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Title:	2012 Update to the Site Discharge Pollution Prevention Plan, Revision 1 Los Alamos National Laboratory NPDES Permit No. NM0030759, May 1, 2013 Water/Cañon de Valle Watershed Receiving Waters: Cañon de Valle, Potrillo Canyon, Water Canyon and Fence Canyon Volume 4
Author(s):	Veenis, Steven J.
Intended for:	Individual Permit Pollution Prevention Team, Public, EPA, NMED Report Environmental Programs
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2012 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory
NPDES Permit No. NM0030759
LA-UR-13-21503 • May 1, 2013

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).

Solid Waste Management Unit (SWMU) 16-017(b)-99 is a former high explosives (HE) machining building (structure 16-93) that was located at Technical Area 16 (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 for storage. The building was removed in 1996. This SWMU 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 16-93 was given the individual SWMU identification of SWMU 16-017(b)-99 at that time.

CDV-SMA-1.2, Base Course Berm, V00103020008 (photo ID 8520-1r)

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 vitrified clay pipe (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 decontamination and decommissioning (D&D) operations in 1996.

The project map (Figure 180-1) is located at the end of this site monitoring area (SMA) update. Any future map updates will be posted on the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, 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	
V00101010003	Seed and Mulch - Seed and Wood Mulch			X		CB
V00101010004	Seed and Mulch - Seed and Wood Mulch			X		CB
V00102010002	Established Vegetation - Grasses and Shrubs			X		CB
V00103020008	Berms - Base Course		X		X	CB
V00103060009	Berms - Straw Wattles	X			X	B
V00103060010	Berms - Straw Wattles	X			X	B
V00103060011	Berms - Straw Wattles	X			X	B
V00104060001	Channel/Swale - Riprap		X	X		CB
V00106010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

180.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-1.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

180.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.2 during the 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23517	05-15-2012
Annual Erosion Evaluation	COMP-23329	06-04-2012
Storm Rain Event	BMP-24684	07-11-2012
Storm Rain Event	BMP-25262	07-18-2012
Storm Rain Event	BMP-25841	07-27-2012
Storm Rain Event	BMP-26664	08-20-2012
Storm Rain Event	BMP-28751	10-16-2012

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

Table 180-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26071	Installed new straw wattle V00103060010 directly above existing wattle -0005, which was retired.	08-02-2012	6 day(s)	Maintenance conducted in timely manner.
BMP-26072	Installed new straw wattle V00103060011 directly above existing wattle -0006, which was retired.	08-02-2012	6 day(s)	Maintenance conducted in timely manner.

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 180-4 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-017(b)-99	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-029(k)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

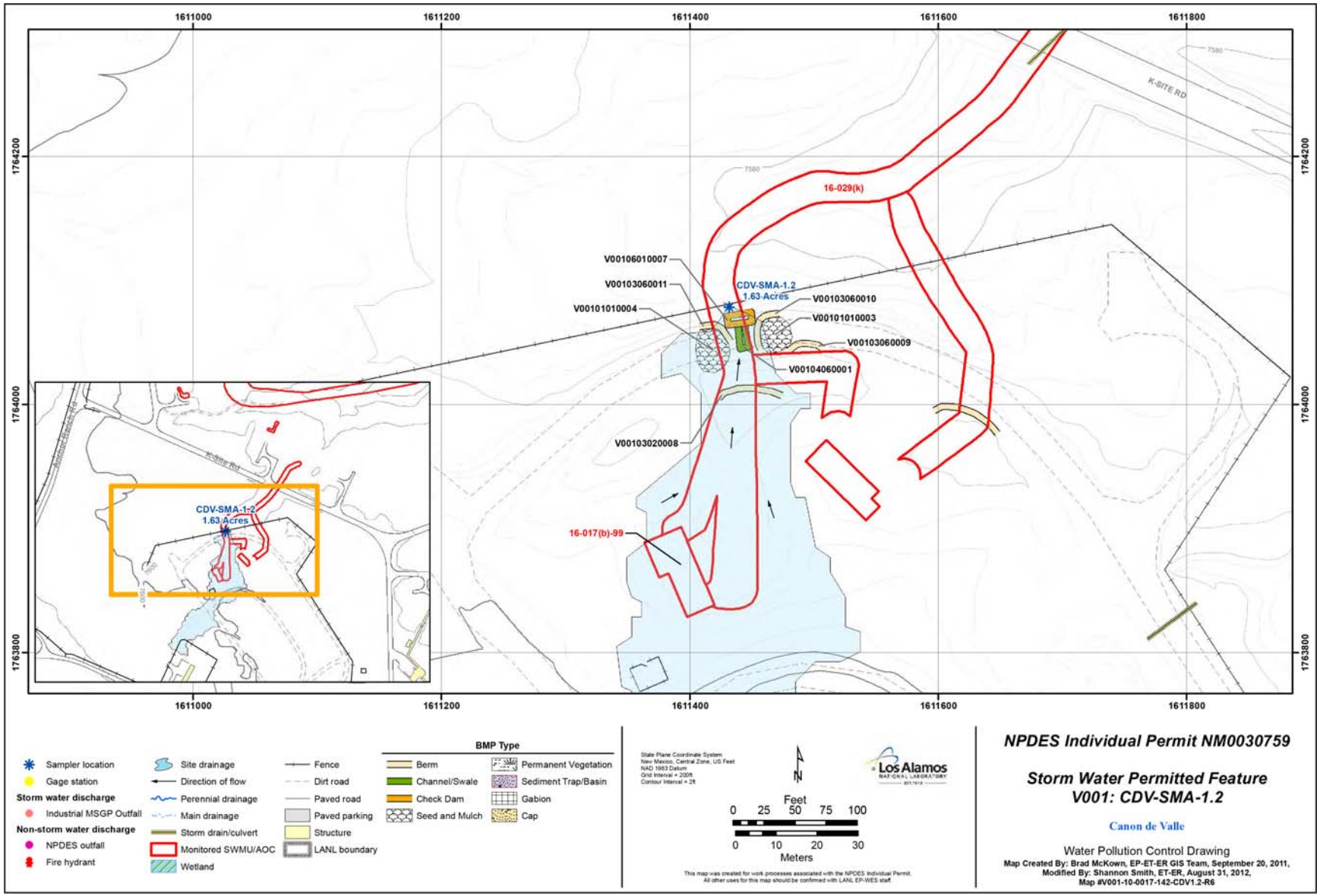


Figure 180-1 CDV-SMA-1.2 location map

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).

SWMU 16-017(a)-99 is 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 for storage. The building was removed in 1996. This SWMU 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.

SWMU 16-026(m) consists of two outfalls from two sumps [SWMU 16-029(l)] that served former HE machining building 16-92. The sumps were located on the east and west sides of building 16-92 near the 90s-Line Pond area at TA-16. 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 until 1955 for machining HE. Subsequently, the building was used for the 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 its drainlines were all removed in 1996.

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	
V00202010001	Established Vegetation - Grasses and Shrubs			X		CB
V00203020002	Berms - Base Course		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

181.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-1.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

181.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.3 during the 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23518	05-15-2012
Annual Erosion Evaluation	COMP-23330	06-04-2012
Storm Rain Event	BMP-24685	07-11-2012
Storm Rain Event	BMP-25263	07-18-2012
Storm Rain Event	BMP-25842	07-27-2012
Storm Rain Event	BMP-26665	08-20-2012
Storm Rain Event	BMP-28752	10-16-2012

There were no maintenance activities conducted at CDV-SMA-1.3 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-017(a)-99	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-026(m)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

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

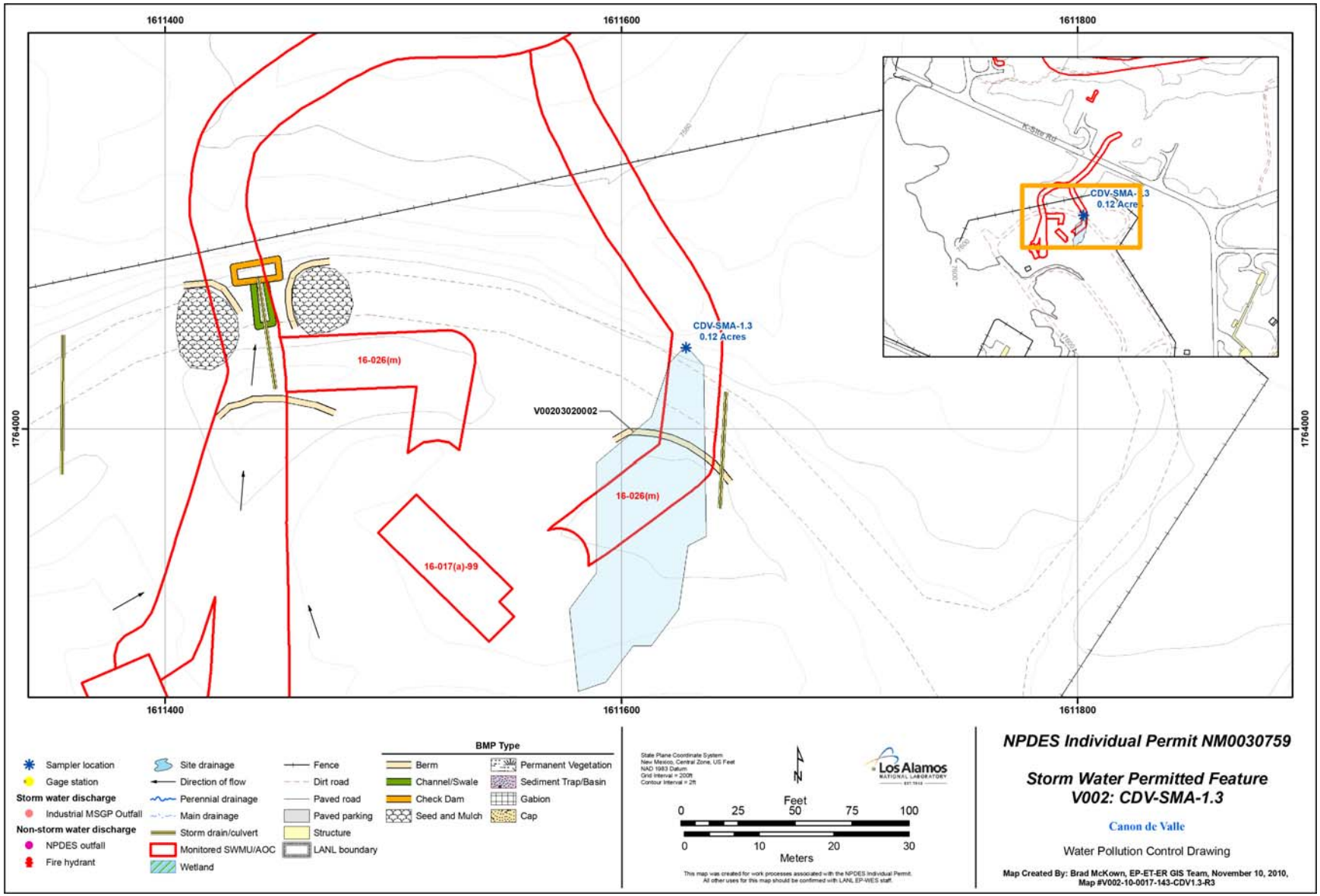


Figure 181-1 CDV-SMA-1.3 location map

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 interim measure. 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 was removed in 2003. The outfall drainline is still in place. Potential contaminants associated with industrial materials historically managed at this Site include chromium, silver, cyanide, and organic chemicals.

CDV-SMA-1.4, Seed and Mulch, V00301010025 (photo ID 8522-10r)

SWMU 16-026(l) consists of two outfalls located on the east side of former x-ray building 16-220 in the northern portion of TA-16. Both outfalls received discharge from separate roof drains. Engineering records state that neither drainline could be located. Environmental personnel were also unable to locate the outfalls. Building 16-220 was removed in 2003; however, the drainlines remain in place. The 1990 SWMU Report describes SWMU 16-026(l) as three outfalls located on the northeast, southeast, and south sides of former building 16-220. However, engineering records do not indicate that an outfall exists on the south side of the building. Thus, the SWMU consists only of the northeast and southeast outfalls. No industrial materials were historically managed at this site, which only received rainwater discharged from roof drains.

SWMU 16-028(c) is a formerly permitted outfall (EPA 04A070) located east of former x-ray building 16-220 in the northern portion of TA-16. The outfall received discharges from the eight floor drains in former building 16-220. The 1995 Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) for Operable Unit (OU) 1082 indicates the discharge effluent contained noncontact cooling water, chiller condensate, vacuum pump discharge, and floor washings. The floor drains in building 16-220 were plugged in 1991, and the outfall was removed from the Laboratory's NPDES permit, effective September 19, 1997. Building 16-220 was removed in 2003; however, the drainlines remain in place. Potential contaminants associated with industrial materials historically managed at this site are metals, particularly barium, explosive compounds, and petroleum products.

SWMU 16-030(c) is consists of three outfalls from four roof drains at a former rest house (structure 16-222) located 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 on each roof corner that discharged to three outfalls. The roof drain on the northeast corner of the building discharged via a 6-in.

VCP approximately 65 ft southeast of the building. The northwest corner roof drain discharged via a 6-in. VCP approximately 20 ft west of the building. The southeast and southwest corner roof drains were connected to a 6-in. VCP that discharged 15 ft southwest of the building. Building 16-222 was built in 1953 and underwent D&D in 2003. All surface and subsurface structures were removed. No industrial materials were historically managed at this site, which only received rainwater discharged from roof drains. NMED issued a certificate of completion (COC) without controls on January 23, 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	
V00301010025	Seed and Mulch - Seed and Wood Mulch			X		CB
V00302010007	Established Vegetation - Grasses and Shrubs			X		CB
V00302020005	Established Vegetation - Forested/Needle Cast			X		CB
V00303010066	Berms - Earthen	X			X	B
V00303010067	Berms - Earthen		X		X	B
V00303020017	Berms - Base Course	X			X	CB
V00303060019	Berms - Straw Wattles	X			X	CB
V00303060020	Berms - Straw Wattles	X			X	CB
V00303060022	Berms - Straw Wattles		X		X	CB
V00303060023	Berms - Straw Wattles		X		X	CB
V00303060024	Berms - Straw Wattles		X		X	CB
V00305020068	Sediment Traps and Basins - Sediment Basin	X			X	B
V00306010004	Check Dam - Rock	X			X	CB
V00306010012	Check Dam - Rock		X		X	CB
V00306010016	Check Dam - Rock	X			X	CB
V00306010026	Check Dam - Rock	X			X	CB
V00306010039	Check Dam - Rock		X		X	B
V00306010040	Check Dam - Rock		X		X	B
V00306010043	Check Dam - Rock	X			X	B
V00306010044	Check Dam - Rock		X		X	B
V00306010057	Check Dam - Rock	X			X	B

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00306010058	Check Dam - Rock		X		X	B
V00306010059	Check Dam - Rock		X		X	B
V00306010060	Check Dam - Rock		X		X	B
V00306010061	Check Dam - Rock		X		X	B
V00306010062	Check Dam - Rock		X		X	B
V00306010063	Check Dam - Rock		X		X	B
V00306010064	Check Dam - Rock		X		X	B
V00306010065	Check Dam - Rock	X			X	B

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

Enhanced controls will be installed in the second quarter of 2013 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 target action level (TAL) exceedance:

- Silver concentration of 7.86 µg/L (maximum TAL [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 Compliance Order on Consent (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: Potential contaminants associated with industrial materials historically managed at this Site include chromium, silver, cyanide, and organic chemicals.

- Silver—Silver was detected at 720 times background value (BV) in soil samples collected in 2000 following soil/sediment removal activities within the outfall area.
- Cyanide—Cyanide was not detected in soil samples collected in 2000.

In summary, silver was detected substantially above BV and is known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is a likely source of silver above MTAL in storm water.

SWMU 16-026(l): No industrial materials were historically managed at this Site, which received only rainwater discharged from roof drains. Consent Order sampling has not been performed at SWMU 16-026(l). No investigations were conducted at SWMU 16-026(l) before the Consent Order went

into effect in 2005. Cyanide and silver are not known to have been associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of silver above MTAL.

SWMU 16-028(c): Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly barium, explosive compounds, and petroleum products. Consent Order sampling has not been performed at SWMU 16-028(c). No investigations were conducted at SWMU 16-028(c) before the Consent Order went into effect in 2005. Cyanide and silver are not known to have been associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of silver above MTAL.

SWMU 16-030(c): No industrial materials were historically managed at this site, which only received rainwater discharged from roof drains. Consent Order sampling has not been performed at SWMU 16-030(c). No investigations were conducted at SWMU 16-030(c) before the Consent Order went into effect in 2005. NMED issued a COC without controls for the Site. Cyanide and silver are not known to have been associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of silver above MTAL.

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 upper tolerance limits (UTLs) using the approved U.S. Environmental Protection Agency (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.

182.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.4 during the 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23519	05-15-2012
Annual Erosion Evaluation	COMP-23331	06-05-2012
Storm Rain Event	BMP-24686	07-11-2012
Significant Event	COMP-25351	07-12-2012
Storm Rain Event	BMP-25264	07-19-2012
Storm Rain Event	BMP-25843	08-08-2012
Construction	COMP-26969	08-28-2012
Storm Rain Event	BMP-26666	08-30-2012
Construction	COMP-27235	09-04-2012
Construction	COMP-27410	09-06-2012
Storm Rain Event	BMP-28753	10-16-2012
Visual	COMP-29201	10-30-2012

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

Table 182-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23594	Repaired seed/mulch V00301010025 and adjacent area with additional seed/mulch.	05-24-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-25442	Added rock to check dam V00306010012 to increase height and width.	07-24-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-26666	Repaired rock check dam V00306010044.	08-30-2012	0 day(s)	Maintenance conducted upon inspection.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	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"

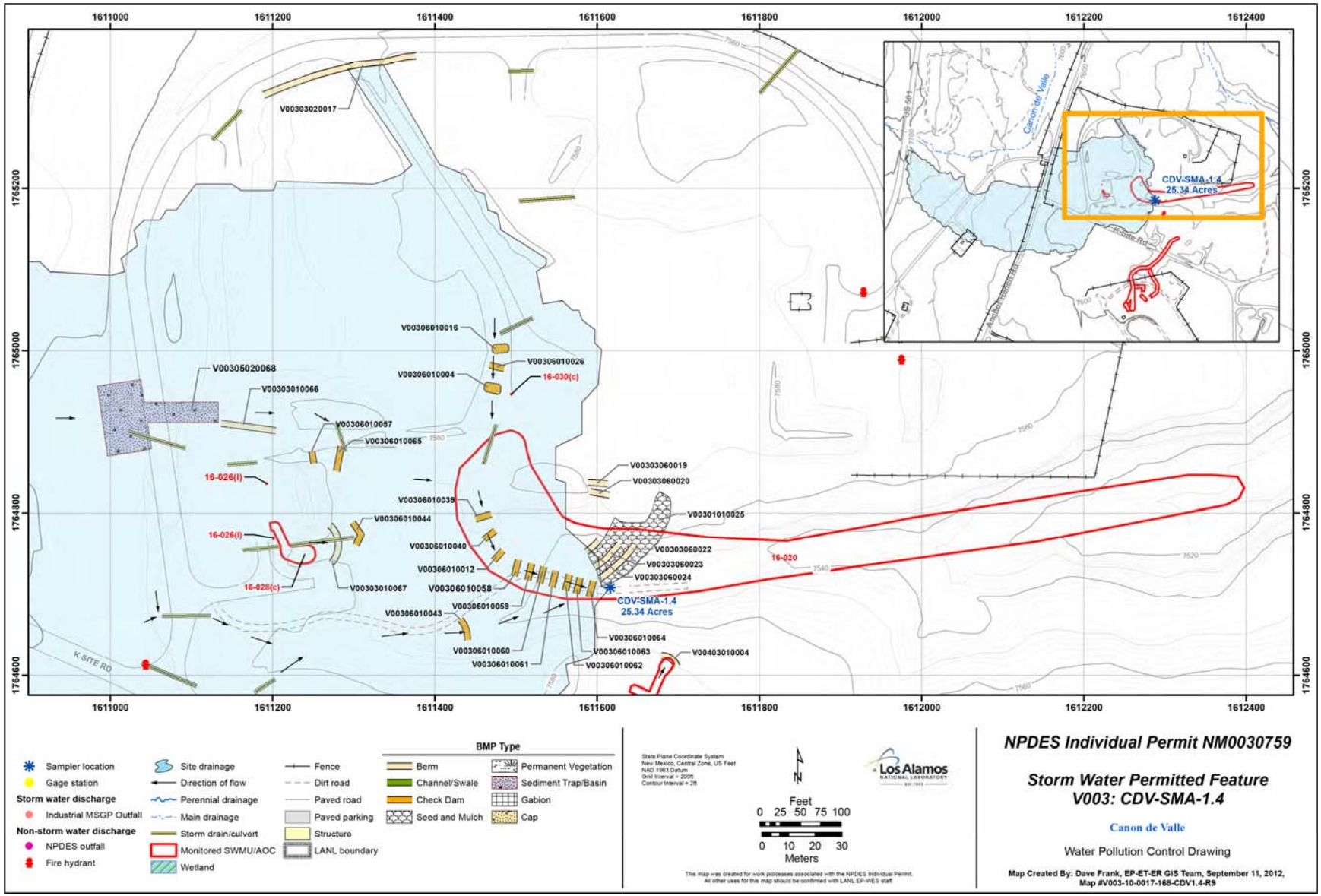
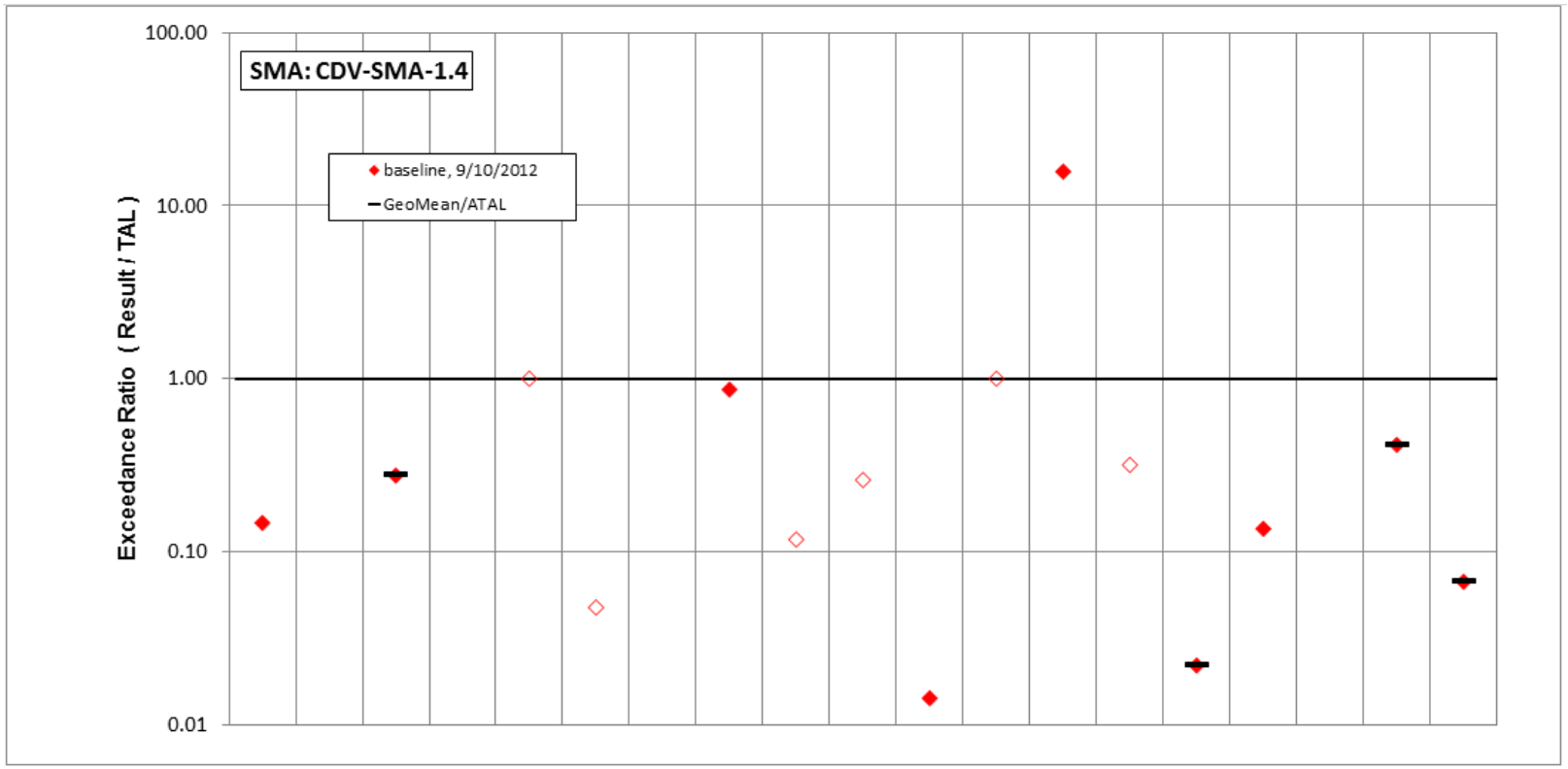


Figure 182-1 CDV-SMA-1.4 location map



	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) is an outfall northeast of former x-ray building 16-224, located in the northern portion of TA-16. The outfall received discharge from the floor drains in building 16-224. The floor drains were plugged in 1991, and the building was removed in 2003. The drainlines to the outfall remain in place. Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly barium, and explosive compounds.

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	
V00402020001	Established Vegetation - Forested/Needle Cast			X		CB
V00403010004	Berms - Earthen		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 (average TAL [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): Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly barium, and explosive compounds. Consent Order sampling has not been performed at SWMU 16-026(i). Soil samples were collected in 2003 following demolition of the building associated with the Site but were not analyzed for radionuclides because they were not identified as chemicals of potential concern at this Site.

In summary, alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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—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 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23520	05-15-2012
Annual Erosion Evaluation	COMP-23332	06-04-2012
Construction	COMP-23960	06-04-12
Enhanced control measure verification	BMP-23980	06-05-2012
Storm Rain Event	BMP-24687	07-11-2012
Storm Rain Event	BMP-25265	07-18-2012
Storm Rain Event	BMP-25844	08-07-2012
Storm Rain Event	BMP-26667	08-20-2012
Storm Rain Event	BMP-28754	10-16-2012

There were no maintenance activities conducted at CDV-SMA-1.45 in 2012.

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 2012

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

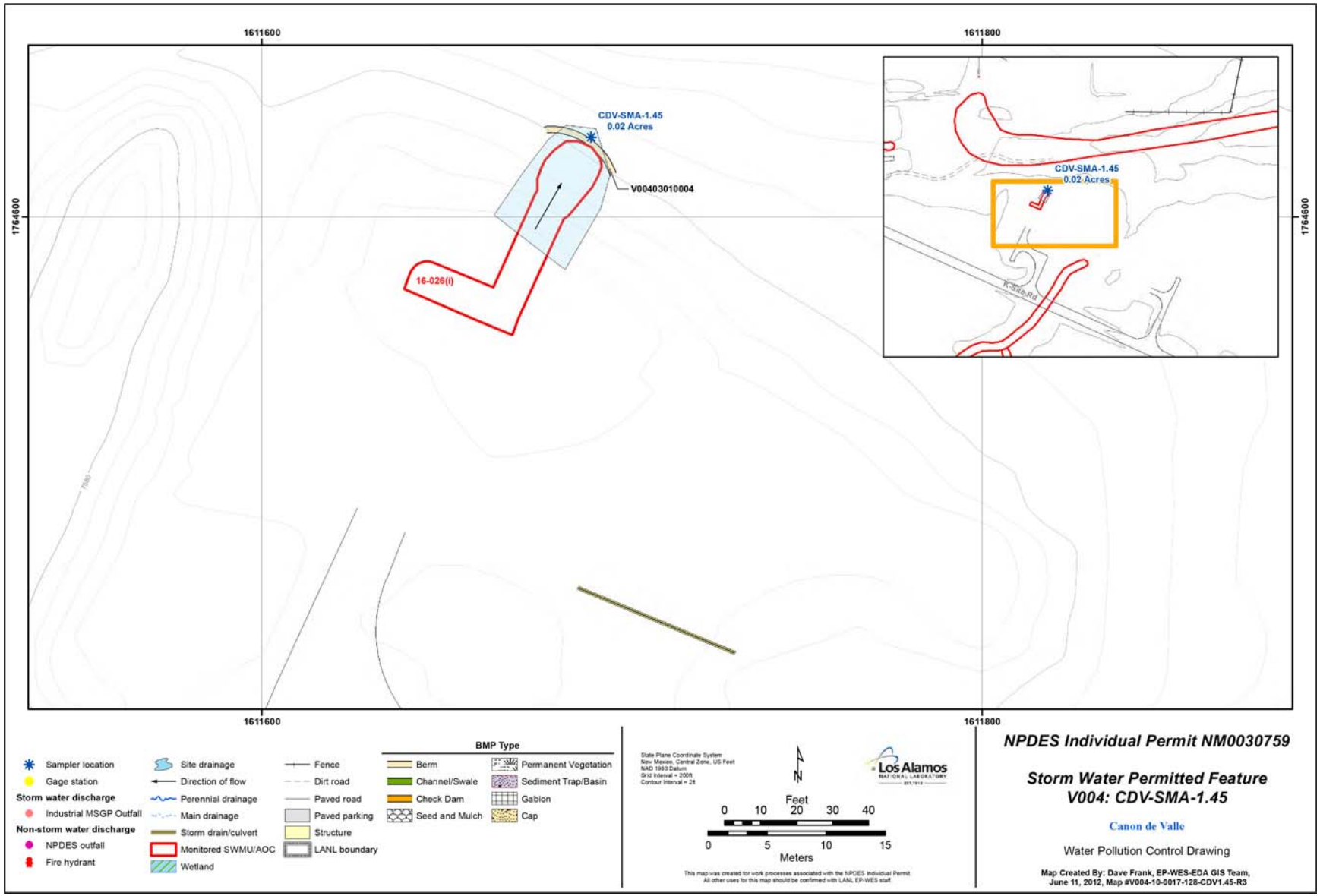
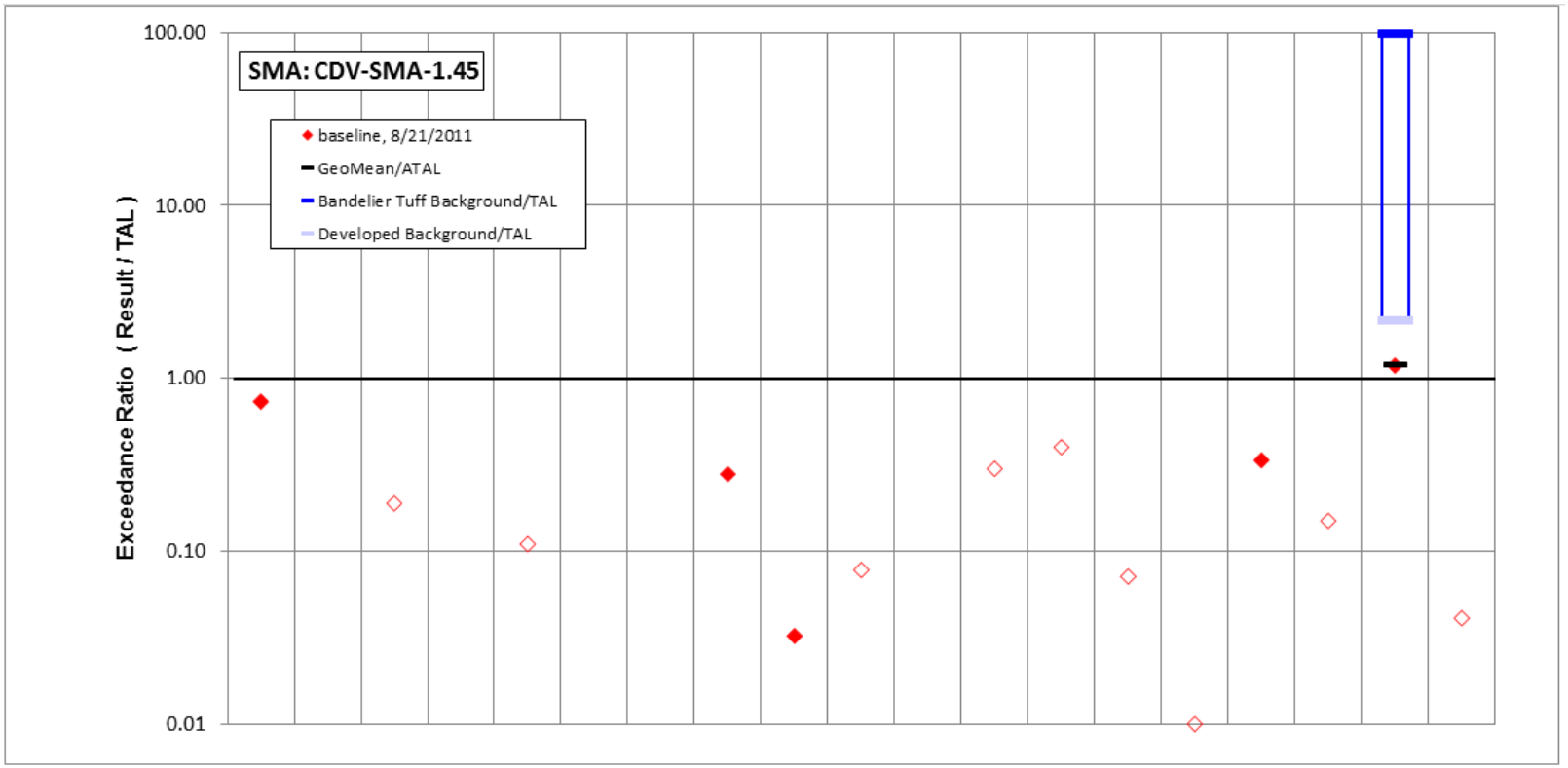


Figure 183-1 CDV-SMA-1.45 location map



	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	*0.06*	*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	*0.078*	*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 consists of MDA R, located north of building 16-260 along the southern rim of Cañon de Valle at TA-16. The majority of the approximately 2.25-acre material disposal area (MDA) lies on flat terrain, with the exception of the northern boundary, which drops off steeply for approximately 80 ft into 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 square, constructed in the eastern portion of the MDA, approximately 150 ft from the edge of the canyon. U-shaped earthen berms were placed around each pit in such a way that the open ends of the east and west pits faced northward towards Cañon de Valle and the central pit faced south. An access road encircled the pits and the entire area was fenced. 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 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.

CDV-SMA-1.7, Rock Check Dam, V00506010006 (photo ID 10885-4r)

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 Mulch - Seed and Wood Mulch		X	X		CB
V00502010003	Established Vegetation - Grasses and Shrubs			X		CB
V00504060015	Channel/Swale - Riprap			X		CB
V00506010005	Check Dam - Rock		X		X	CB
V00506010006	Check Dam - Rock		X		X	CB
V00506010007	Check Dam - Rock		X		X	CB
V00506010008	Check Dam - Rock	X			X	CB
V00506010009	Check Dam - Rock	X			X	CB
V00506010010	Check Dam - Rock	X			X	CB
V00506010011	Check Dam - Rock		X		X	CB
V00506010012	Check Dam - Rock		X		X	CB
V00506010013	Check Dam - Rock	X			X	CB
V00506010014	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

184.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-1.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

184.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.7 during the 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23521	05-15-2012
Annual Erosion Evaluation	COMP-23333	06-08-2012
Storm Rain Event	BMP-24688	07-11-2012
Storm Rain Event	BMP-25266	07-20-2012
Storm Rain Event	BMP-25845	08-08-2012
Storm Rain Event	BMP-26668	08-21-2012
Storm Rain Event	BMP-28755	10-18-2012

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

Table 184-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23521	Removed debris.	05-15-2012	0 day(s)	Maintenance conducted upon inspection.

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 184-4 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-019	Baseline Monitoring	Baseline Monitoring Extended	No Comment

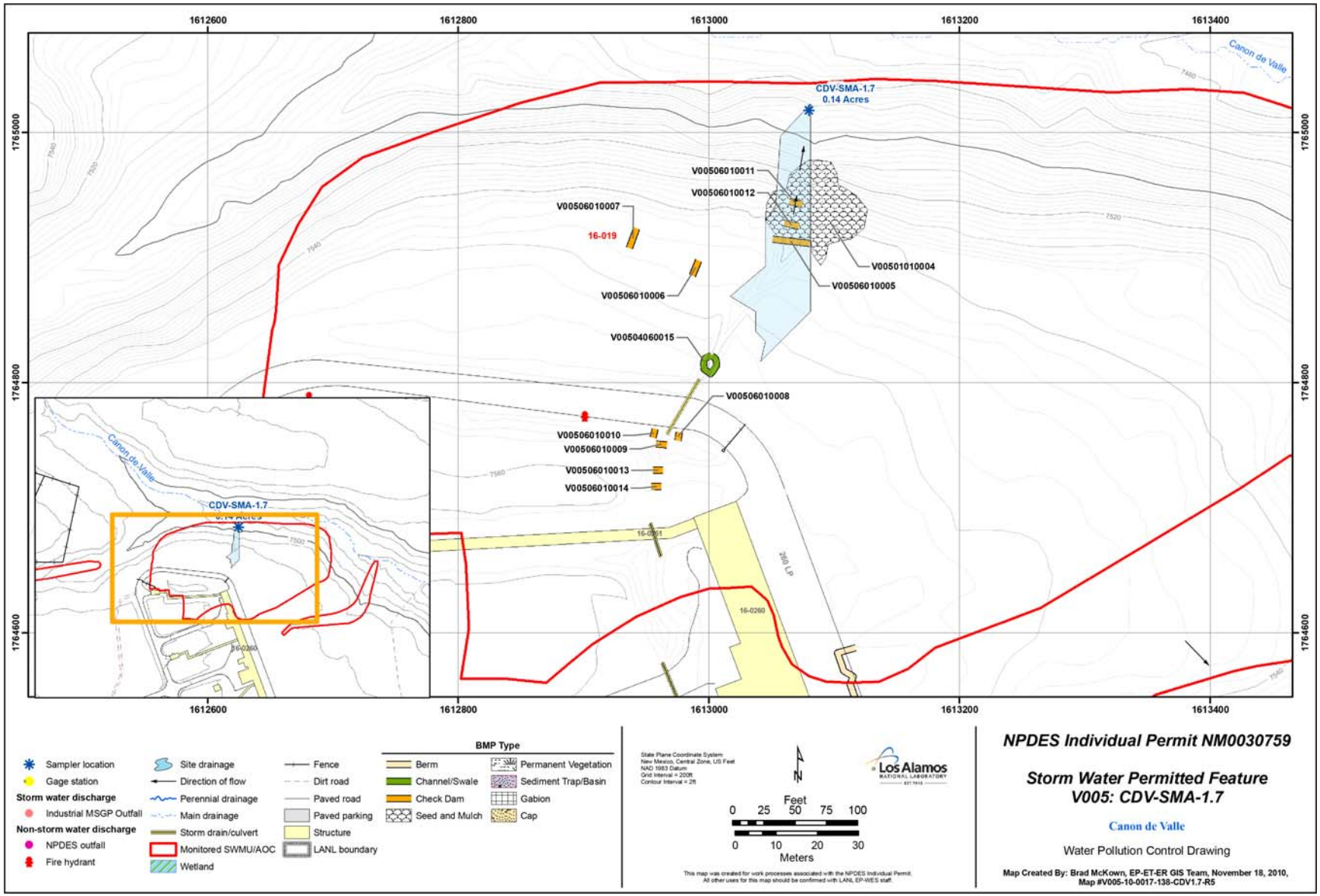


Figure 184-1 CDV-SMA-1.7 location map

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) is a formerly permitted outfall (EPA05A056) for 13 HE sumps [SWMU 16-003(k)] that served HE machining building 16-260 at TA-16. SWMUs 16-003(k) and 16-021(c) comprise Consolidated Unit 16-021(c)-99. 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 interim measure (IM) performed 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.


CDV-SMA-2, Rip Rap, V00604060003 (photo ID 12989-4)

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	
V00601010011	Seed and Mulch - Seed and Wood Mulch			X		CB
V00602010004	Established Vegetation - Grasses and Shrubs			X		CB
V00602020005	Established Vegetation - Forested/Needle Cast			X		CB
V00603010006	Berms - Earthen		X		X	CB
V00603010007	Berms - Earthen	X			X	CB
V00603010008	Berms - Earthen	X			X	CB
V00603010009	Berms - Earthen	X			X	CB
V00603010010	Berms - Earthen	X			X	CB
V00603090001	Berms - Curbing	X			X	CB
V00604060003	Channel/Swale - Riprap		X	X		CB
V00606010002	Check Dam - Rock		X		X	CB
V00608020012	Cap - Rock		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

185.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

185.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-2 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23334	06-08-2012
Storm Rain Event	BMP-24884	07-18-2012
Storm Rain Event	BMP-28195	10-02-2012

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

Table 185-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28274	10/12/12 unable to complete work due to lightning stand down. Installed new seed and erosion control blanket on berm V00603010009.	10-15-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28275	10/12/12 unable to complete work due to lightning stand down. Installed new seed and erosion control blanket on berm V00603010008.	10-15-2012	13 day(s)	Maintenance conducted in timely manner.
BMP-28276	10/12/12 unable to complete work due to lightning stand down. Installed new seed and erosion control blanket on berm V00603010010.	10-15-2012	13 day(s)	Maintenance conducted in timely manner.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-021(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

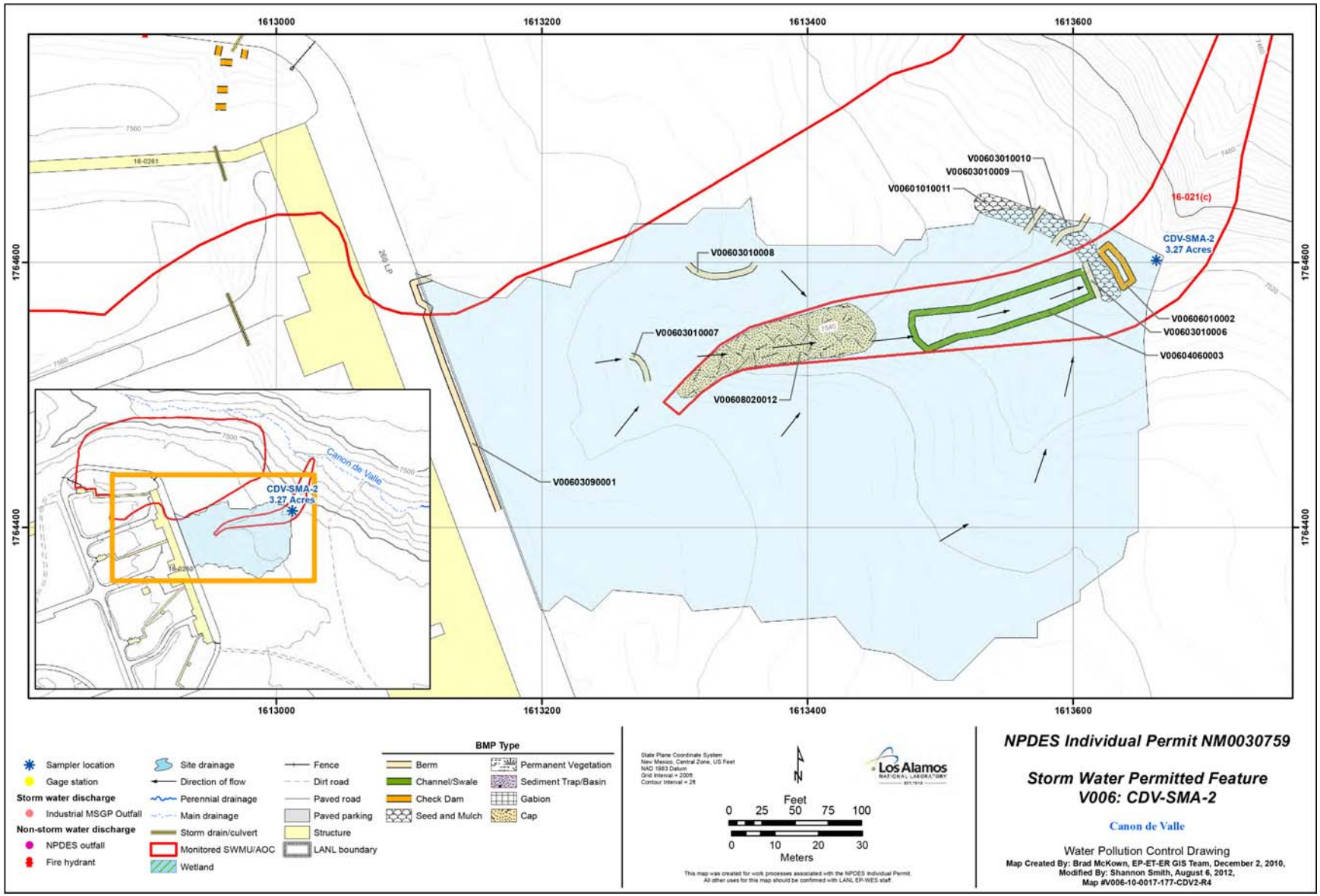


Figure 185-1 CDV-SMA-2 location map

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 at TA-16. 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.

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

SWMU 16-003(n) is a former sump that was located on the exterior northeast wall of 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 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 removed in 2005.

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 (potassium butyl xanthate). Volatile organic compounds (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. The air stripper 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. The building 16-340 complex underwent D&D in 2005, and all aboveground and subsurface structures and contaminated soil were removed. Approximately 100 yd^3 of soil was removed from seven locations at 16-003(o).

CDV-SMA-2.3, Permanent Vegetation, V00702020001 (photo ID 8527-2r)

SWMU 16-029(h) consists of the outfall and drainline from the HE sump [AOC 16-003(p)] located on the south side of former building 16-478. The 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 was alleged to be present and was described as a French drain that extended south of the sump. During the investigation activities conducted in 2009 and 2010, no evidence of the French drain was found. 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. It should be noted that SWMU 16-029(h) was identified as an HE sump in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designate as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 work plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump next to former building 16-478.

SWMU 16-031(h) is an outfall located approximately 300 ft northeast of former building 16-340. The outfall was formerly NPDES permitted (EPA04A134) and received discharge from the sink, vacuum pump, and floor drain of a utility room within former building 16-478. The drain, which consists of a 4-in. VCP, daylights approximately 30 ft from the building. Initially, former building 16-478 was used for photographing explosives testing and was later used for testing the effects of machining on HE products. A water-sealed/water-cooled vacuum pump was located in the utility room and served a vacuum system in another area of the building. The vacuum system held HE pieces in place for machining. The vacuum line contained a water filter to prevent HE from reaching the vacuum pump lines.

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	
V00702010004	Established Vegetation - Grasses and Shrubs			X		CB
V00702020001	Established Vegetation - Forested/Needle Cast			X		CB
V00703060007	Berms - Straw Wattles	X			X	CB
V00703060009	Berms - Straw Wattles		X		X	CB
V00703060010	Berms - Straw Wattles		X		X	CB
V00703060011	Berms - Straw Wattles		X		X	CB
V00703060012	Berms - Straw Wattles		X		X	CB
V00703060017	Berms - Straw Wattles		X		X	B
V00703060018	Berms - Straw Wattles		X		X	B
V00706010016	Check Dam - Rock		X		X	B
V00706010019	Check Dam - Rock	X			X	B
V00706010020	Check Dam - Rock	X			X	B
V00707010002	Gabions - Gabions		X		X	CB

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

186.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at CDV-SMA-2.3 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23335	06-05-2012
Storm Rain Event	BMP-24885	07-17-2012
Storm Rain Event	BMP-28196	10-09-2012

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

Table 186-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28471	Repaired wattle V00703060007.	10-16-2012	7 day(s)	Maintenance conducted in timely manner.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 13-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 13-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-003(n)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-003(o)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-029(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-031(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

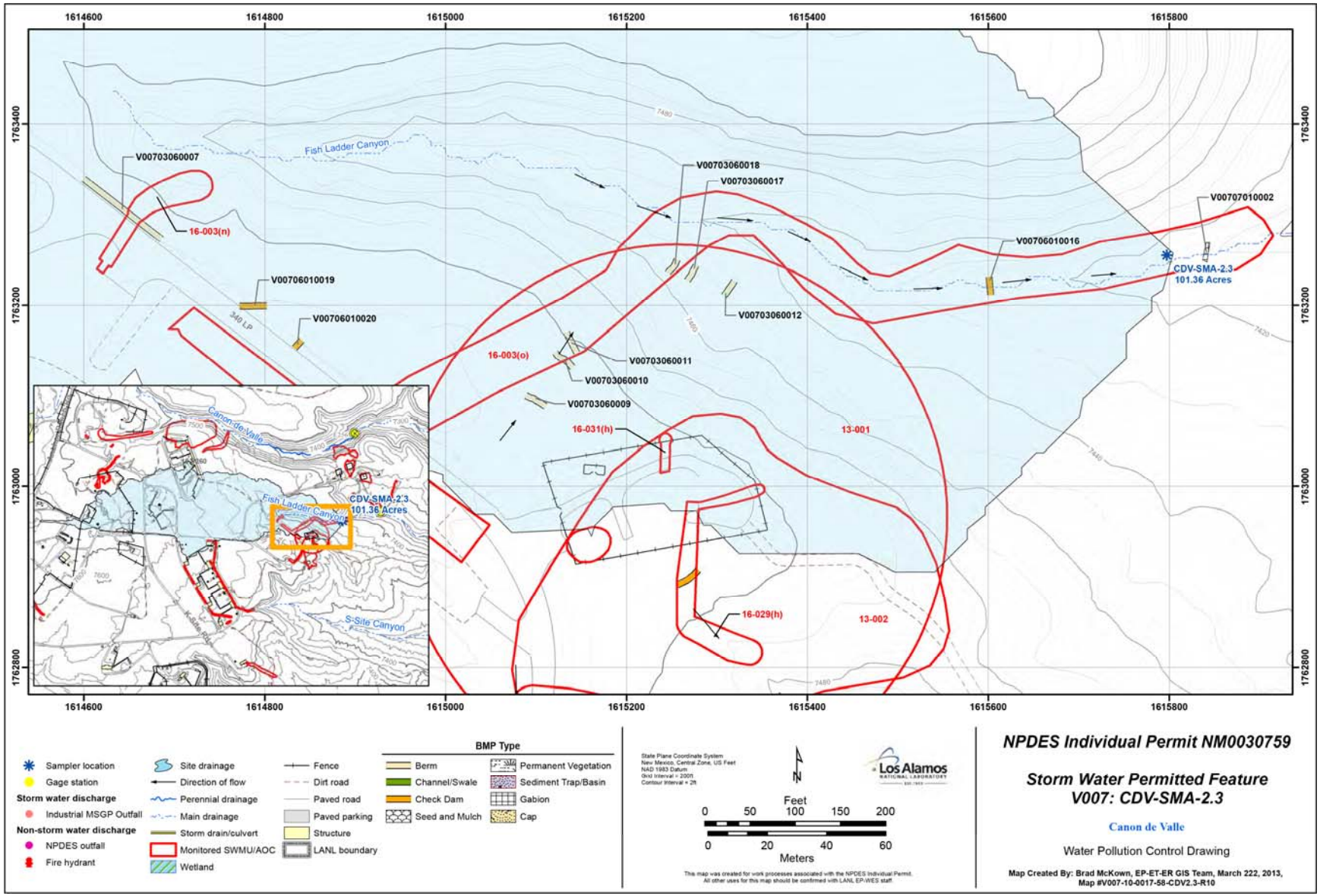


Figure 186-1 CDV-SMA-2.3 location map

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, MDA P, is located north of the TA-16 Burning Ground near the south rim of Cañon de Valle at TA-16. Disposal operations at MDA P began in 1950. MDA P received debris that resulted from burning HE and HE-contaminated material at TA-16. Concrete and construction debris was deposited directly on the slopes leading down 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. 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. Disposal operations continued until 1984. MDA P underwent closure between 1999 and 2001. Over 55,000 yd^3 of debris, soil, and bedrock was excavated from the site. Potential contaminants associated with industrial materials historically managed at this site are metals, particularly barium and nitrate, and explosive compounds. SWMU 16-018 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. SWMU 16-018 underwent RCRA clean closure and has been approved for no further action under RCRA by NMED.

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	
V00802010005	Established Vegetation - Grasses and Shrubs			X		CB
V00803060002	Berms - Straw Wattles		X		X	CB
V00804040011	Channel/Swale - Culvert	X		X		CB
V00804060009	Channel/Swale - Riprap	X		X		CB
V00804060010	Channel/Swale - Riprap	X		X		CB
V00806030007	Check Dam - Juniper Bales		X		X	CB
V00806030008	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 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).
- Polychlorinated biphenyl (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: Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly barium and nitrate, and explosive compounds. Consent Order sampling has not been performed at SWMU 16-018. Soil sampling was performed in 2001 as part of RCRA clean-closure activities. The following discussion is organized by analyte:

- Gross alpha—Uranium isotopes were not detected above BVs in post-closure confirmation soil samples.
- PCBs—The PCB mixture Aroclor-1260 was detected in one confirmation soil sample at a concentration of less than 3% of the residential soil screening level.


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

NMED approved the closure certification report, indicating no unacceptable risk to human health or the environment was present and no further action was required. SWMU 16-018 underwent clean closure in 2001, including the removal of all wastes and contaminated media and confirmatory sampling to demonstrate risk-based cleanup levels had been met. NMED approved the RCRA closure certification report, which is equivalent to a COC without controls under the Consent Order. Based on site history and previous sampling results, the Site is an unlikely source of the PCBs and adjusted gross alpha above ATALs in storm water.

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.

- Gross alpha—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 three storm events at CDV-SMA-2.41 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23336	06-05-2012
Storm Rain Event	BMP-24886	07-17-2012
Storm Rain Event	BMP-28197	10-09-2012
Construction	COMP-29945	11-28-2012
Construction	COMP-30332	12-05-2012
Construction	COMP-30400	12-11-2012

There were no maintenance activities conducted at CDV-SMA-2.41 in 2012.

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 187-3 Compliance Status during 2012

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

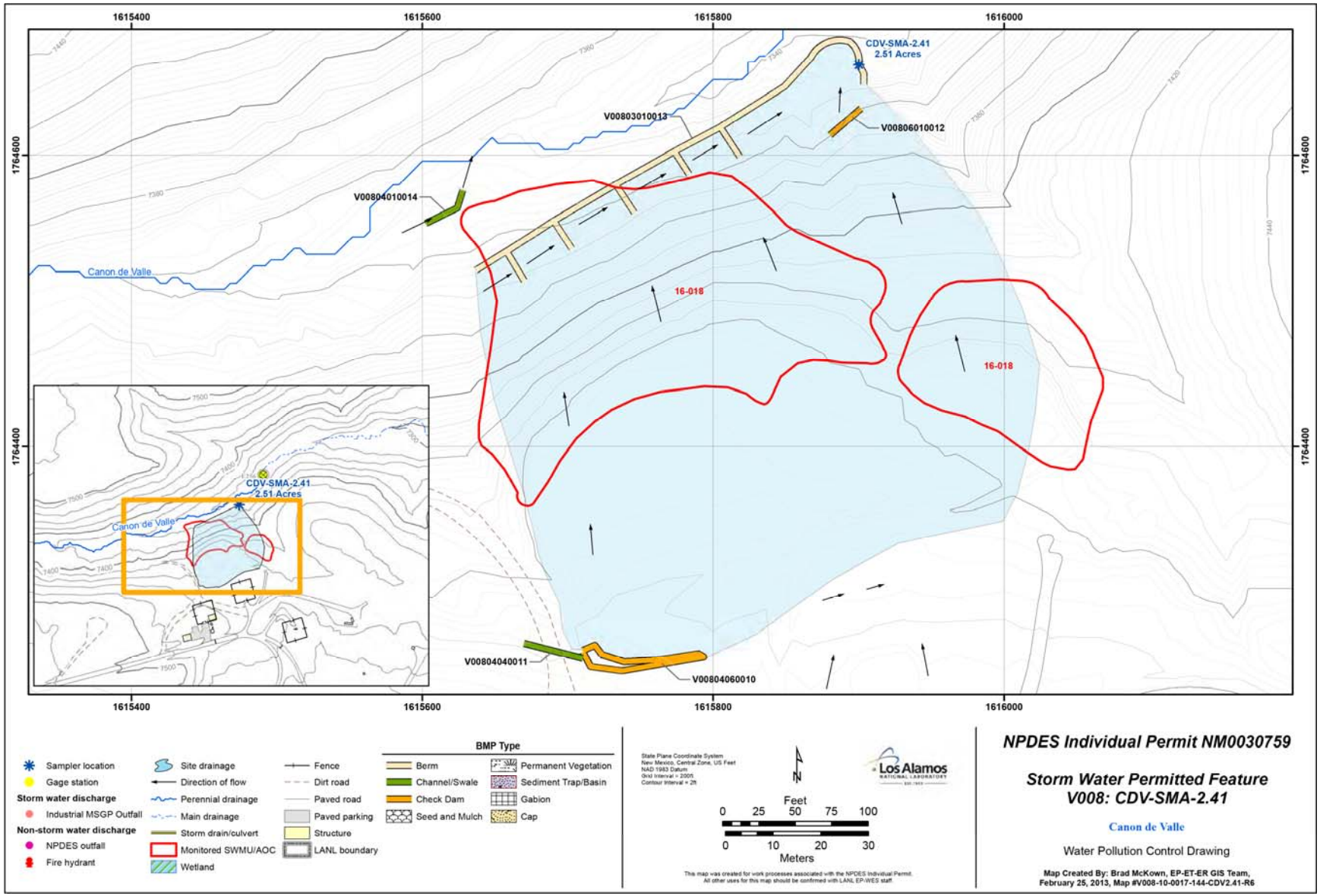
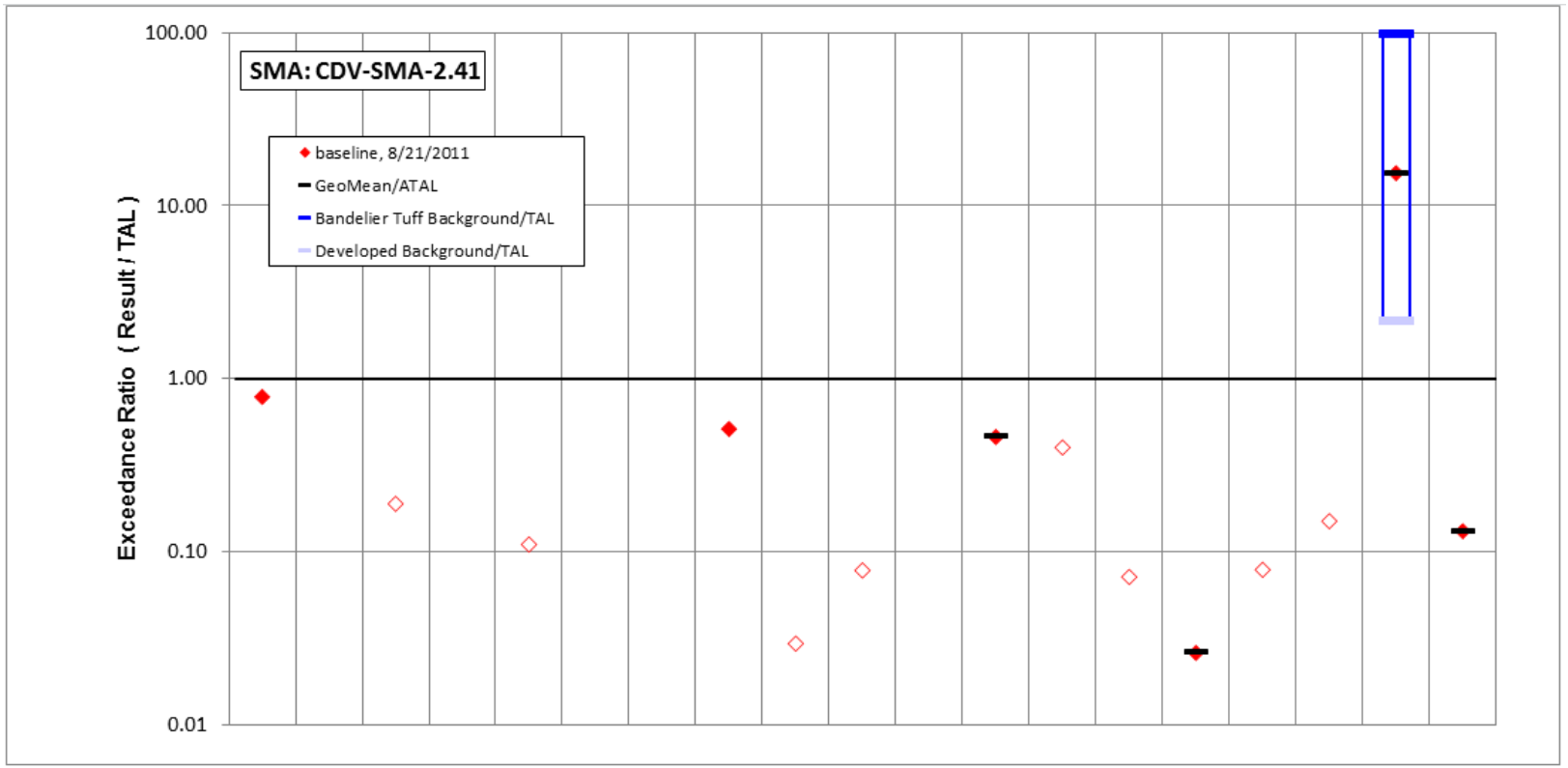


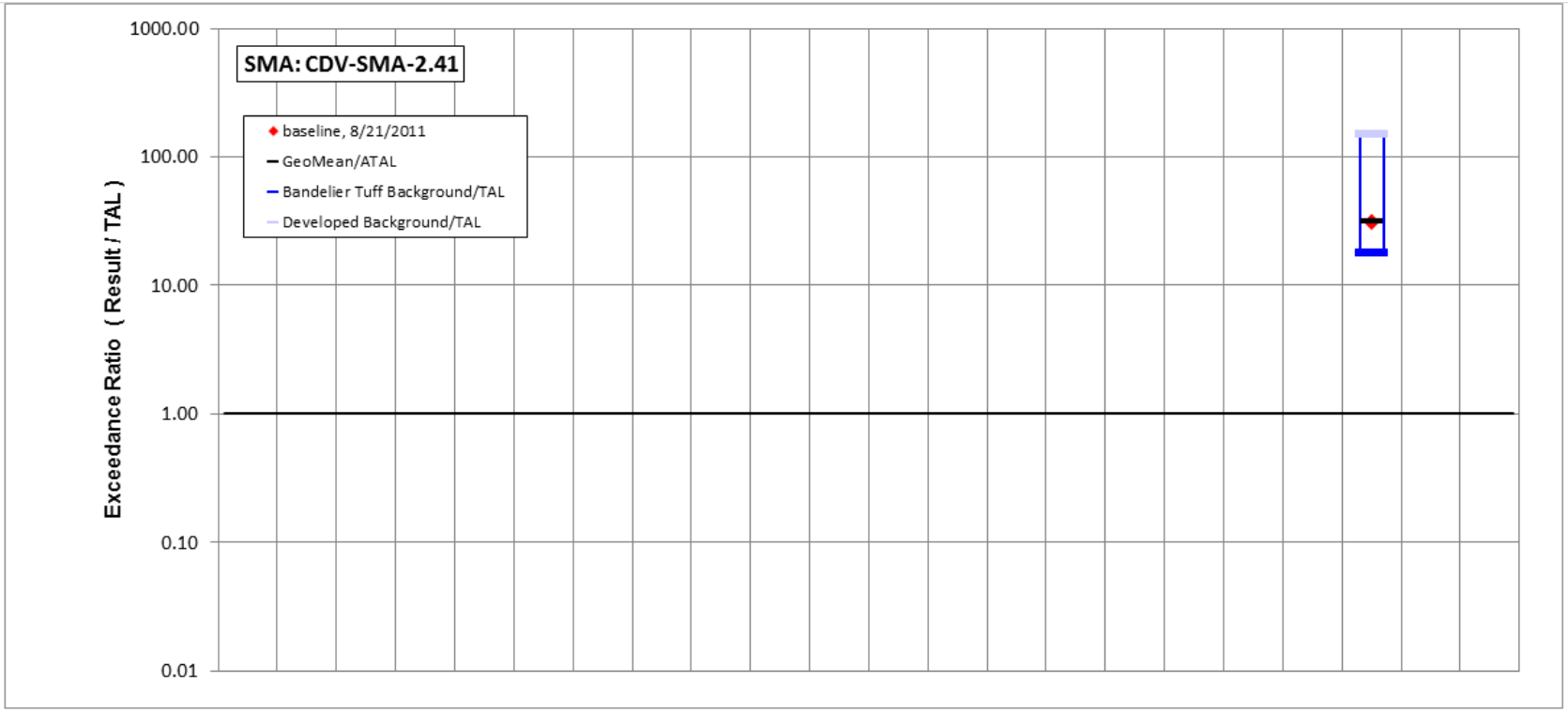
Figure 187-1 CDV-SMA-2.41 location map



	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*	*0.06*	*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*	*0.078*	*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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.02**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**31**	-	-

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) is a former flash pad (structure 16-387) located at the TA-16 Burning Ground. The flash pad was enclosed within a 100-ft × 100-ft fenced area and consisted of a layer of sand several inches thick over a soil base. The pad was built in 1951 and was used to flash-burn HE-contaminated material. The flash pad operated as a hazardous waste treatment unit under RCRA interim status and has undergone RCRA closure. SWMU 16-010(b) is a formerly dual-regulated corrective action unit and has been removed from 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	
V008A02010001	Established Vegetation - Grasses and Shrubs			X		CB
V008A03010006	Berms - Earthen		X		X	CB
V008A03010016	Berms - Earthen		X		X	CB
V008A03060012	Berms - Straw Wattles	X			X	CB
V008A04060002	Channel/Swale - Riprap		X	X		CB
V008A04060005	Channel/Swale - Riprap		X	X		CB
V008A04060018	Channel/Swale - Riprap	X		X		B
V008A04060019	Channel/Swale - Riprap		X	X		B
V008A06010004	Check Dam - Rock		X		X	CB
V008A06010017	Check Dam - Rock	X			X	B
V008A07010003	Gabions - Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

188.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-2.42. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

188.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-2.42 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23337	06-05-2012
Storm Rain Event	BMP-24890	07-17-2012
Storm Rain Event	BMP-28201	10-09-2012

There were no maintenance activities conducted at CDV-SMA-2.42 in 2012.

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 188-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-010(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

CDV-SMA-2.42, Earthen Berm, V008A03010016 (photo ID 11465-5r)

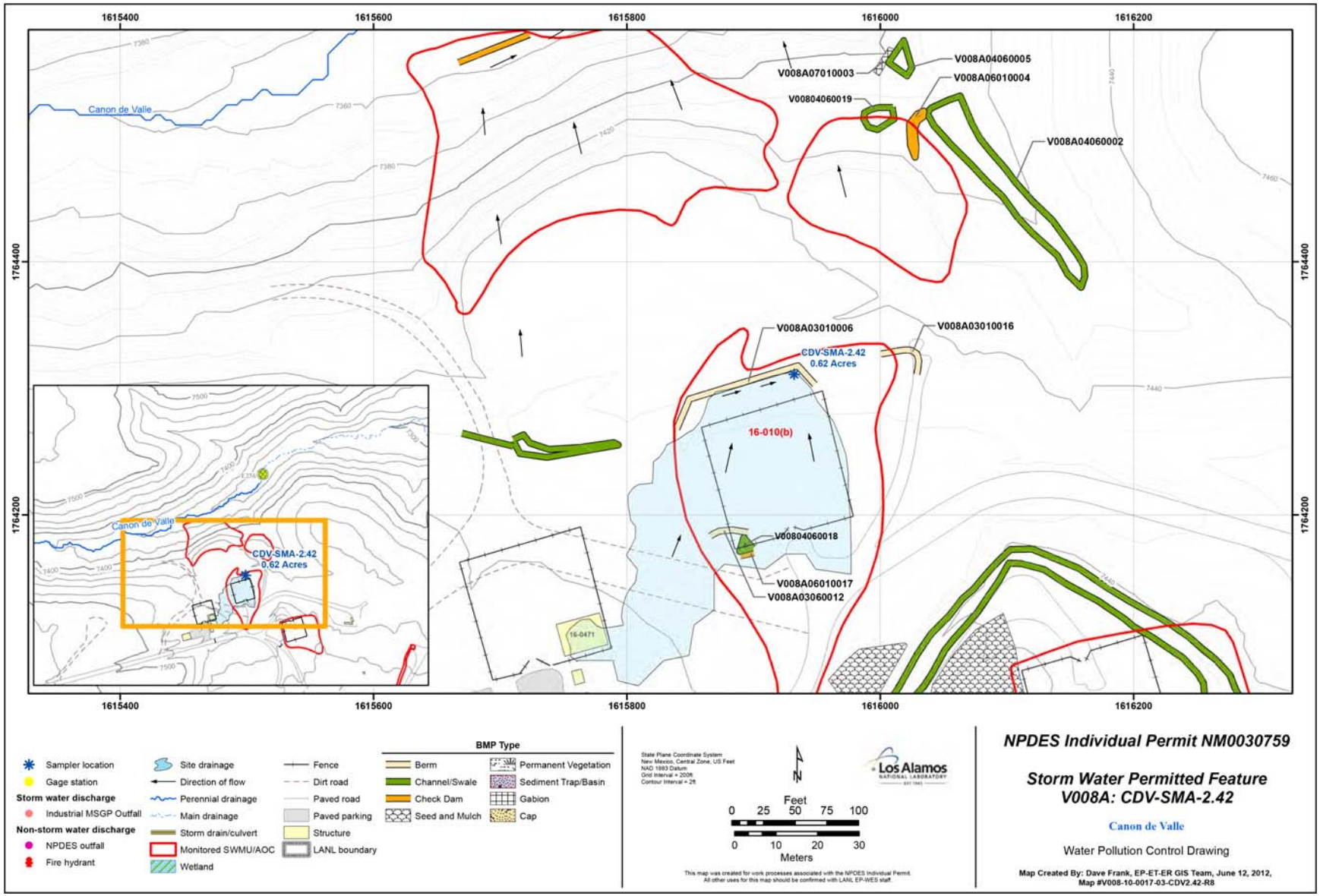


Figure 188-1 CDV-SMA-2.42 location map

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-ft × 100-ft enclosed area consisted of a concrete pad that was used to unload explosives and a 16-ft × 4-ft metal tray that was approximately 2 ft above the ground surface. Scrap HE was placed on the tray and burned. The current flash pad consists of a 22-ft × 22-ft concrete pad set on a secondary containment area and surrounded on three sides by a concrete wall. Before treatment, the HE-contaminated wastes are placed on steel pallets or steel trays. Propane burners are used as heat sources to treat the wastes at the flash pad, which can be covered with a movable steel roof when 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. Potential contaminants associated with industrial materials historically managed at this site are metals, particularly barium, and explosive compounds. SWMU 16-010(c) 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.

CDV-SMA-2.5, Rock Check Dam, V00906010017 (photo ID 8524-05r)

SWMU 16-010(d) is a former burn table that was converted to a burn tray (structure 16-399) located at the TA-16 Burning Ground. The 100-ft^2 enclosed area consists of a concrete pad, a burn table that is approximately 2 ft above the ground surface, and a 16-ft × 4-ft metal tray situated on the table. Scrap HE is placed on the tray and burned. A metal-covered rain guard can be rolled back to expose the tray. Potential contaminants associated with industrial materials historically managed at this site are metals, particularly barium, and explosive compounds. SWMU 16-010(d) 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.

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. Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly barium, and explosive compounds.

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	
V00902010012	Established Vegetation - Grasses and Shrubs			X		CB
V00903010011	Berms - Earthen		X		X	CB
V00903060019	Berms - Straw Wattles	X			X	CB
V00903060020	Berms - Straw Wattles		X		X	CB
V00903060021	Berms - Straw Wattles		X		X	CB
V00903060024	Berms - Straw Wattles		X		X	B
V00903060025	Berms - Straw Wattles		X		X	B
V00903060026	Berms - Straw Wattles	X			X	B
V00903060027	Berms - Straw Wattles	X			X	B
V00904060005	Channel/Swale - Riprap	X		X		CB
V00904060006	Channel/Swale - Riprap		X	X		CB
V00904060007	Channel/Swale - Riprap	X		X		CB
V00904060009	Channel/Swale - Riprap	X		X		CB
V00906010015	Check Dam - Rock	X			X	CB
V00906010016	Check Dam - Rock	X			X	CB
V00906010017	Check Dam - Rock	X			X	CB
V00906010018	Check Dam - Rock	X			X	CB
V00906010022	Check Dam - Rock	X			X	CB
V00906010028	Check Dam - Rock	X			X	B
V00906010029	Check Dam - Rock	X			X	B
V00906010030	Check Dam - Rock	X			X	B
V00906010031	Check Dam - Rock	X			X	B
V00906010032	Check Dam - Rock		X		X	B
V00906010033	Check Dam - Rock	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, and October 12, 2012 (Figure 189-2 and 189-3). Inorganic and organic analytical results from these baseline samples yielded no TAL exceedances. The semivolatile organic results for the sample collected at CDV-SMA-2.5 on October 12, 2012, were rejected as an outcome of data validation and are unusable for confirmation sampling assessment. Thus, the SMA will remain in the baseline monitoring extended phase until a complete confirmation monitoring sample can be collected and analyzed with fully usable results.

189.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-2.5 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23338	06-05-2012
Storm Rain Event	BMP-24887	07-17-2012
Storm Rain Event	BMP-28198	10-09-2012

There were no maintenance activities conducted at CDV-SMA-2.5 in 2012.

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 189-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-010(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-010(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-028(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

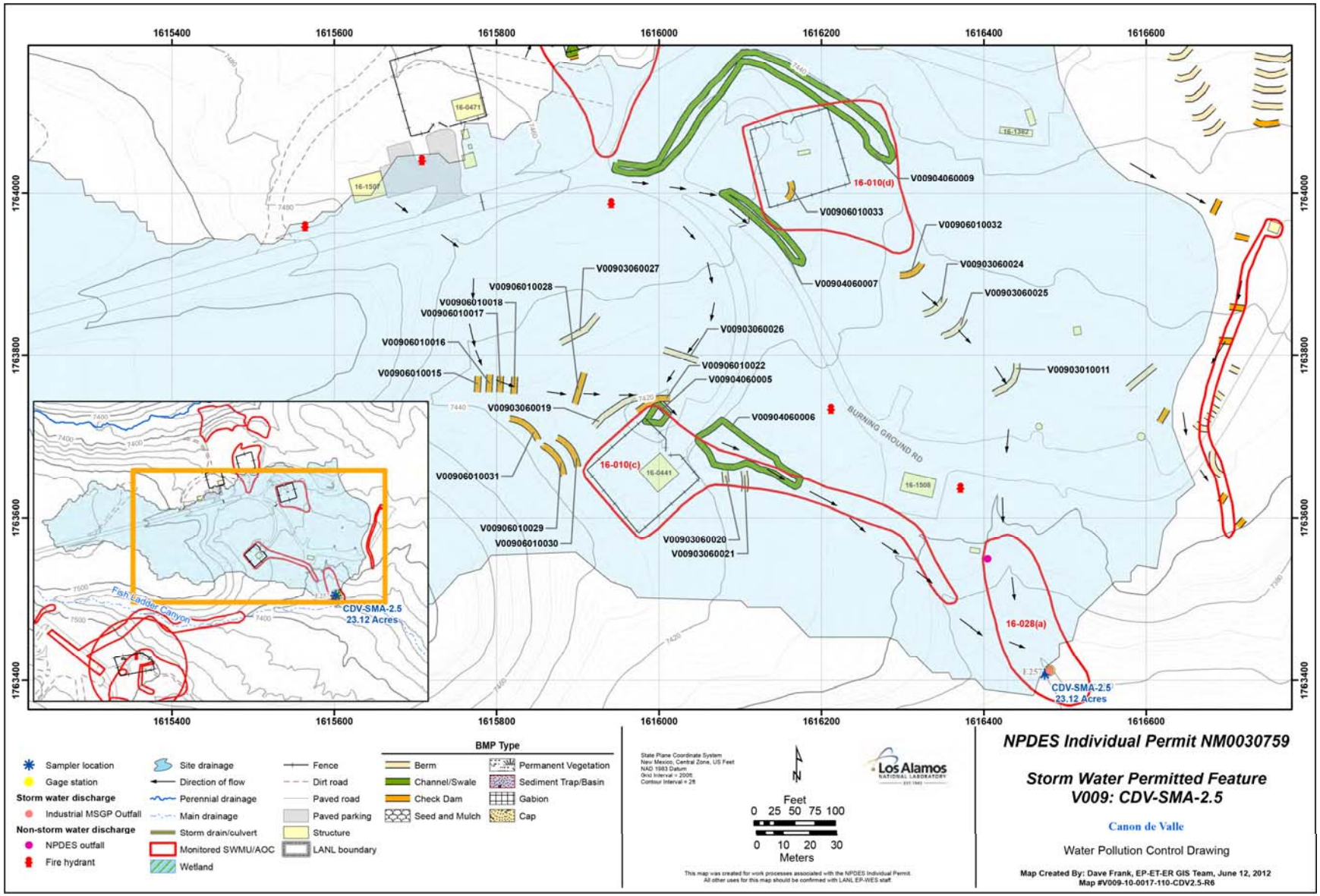
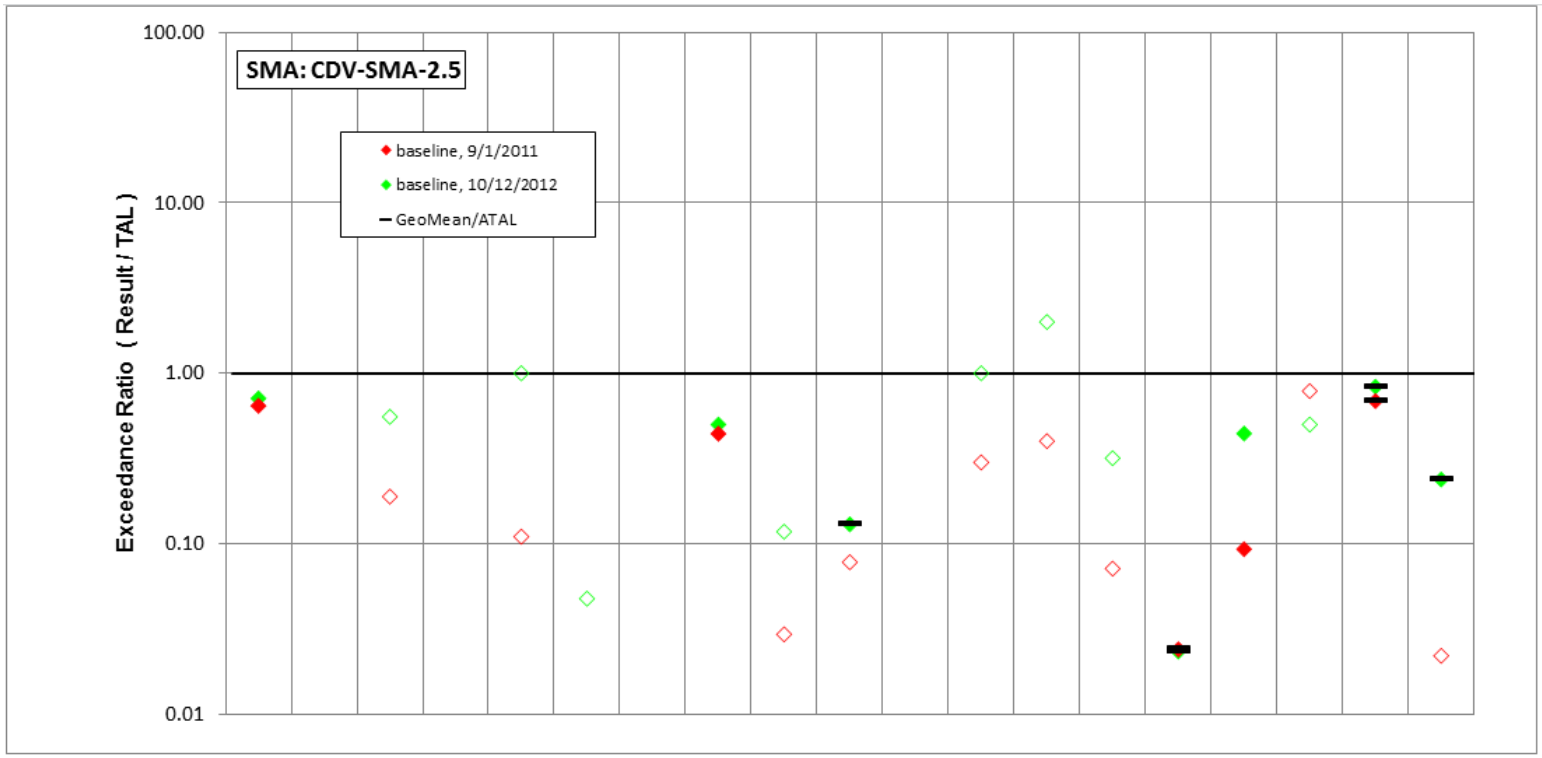


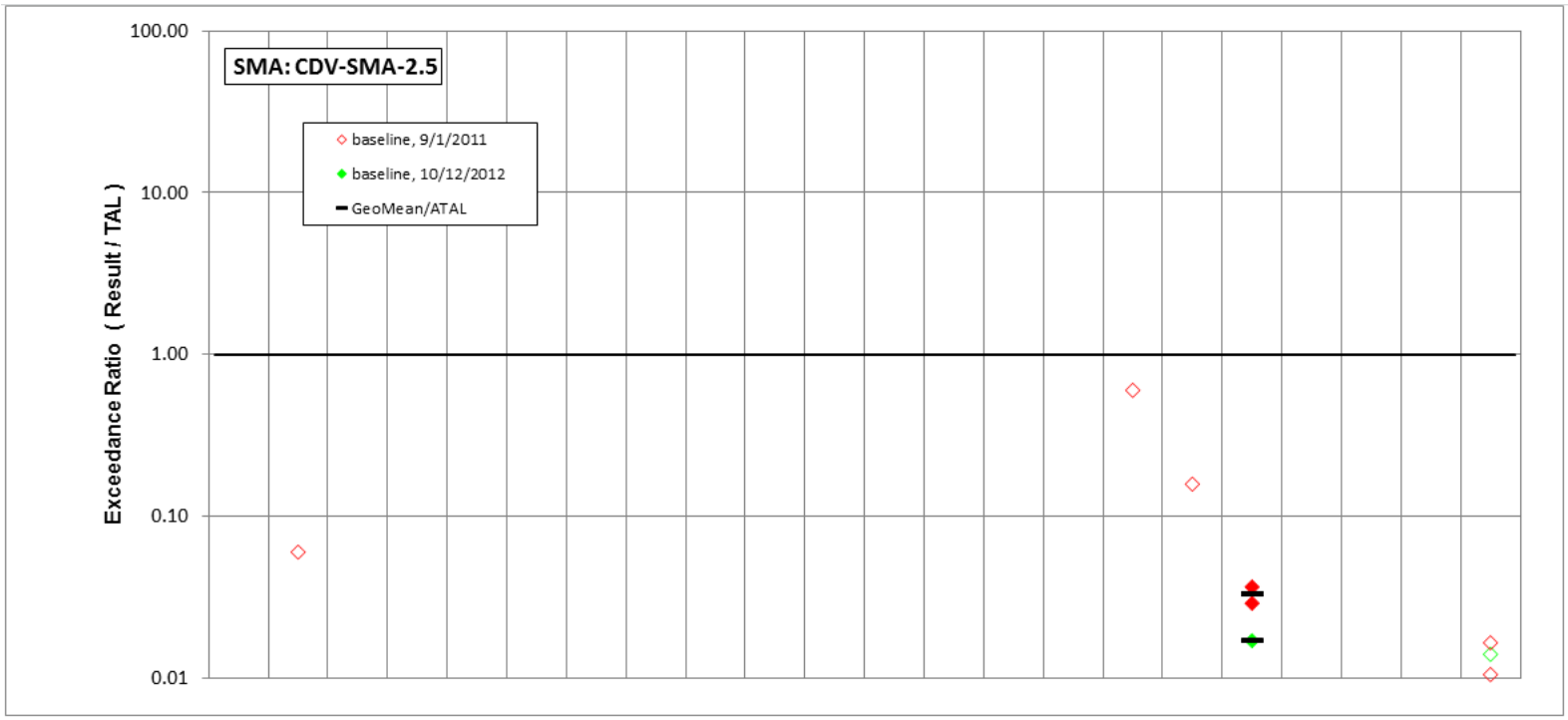
Figure 189-1 CDV-SMA-2.5 location map



	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
10/12/2012 result	534	*3*	*5*	17.4	*1*	*10*	1.94	2.15	*2*	0.1	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*	*0.06*	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*	*0.078*	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
10/12/2012 resul	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	*0.28*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.017	-	-	-	*0.014*
9/1/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	5.79	-	-	-	*0.33*
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	0.029	-	-	-	*0.016*

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 a former filter bed (structure 16-392) that was located at the TA-16 Burning Ground. Constructed in 1951, the sand-filled filter bed received washdown water from the basket wash facility [structure 16-390; SWMU 16-010(h)] via a trough [structure 16-1136; SWMU 16-010(n)] that discharged to perforated piping lining the bottom of the SWMU 16-010(i) filter bed. The filter bed was later converted to a burn pad where HE- and possibly uranium-contaminated objects were burned. The basket wash facility and discharge trough were removed in 2003; the filter bed is still in place.

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	
V009A02010001	Established Vegetation - Grasses and Shrubs			X		CB
V009A02020002	Established Vegetation - Forested/Needle Cast			X		CB
V009A03020005	Berms - Base Course	X			X	CB
V009A03020012	Berms - Base Course	X			X	CB
V009A03060007	Berms - Straw Wattles	X			X	CB
V009A03060008	Berms - Straw Wattles	X			X	CB
V009A03060009	Berms - Straw Wattles	X			X	CB
V009A03060010	Berms - Straw Wattles	X			X	CB
V009A03060011	Berms - Straw Wattles	X			X	CB
V009A03060018	Berms - Straw Wattles	X			X	CB
V009A03060019	Berms - Straw Wattles	X			X	CB
V009A03060020	Berms - Straw Wattles	X			X	CB
V009A03060022	Berms - Straw Wattles	X			X	CB
V009A03060023	Berms - Straw Wattles	X			X	CB
V009A03060024	Berms - Straw Wattles	X			X	CB
V009A03060025	Berms - Straw Wattles	X			X	CB
V009A03060026	Berms - Straw Wattles	X			X	CB
V009A03060027	Berms - Straw Wattles	X			X	CB

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V009A03060028	Berms - Straw Wattles	X			X	B
V009A06010003	Check Dam - Rock		X		X	CB
V009A06010004	Check Dam - Rock		X		X	CB
V009A06010006	Check Dam - Rock	X			X	CB
V009A06010013	Check Dam - Rock		X		X	CB
V009A06010014	Check Dam - Rock		X		X	CB
V009A06010015	Check Dam - Rock		X		X	CB
V009A06010016	Check Dam - Rock	X			X	CB
V009A06030017	Check Dam - Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

190.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-2.51. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

190.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-2.51 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23339	06-05-2012
Storm Rain Event	BMP-24891	07-17-2012
Storm Rain Event	BMP-28202	10-09-2012

There were no maintenance activities conducted at CDV-SMA-2.51 in 2012.

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 190-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-010(i)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

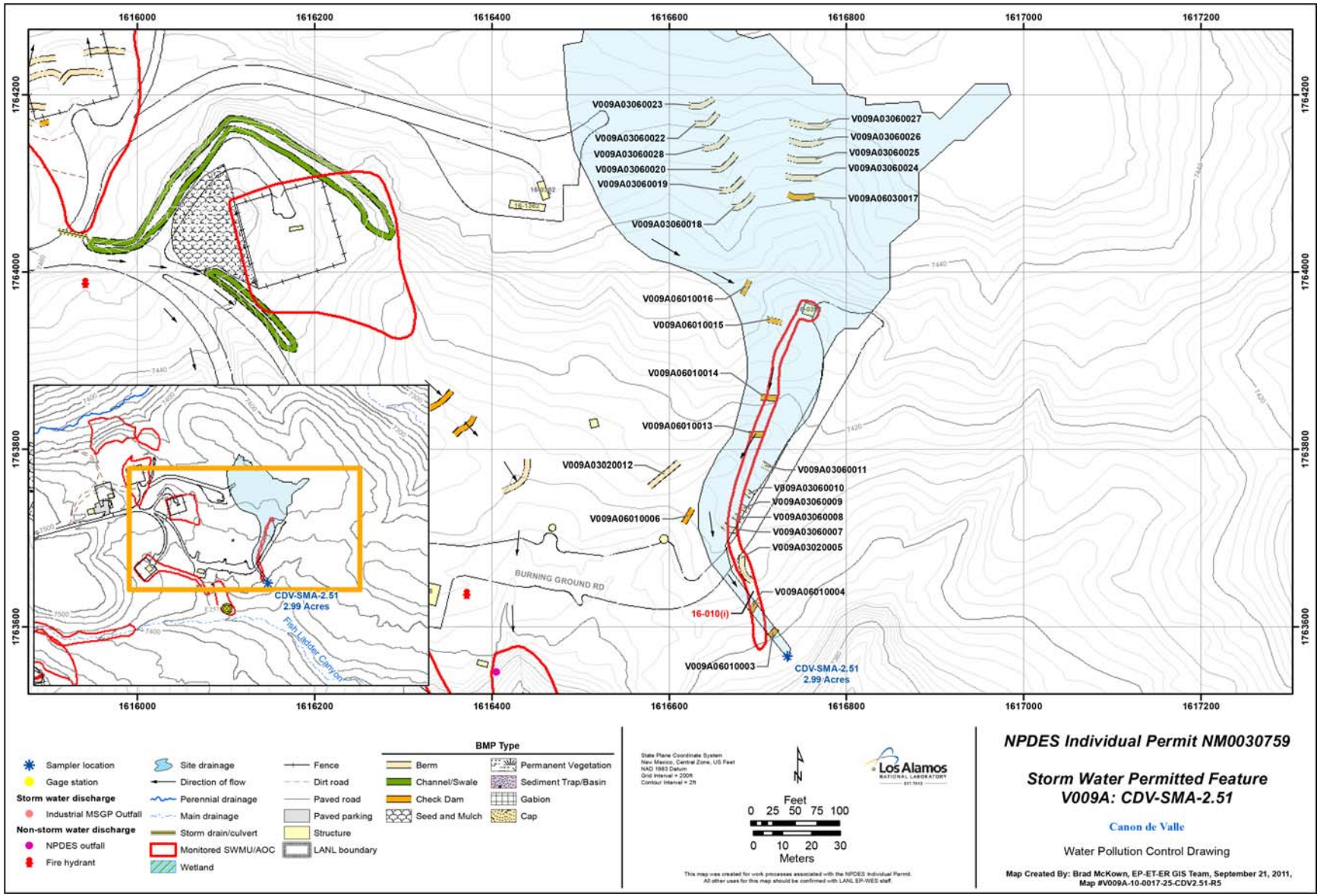


Figure 190-1 CDV-SMA-2.51 location map

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 of building 14-43 at TA-14. The disposal area measures approximately 30 ft × 140 ft and consists of sand and ruptured sandbags used during explosives tests performed at nearby firing sites [SWMUs 14-002(a) and 14-002(b)]. Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium and lead, uranium, and explosive compounds.

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.

The Site boundary for SWMU 14-009 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 191.1) and the Site physical characteristic information listed in Attachment 4 has been updated.

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 Mulch - Seed and Wood Mulch			X		EC
V01002010003	Established Vegetation - Grasses and Shrubs			X		CB
V01003010010	Berms - Earthen		X		X	EC
V01003010011	Berms - Earthen		X		X	EC
V01003120005	Berms - Rock	X			X	CB
V01003120009	Berms - Rock		X		X	CB
V01004060007	Channel/Swale - Riprap	X		X		CB
V01006010004	Check Dam - Rock		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:

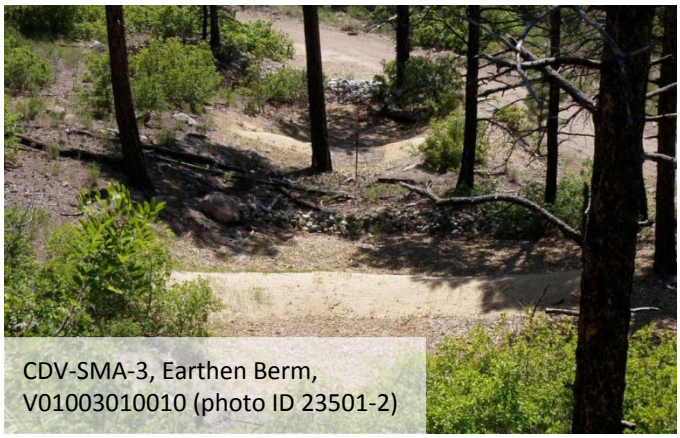
- Gross-alpha activity of 33.4 pCi/L (ATAL is 15 pCi/L).

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: Potential contaminants associated with industrial materials historically managed at this site are metals, particularly beryllium and lead, uranium, and explosive compounds.

- Gross alpha—Uranium isotopes were detected above BVs in soil samples collected from SWMU 14-009 during the 2011 Consent Order investigation. Maximum activities of uranium-234, uranium-235/236, and uranium-238 were 8 times BV, 14 times BV, and 71 times BV, respectively. Uranium-238 was also detected above the residential screening action level.

In summary, uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site and was detected substantially above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.


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—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 three storm events at CDV-SMA-3 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22691	04-19-2012
Enhanced Control Measure Verification	BMP-23501	05-15-2012
Storm Rain Event	BMP-24888	07-17-2012
Storm Rain Event	BMP-28199	10-05-2012

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

Table 191-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23501	Additional seed applied to enhanced control measure seed/mulch V01001010012.	05-15-2012	0 day(s)	Maintenance conducted upon inspection.

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 191-4 Compliance Status during 2012

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

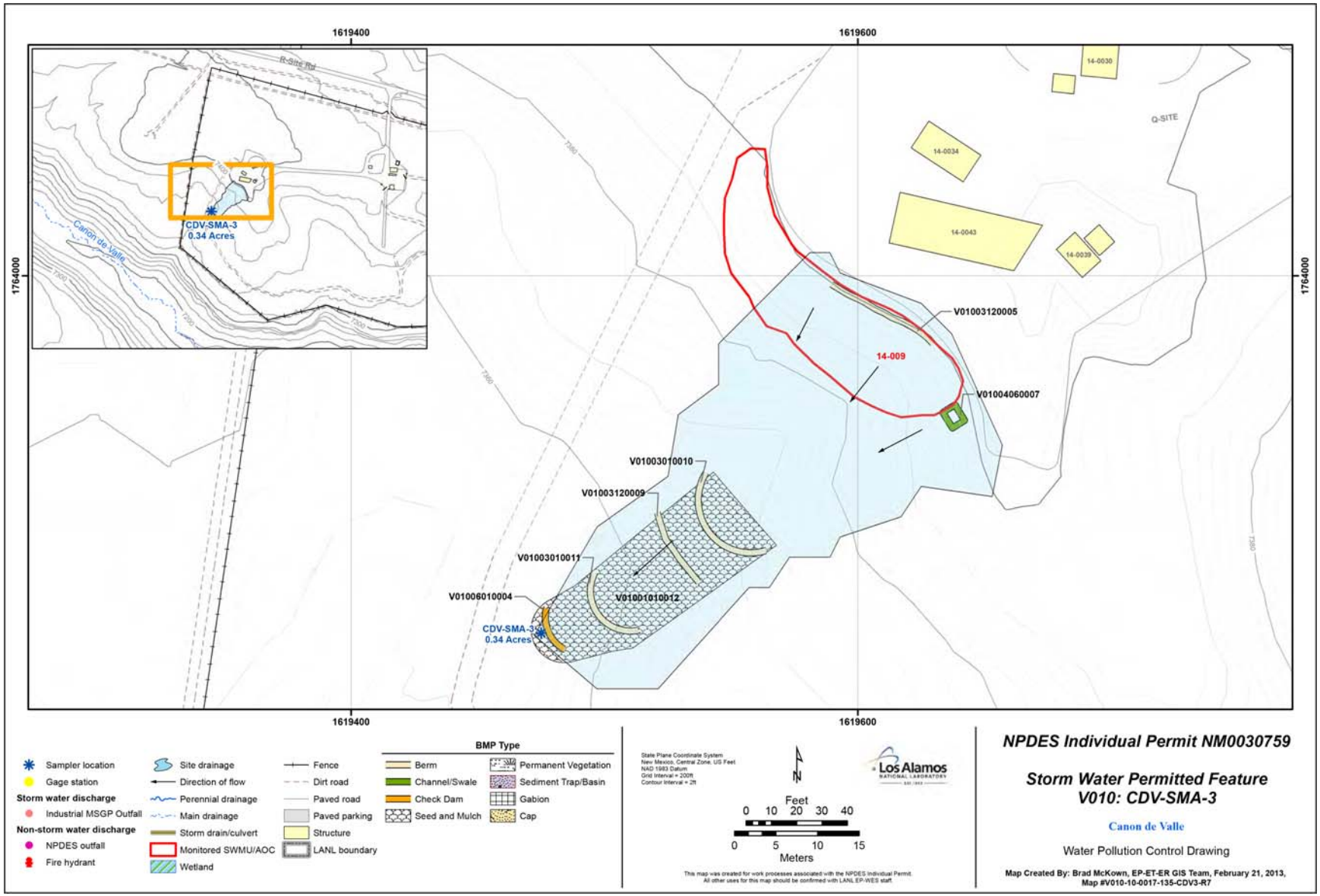
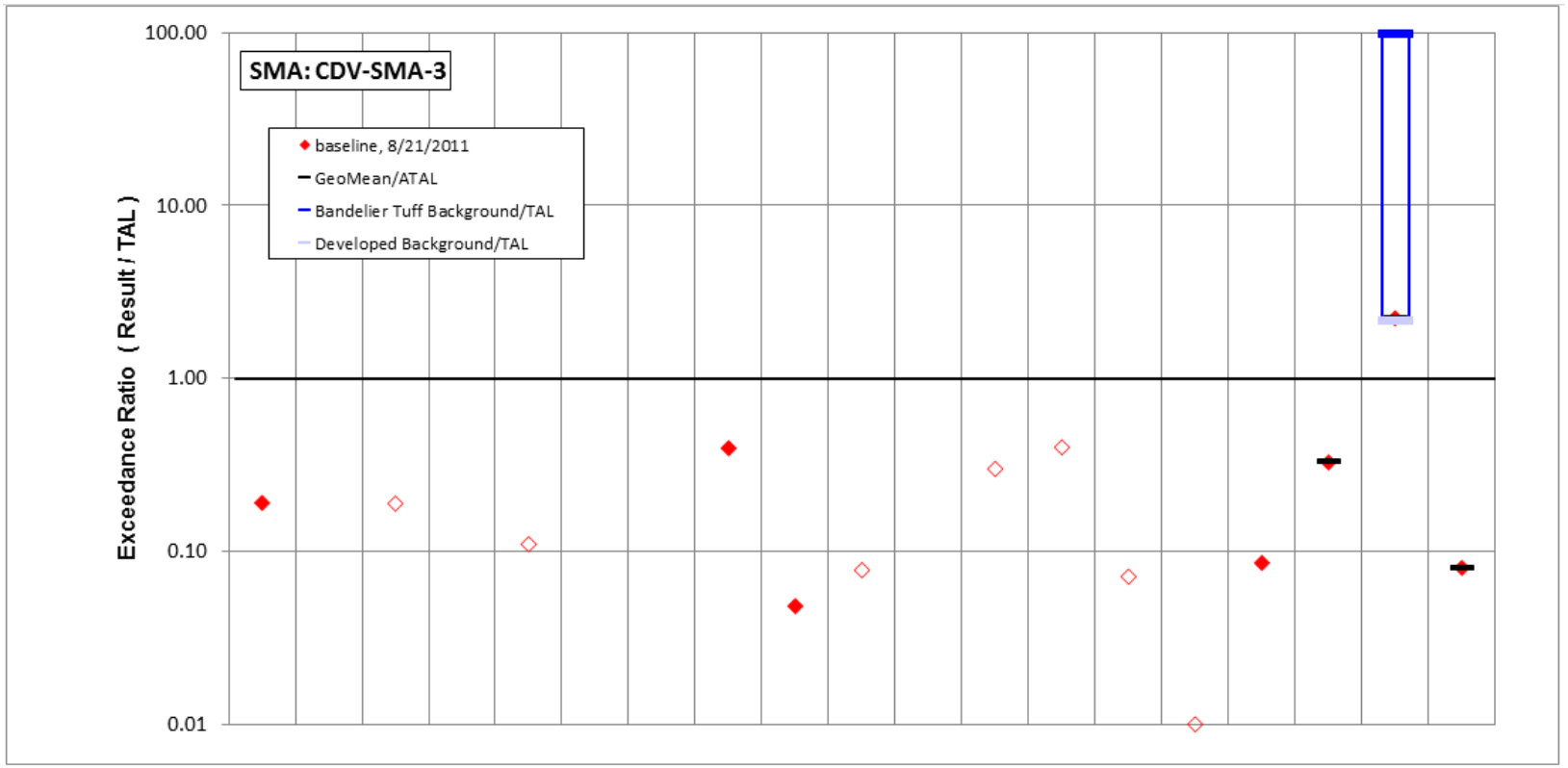


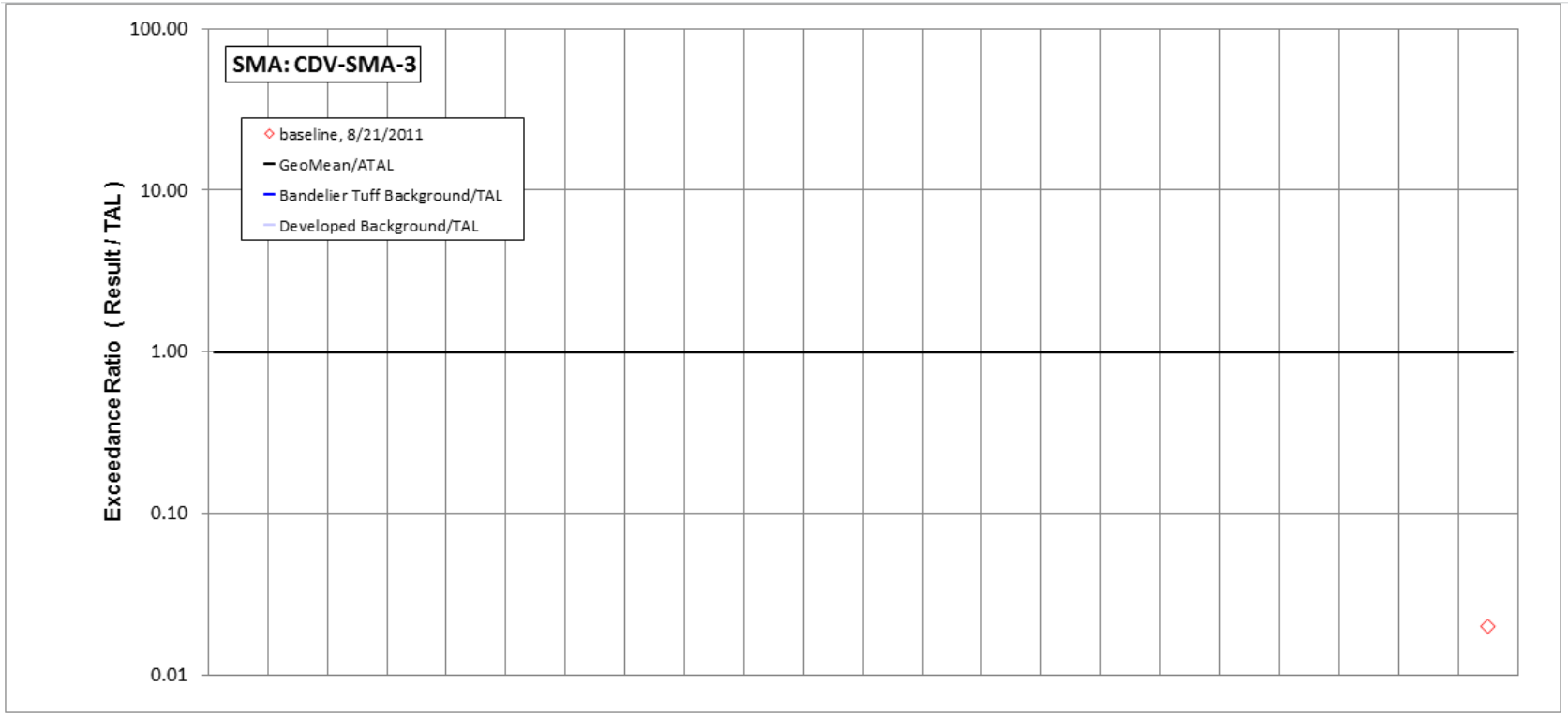
Figure 191-1 CDV-SMA-3 location map



	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	*0.06*	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	*0.078*	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.4*	-	-	-	*0.4*
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 waste from firing chamber 14-2 and discharged to an outfall located approximately 24 ft southeast of the sump. The SWMU 14-010 sump was removed in 1973. The drainline remains in place.

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.

The Site boundary for SWMU 14-010 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change may result in a minor sampler relocation within the drainage to collect a more representative sample. In this case, the sampler location will be updated using a hand-held global positioning system before the 2013 sampling season begins. The updated sampler location information will be included in the Status Report (January 1–June 30, 2013), published on the IP website, and incorporated into the next update to the Storm Water Discharge Pollution Prevention Plan (SDPPP).

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	
V01101010005	Seed and Mulch - Seed and Wood Mulch			X		B
V01102010001	Established Vegetation - Grasses and Shrubs			X		CB
V01103120002	Berms - Rock	X			X	CB
V01106010003	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

192.3 Storm Water Monitoring

For calendar year 2012, 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.

192.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-4 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22692	04-19-2012
Storm Rain Event	BMP-24889	07-17-2012
Storm Rain Event	BMP-28200	10-05-2012

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

Table 192-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25514	Installed seed and much V01101010005 in same location as -0004, which was retired.	07-25-2012	8 day(s)	Maintenance conducted in timely manner.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 14-010	Baseline Monitoring	Baseline Monitoring Extended	No Comment

CDV-SMA-4, Rock Check Dam, V01106010003 (photo ID 8535-1r)

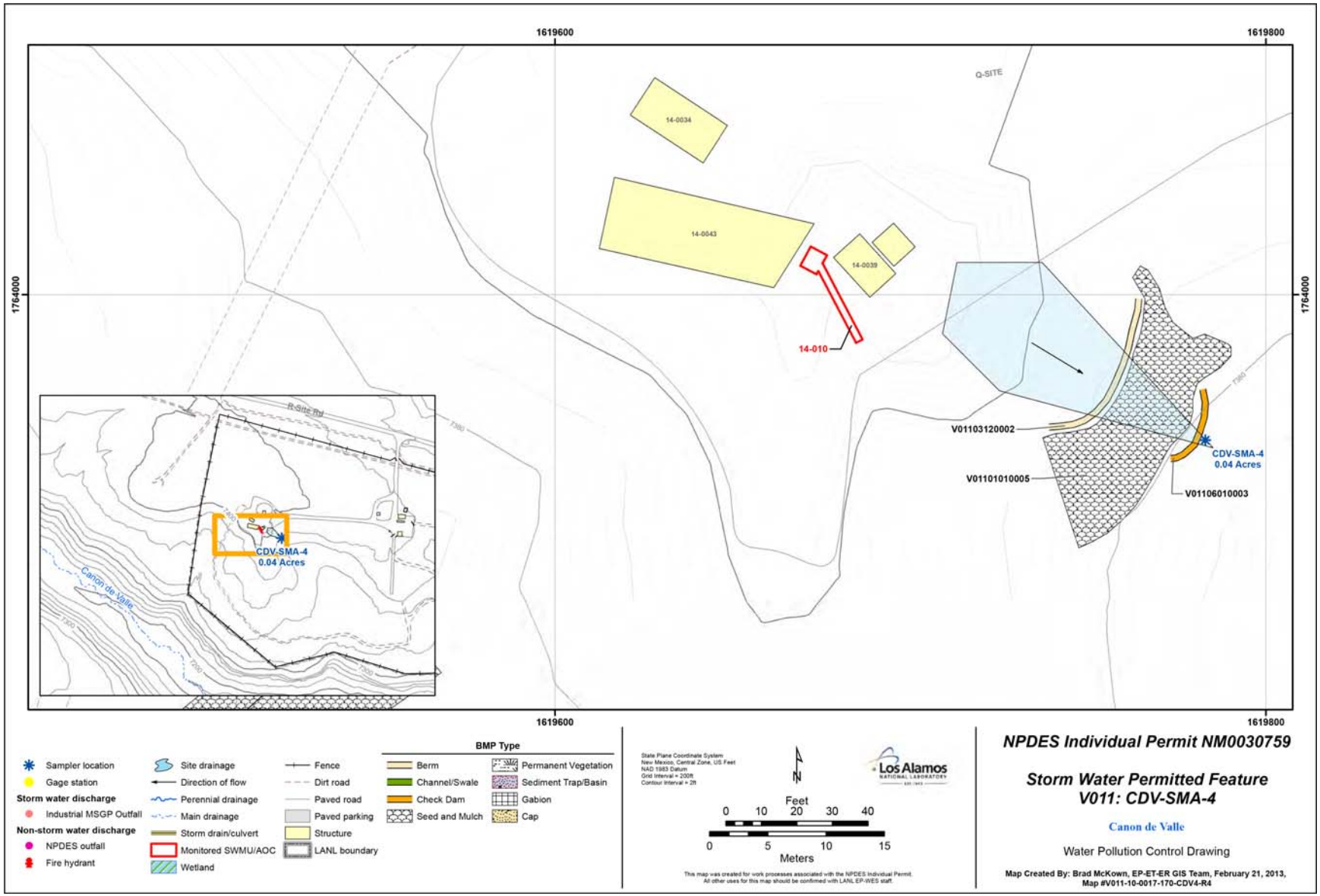


Figure 192-1 CDV-SMA-4 location map

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 the decommissioned HE sump (structure 14-31), associated drainline, and outfall that are 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 unknown). Currently, the outfall receives only storm water.

Area of Concern (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 square × 2 ft thick and surrounded on three sides with a blast shield. At the base, the shield is a 6-ft-square × 2-ft-thick concrete pad overlain by a neoprene shock pad, a 4.5-in.-thick steel plate, and several 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.

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.

The Site boundaries for SWMU 14-006 AOC 14-001(g) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 193-1), and the Site physical characteristic information in Attachment 4 has been updated.

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	
V01202010002	Established Vegetation - Grasses and Shrubs			X		CB
V01203010006	Berms - Earthen	X			X	CB
V01203020003	Berms - Base Course		X		X	CB
V01203060011	Berms - Straw Wattles	X			X	B
V01203060012	Berms - Straw Wattles	X			X	B
V01203130004	Berms - S-Fence		X		X	CB
V01203130005	Berms - S-Fence		X		X	CB

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

193.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at CDV-SMA-6.01 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22643	04-19-2012
Storm Rain Event	BMP-24893	07-17-2012
Storm Rain Event	BMP-28204	10-05-2012

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

Table 193-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22769	Built up, reseeded, and matted berm V01203010006	05-03-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-25511	Installed new wattle V01203060011 just above existing wattle -0008, which was retired.	07-25-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-25512	Installed new wattle V01203060012 just above existing wattle -0009, which was retired.	07-25-2012	8 day(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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 14-006	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 14-001(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

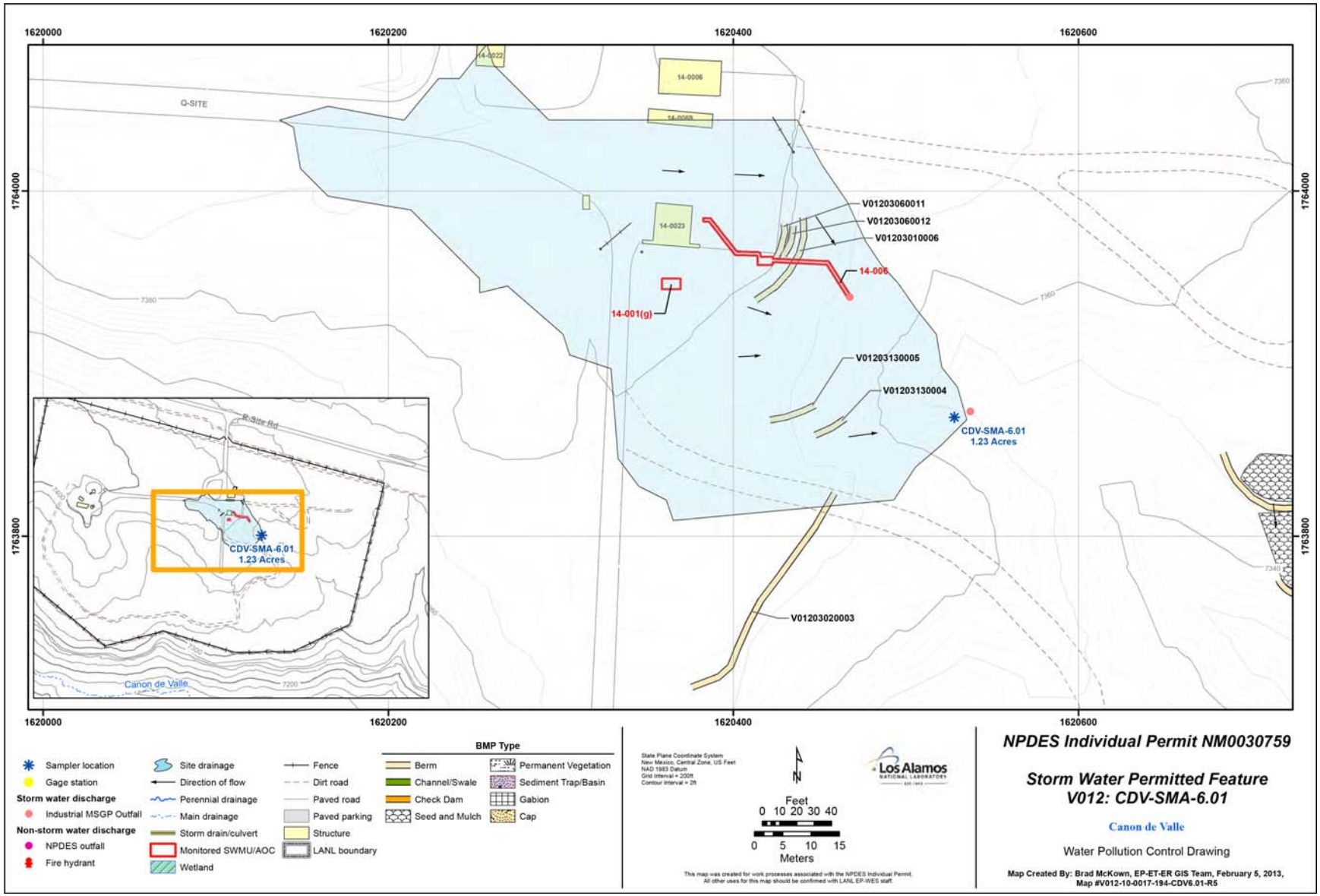


Figure 193-1 CDV-SMA-6.01 location map

194.0 CDV-SMA-6.02: SWMUs 14-002(c), 14-002(d), and 14-002(e)

194.1 Site Descriptions

Two historical industrial activity areas are associated with V012A, CDV-SMA-6.02: Sites 14-002(c), 14-002(d), and 14-002(e).

Before implementation of the 2011 Consent Order sampling for Sites in the Water/Cañon de Valle watershed, the historical information was thoroughly reviewed. The review determined that SWMU 14-002(c) should be added to CDV-SMA-6.02. Accordingly, the Site description and project map (Figure 194-1) have been updated to include SWMU 14-002(c). SWMU 14-002(c) is located within the current SMA boundary, and no changes to the SMA boundary are required. The sampler location will not change, and samples previously collected are representative of SWMU 14-002(c). An explanation of the error will be incorporated in the IP renewal application.

SWMU 14-002(d) is an x-unit chamber (structure 14-14) located at TA-14 approximately 7 ft southwest of structure 14-5. Constructed in 1944, the x-unit chamber was one of two voltage distribution systems installed at the SWMU 14-002(c) firing site. The x-unit chamber was constructed of reinforced concrete and measured approximately 3 ft wide × 4 ft long × 3 ft high. The x-unit housed the firing voltage distribution system used for the remote detonation of small-scale explosives tests at structure 14-5. The x-unit was used from 1944 to the mid-1950s when explosives operations ceased. It is not known whether the chamber is still in place. The investigation of SWMU 14-002(d) is deferred per Table IV-2 of the Consent Order. The 1994 RFI work plan for OU 1085 incorrectly identified SWMU 14-002(d) as a firing pad associated with former control building 14-5 [SWMU 14-002(c)]. Engineering drawings reviewed during planning for Consent Order investigations confirm the firing pad was actually part of SWMU 14-002(c) and SWMU 14-002(d) is an x-unit chamber (ENG C-365). Potential contaminants associated with industrial materials historically managed at this Site are PCBs. Potential contaminants associated with adjacent SWMU 14-002(c), which is also located within the CDV-SMA-6.02 drainage, are copper, mercury, and uranium.

SWMU 14-002(e) is an x-unit chamber (structure 14-15) located at TA-14 approximately 7 ft southeast of structure 14-5. Constructed in 1944, the x-unit chamber was one of two voltage distribution systems installed at the SWMU 14-002(c) firing site. The x-unit chamber was constructed of reinforced concrete and measured approximately 3 ft wide × 4 ft long × 3 ft high. The x-unit housed the firing voltage distribution system used for the remote detonation of small-scale explosives tests at structure 14-5. The x-unit was used from 1944 to the mid-1950s when explosives operations ceased. It is not known whether the chamber is still in place. The investigation of SWMU 14-002(e) is deferred per Table IV-2 of the Consent Order. The 1994 RFI work plan for OU 1085 incorrectly identified SWMU 14-002(e) as a firing pad associated with former control building 14-5 [SWMU 14-002(c)]. Engineering drawings reviewed during planning for Consent Order investigations confirm the firing pad was actually part of SWMU 14-002(c) and SWMU 14-002(e) is an x-unit chamber (ENG C365). Potential contaminants associated with industrial materials historically managed at this Site are PCBs. Potential contaminants associated with adjacent SWMU 14-002(c), which is also located within the CDV-SMA-6.02 drainage, are copper, mercury, and uranium.

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.

The Site boundaries for SWMUs 14-002(d) and 14-002(e) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 194-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

As noted above, changes have also been made to the site descriptions for SWMUs 14-002(d) and 14-002(e). The SMA sampler location was selected to sample runoff from the firing pad formerly attributed to SWMUs 14-002(d) and 14-002(e) and now associated with SWMU 14-002(c). Because SWMU 14-002(c) is located next to SWMUs 14-002(d) and 14-002(e) and within the SMA drainage, no change to the sampler location is needed due to the changed site descriptions.

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 Mulch - Seed and Wood Mulch			X		EC
V012A02010001	Established Vegetation - Grasses and Shrubs			X		CB
V012A03010004	Berms - Earthen		X		X	EC
V012A03010006	Berms - Earthen		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

194.3 Storm Water Monitoring

SWMUs 14-002(d) and 14-002(e) are 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 and 29.3 µg/L (MTAL is 4.3 µg/L),
- Mercury concentrations of 1.6 and 0.95 µg/L (MTAL is 0.77 µg/L), and
- Gross-alpha activities of 147 and 199 pCi/L (ATAL is 15 pCi/L).

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(d): Potential contaminants associated with industrial materials historically managed at this site are PCBs.

- Copper—Copper was detected at a maximum concentration that was 30 times BV in soil samples collected in the drainage below the Site during a 1995 RFI.
- Mercury—Mercury was detected at a maximum concentration that was 6 times BV in soil samples collected in the drainage below the Site during a 1995 RFI.
- Gross alpha—Uranium was detected at a maximum concentration that was 4 times BV in soil samples collected in the drainage below the Site during a 1995 RFI.

The RFI samples were collected to characterize releases from a firing pad, which at that time was believed to be SWMU 14-002(d). It is now known that the firing pad was actually adjacent SWMU 14-002(c), and these sample results should be associated with that site. Potential contaminants associated with industrial materials historically managed at SWMU 14-002(c) are copper, mercury, and uranium.

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

In summary, copper and mercury were not associated with industrial materials historically used at the Site but were detected substantially above BVs in the 1995 RFI, which actually characterized releases from adjacent SWMU 14-002(c). Based on site history, SWMU 14-002(d) is not a source of copper and mercury above MTALs in storm water, but SWMU 14-002(c) is a likely source of copper and mercury above MTALs in storm water. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site, but was detected above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Sites. The Sites are an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 14-002(e): Potential contaminants associated with industrial materials historically managed at this site are PCBs.

- Copper—Copper was detected at a maximum concentration that was 30 times BV in soil samples collected in the drainage below the Site during a 1995 RFI.
- Mercury—Mercury was detected at a maximum concentration that was 6 times BV in soil samples collected in the drainage below the Site during a 1995 RFI. Maximum concentrations of copper were 6 times BV.
- Gross alpha—Uranium was detected at a maximum concentration that was 4 times BV in soil samples collected in the drainage below the site during a 1995 RFI. Maximum concentrations of copper were 4 times BV.

The RFI samples were collected to characterize releases from a firing pad, which at that time was believed to be SWMU 14-002(e). It is now known that the firing pad was actually adjacent SWMU 14-002(c) and these sample results should be associated with that site. Potential contaminants associated with industrial materials historically managed at SWMU 14-002(c) are copper, mercury, and uranium.

Additional sampling under the Consent Order is deferred until activities at nearby active firing sites cease. Copper and mercury were not likely associated with industrial materials historically used at the Site but were detected substantially above BVs in the 1995 RFI, which actually characterized releases from adjacent SWMU 14-002(c). Based on site history and previous sampling results, SWMU 14-002(e) is not a source of copper and mercury above MTALs in storm water, but SWMU 14-002(c) is a likely source of copper and mercury above MTALs in storm water. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site, but was detected above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Sites. The Sites are an unlikely source of adjusted gross alpha above ATAL in storm water.

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 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—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 Annual Report.

194.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-6.02 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22693	04-19-2012
Enhanced Control Measure Verification	BMP-23502	05-15-2012
Storm Rain Event	BMP-24894	07-17-2012
Storm Rain Event	BMP-28205	10-05-2012

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

Table 194-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23502	Additional seed applied to enhanced control measure seed & mulch -0005. (Follow up to MSS installation)	05-15-2012	0 day(s)	Maintenance conducted upon inspection.

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 2012

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

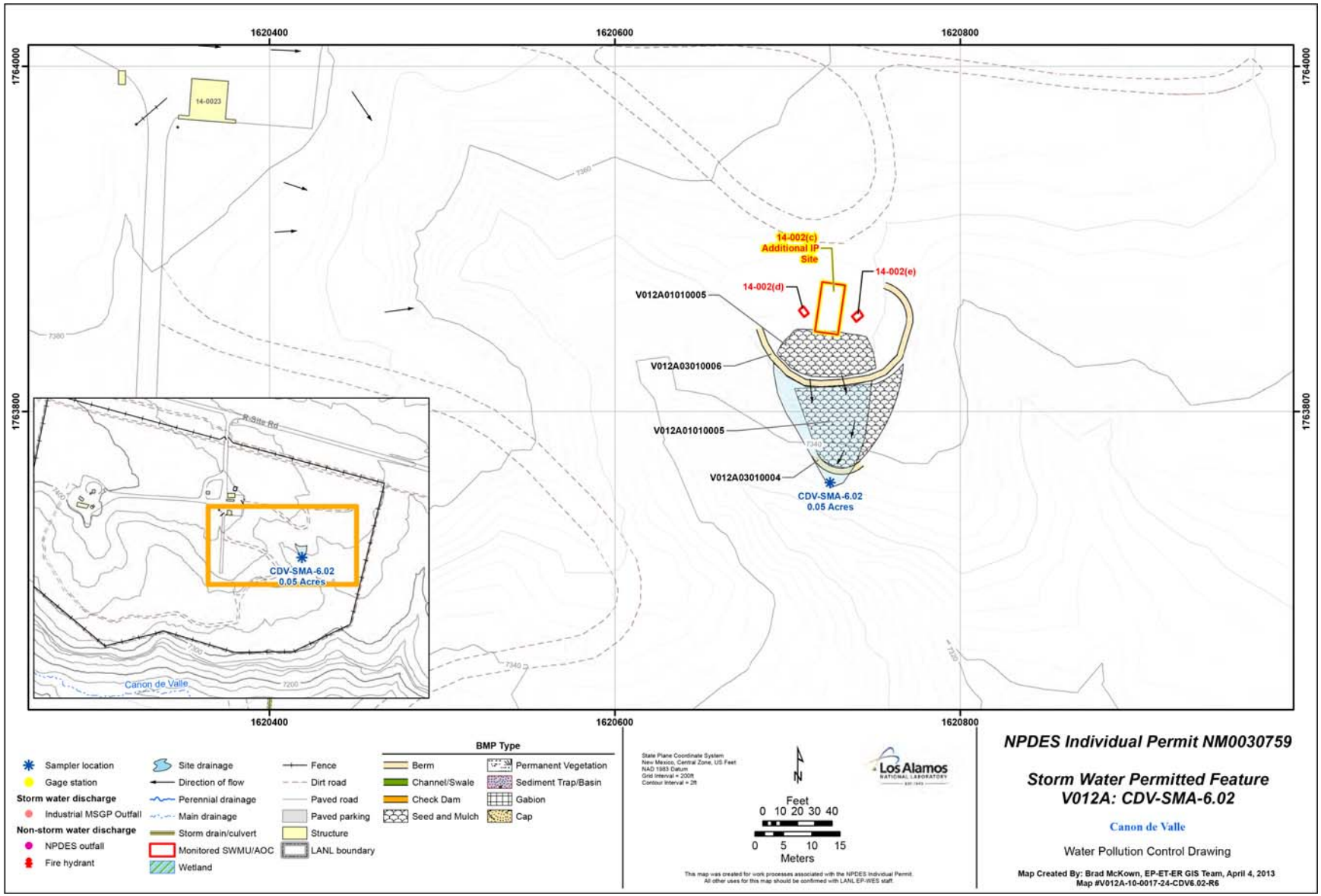
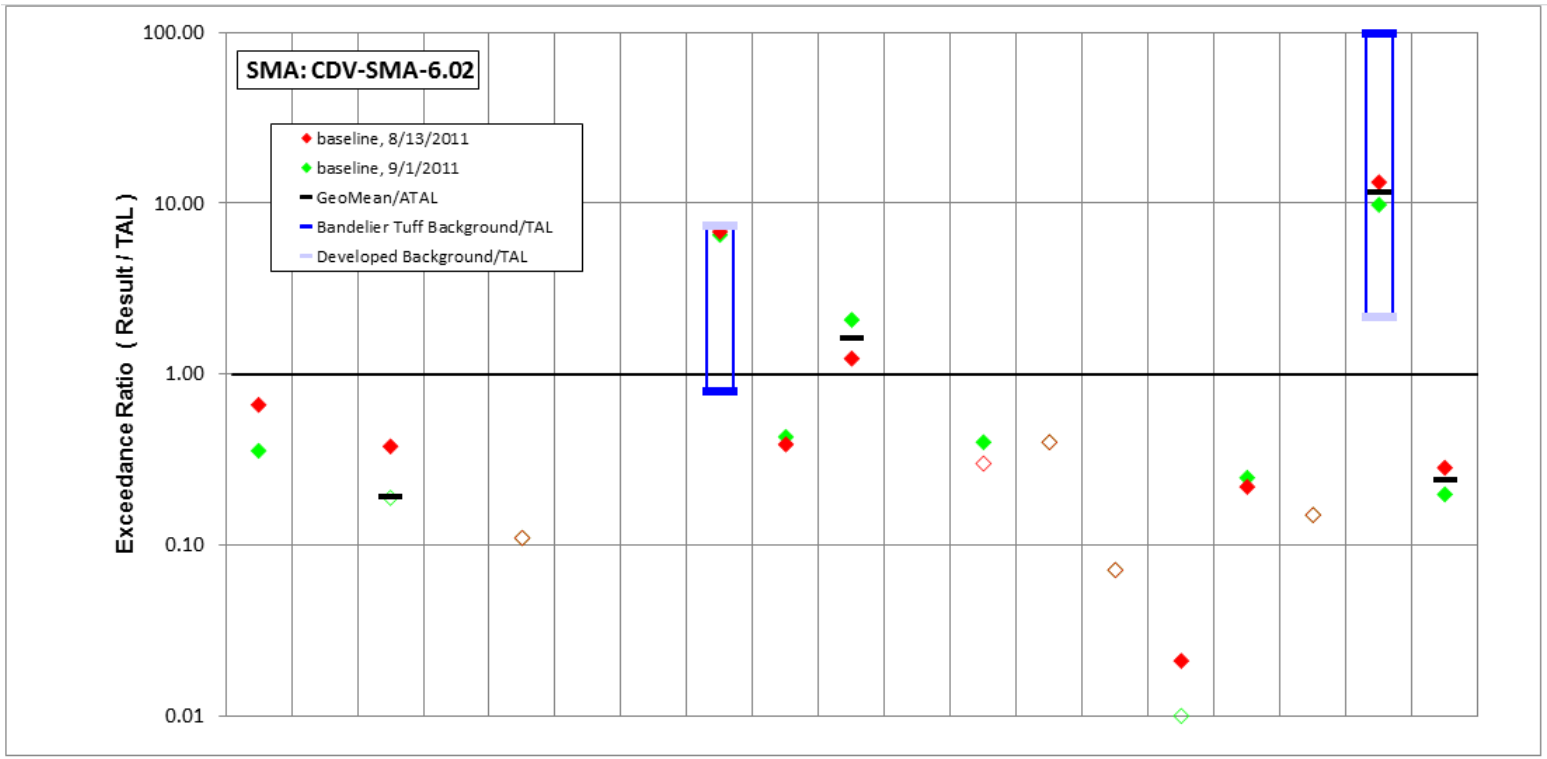


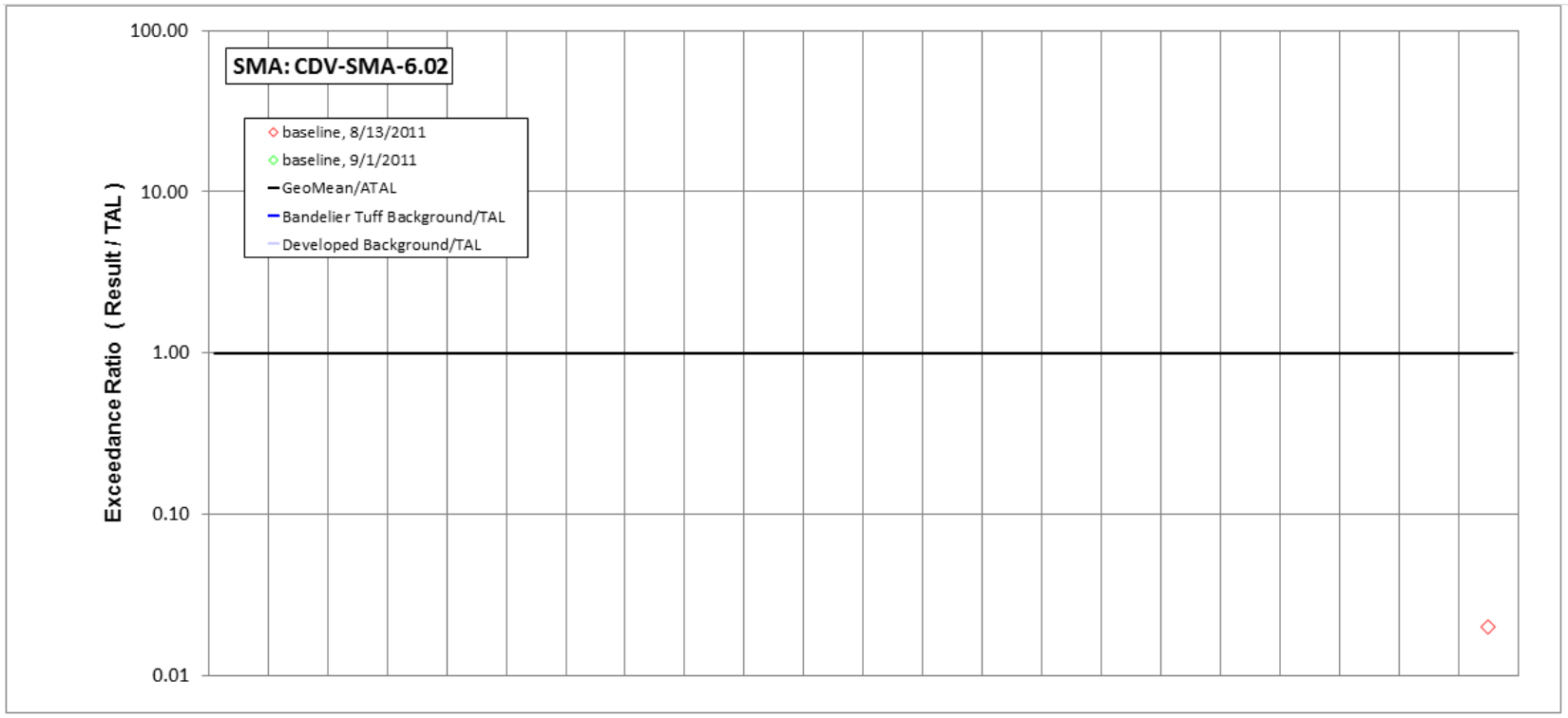
Figure 194-1 CDV-SMA-6.02 location map



	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
9/1/2011 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
9/1/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.39*	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	-
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.4*	-	-	-	*0.4*
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.

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	
V01302010001	Established Vegetation - Grasses and Shrubs			X		CB
V01303010006	Berms - Earthen	X			X	CB
V01303010007	Berms - Earthen		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

195.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

195.4 Inspections and Maintenance

RG257 recorded three storm events at CDV-SMA-7 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23340	06-06-2012
Storm Rain Event	BMP-24892	07-17-2012
Storm Rain Event	BMP-28203	10-05-2012

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

Table 195-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28462	Repaired berm V01303010007, seeded and matted.	10-18-2012	13 day(s)	Maintenance conducted in timely manner.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 15-008(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

CDV-SMA-7, Permanent Vegetation, V01302010001 (photo ID 8528-2r)

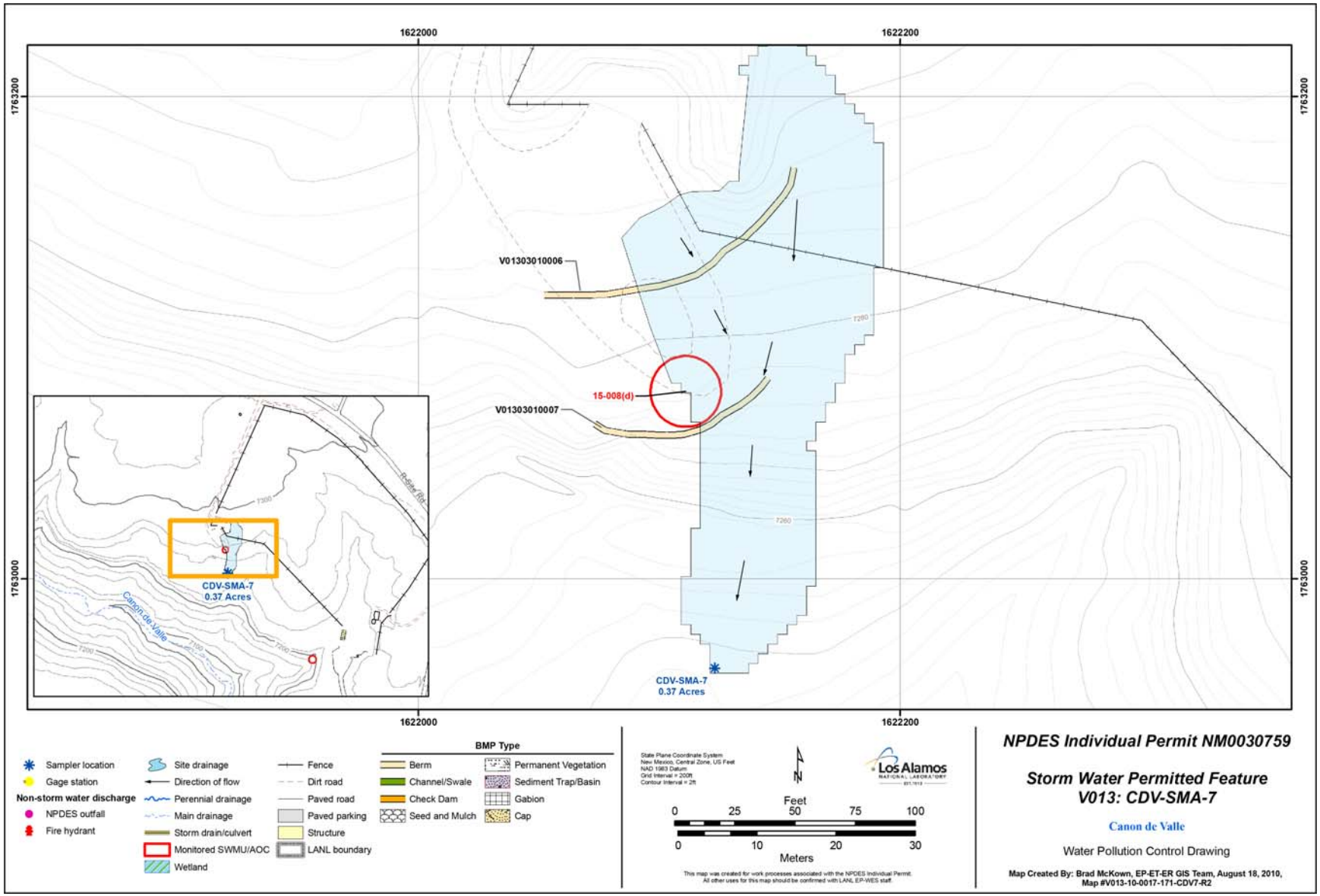


Figure 195-1 CDV-SMA-7 location map

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) consists of an outfall on the edge of Cañon de Valle, where many of the drainages associated with discharges in The Hollow converge. These discharges include those from SWMUs 15-011(a and b) and 15-014(i, j, and k). SWMU 15-011(c) is located west of, and approximately 100 ft lower than, the buildings in The Hollow. Materials that could have been discharged to this SWMU include acid residues from sulfuric, chromic, and hydrochloric acids; degreasing solvents; inorganic chemicals; and uranium. No previous environmental investigations have been performed at this SWMU.

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	
V01402020001	Established Vegetation - Forested/Needle Cast			X		CB
V01402030002	Established Vegetation - Vegetative Buffer Strip		X	X		CB
V01403010007	Berms - Earthen	X			X	B
V01403010008	Berms - Earthen	X			X	B
V01406010003	Check Dam - Rock	X			X	CB
V01406010004	Check Dam - Rock	X			X	CB
V01406010005	Check Dam - Rock	X			X	CB
V01406010006	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

196.3 Storm Water Monitoring

For calendar year 2012, 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 four storm events at CDV-SMA-8 during the 2012 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23341	06-06-2012
Storm Rain Event	BMP-24915	07-17-2012
Storm Rain Event	BMP-25894	07-27-2012
Storm Rain Event	BMP-27554	09-20-2012

There were no maintenance activities conducted at CDV-SMA-8 in 2012.

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 196-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 15-011(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

CDV-SMA-8, Rock Check Dam, V01406010006 (photo ID 8529-3r)

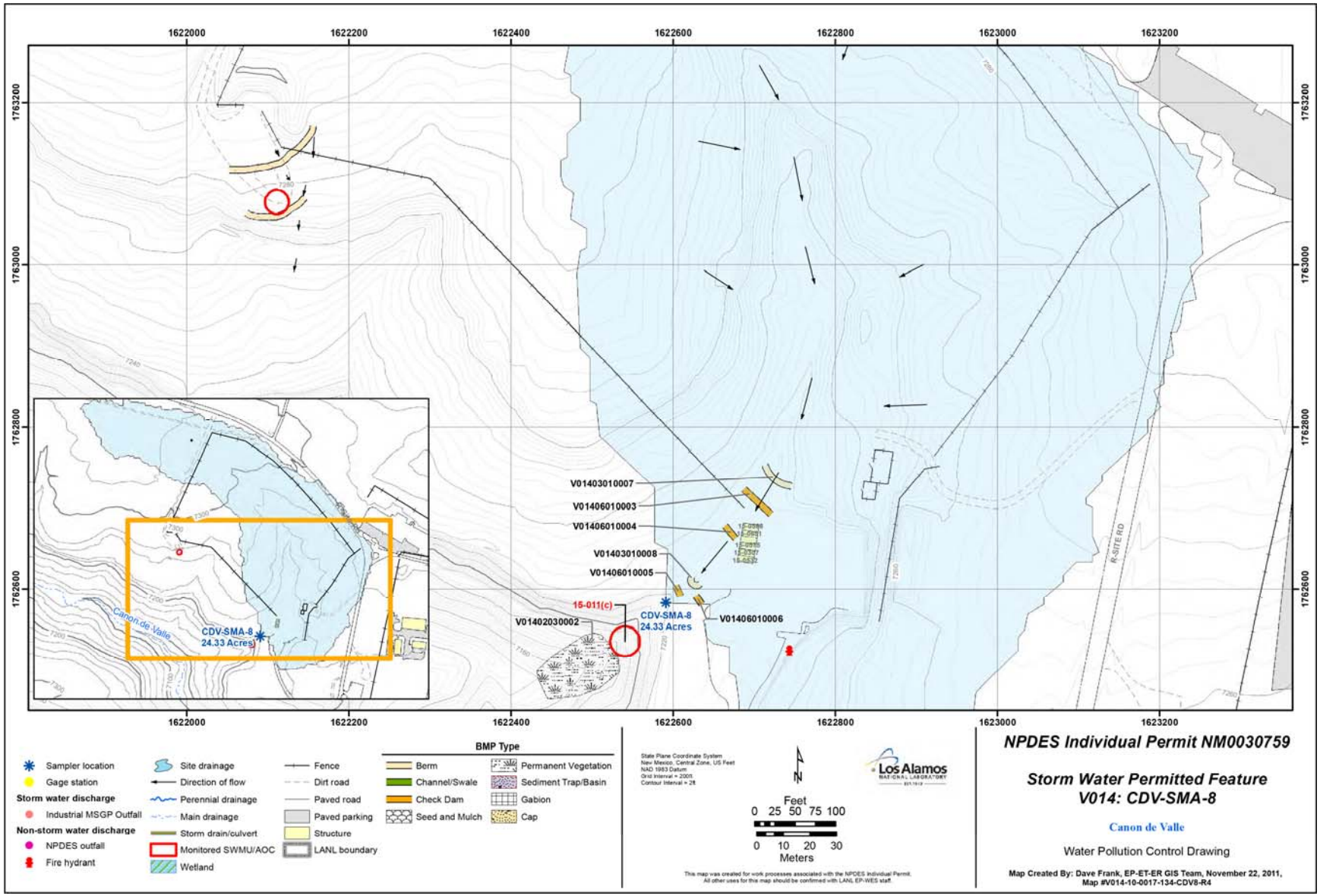


Figure 196-1 CDV-SMA-8 location map

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 a drainline and outfall at TA-15 associated with former building 15-183. The drainline received effluent from photoprocessing operations in building 15-183 and discharged to a formerly 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. The outfall was removed from the NPDES permit as of January 14, 1998.

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	
V01502010001	Established Vegetation - Grasses and Shrubs			X		CB
V01503010004	Berms - Earthen		X		X	CB
V01503010005	Berms - Earthen	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

197.3 Storm Water Monitoring

For calendar year 2012, 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 four storm events at CDV-SMA-8.5 during the 2012 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 197-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation Inspection	COMP-23342	06-06-2012
Storm Rain Event	BMP-24916	07-12-2012
Storm Rain Event	BMP-25895	07-27-2012
Storm Rain Event	BMP-27555	09-20-2012

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

Table 197-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26073	Repaired matting on earthen berm V01503010004.	08-08-2012	12 day(s)	Maintenance conducted in timely manner.

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 197-4 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 15-014(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

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

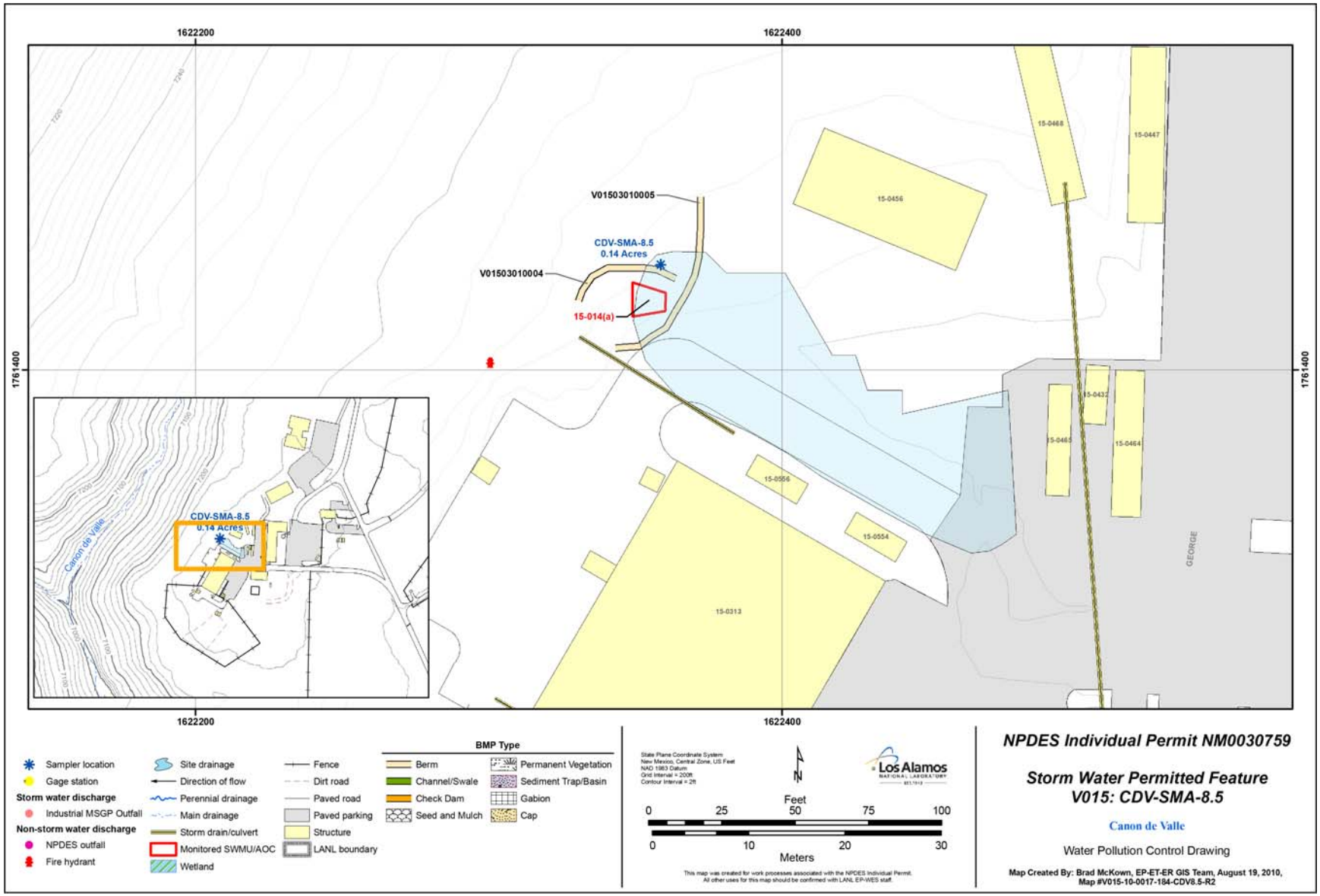


Figure 197-1 CDV-SMA-8.5 location map

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 an inactive surface disposal area known as MDA Z, located northwest of Firing Site G [SWMU 15-004(g)] in the south-central portion of TA-15. MDA Z is roughly triangular in shape and approximately 225 ft long × 50 ft wide, with a surface area of approximately 11,250 ft^2. The disposal area received shot debris from the Pulsed High-Energy Radiographic Machine Emitting X-Rays (PHERMEX) facility. Disposal activities began in 1965 and ceased in the 1980s.

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	
V01602010001	Established Vegetation - Grasses and Shrubs			X		CB
V01603010002	Berms - Earthen		X		X	CB
V01603010003	Berms - Earthen		X		X	CB
V01603010004	Berms - Earthen	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

198.3 Storm Water Monitoring

For calendar year 2012, 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 four storm events at CDV-SMA-9.05 during the 2012 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 198-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23343	06-08-2012
Storm Rain Event	BMP-24917	07-17-2012
Storm Rain Event	BMP-25896	07-27-2012
Storm Rain Event	BMP-27556	09-21-2012

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

Table 198-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28007	Reseeded and rematted berm V01603010004.	09-27-2012	6 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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 15-007(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

CDV-SMA-9.05, Permanent Vegetation, V01602010001 (photo ID 10884-4r)

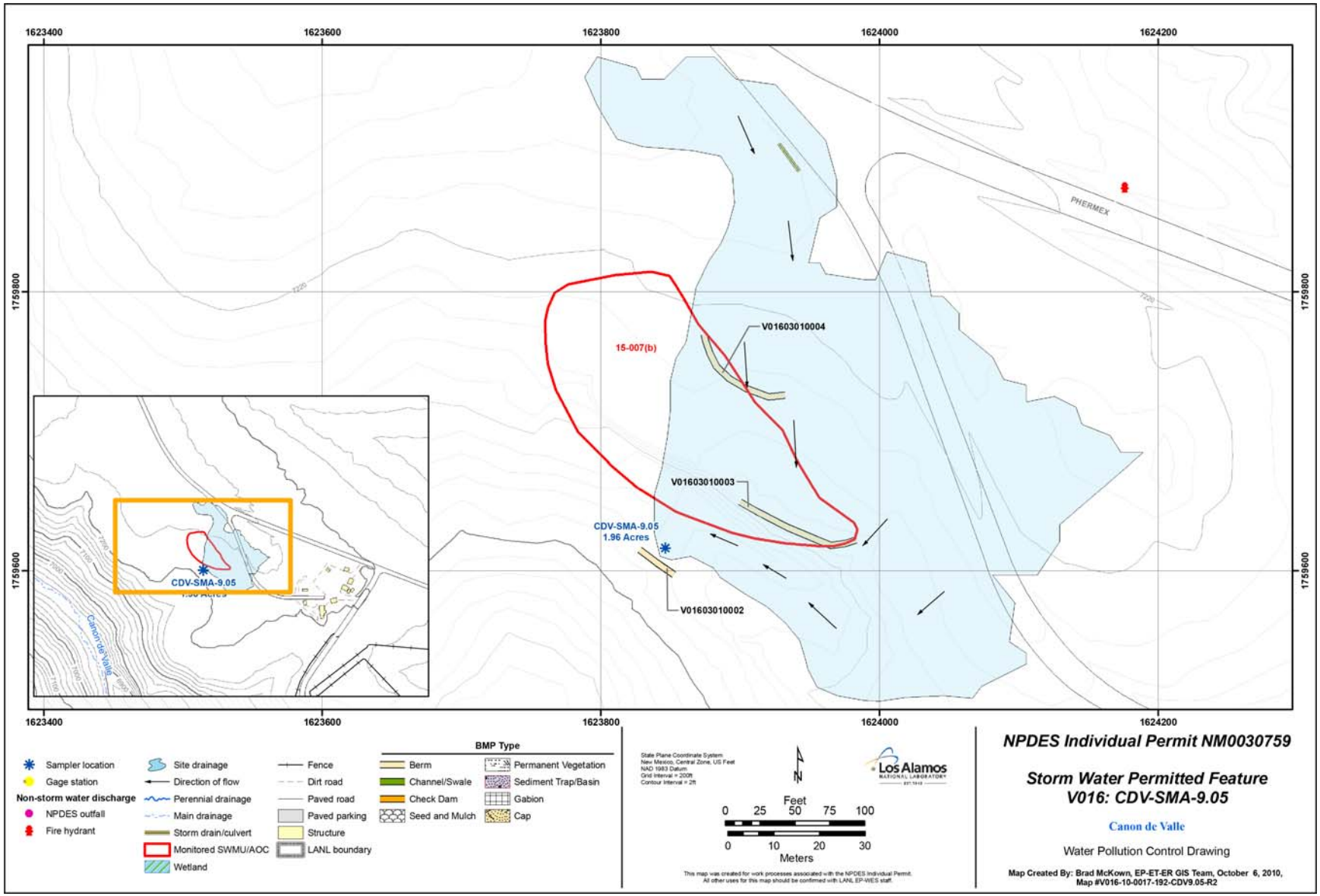


Figure 198-1 CDV-SMA-9.05 location map

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) is the Minie Firing Site located near the head of Fence Canyon, approximately 800 ft southeast of the Meenie Firing Site [AOC 36-004(b)]. AOC 36-004(c) is an active RCRA-regulated open detonation (OD) site and is also used to conduct experiments involving explosives. This firing site consists of the firing point, a control bunker (building 36-0008), a make-up building (36-0007), a firing platform (no structure number), and an x-ray house (no structure number). Construction of the Minie Firing Site began in 1949 and was completed in 1950. The site has been extensively used to conduct armor-piercing experiments. In these experiments, penetrator jets are directed at targets on the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. AOC 36-004(c) has also been used for OD of scrap HE. Emergency detonation of leaking gas cylinders has also been performed, but very infrequently. Potential contaminants associated with industrial materials historically managed at this Site are barium, beryllium, copper, lead, mercury, depleted uranium (DU), and explosive compounds.

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	
F00101040016	Seed and Mulch - Seeding			X		EC
F00102010002	Established Vegetation - Grasses and Shrubs			X		CB
F00103010010	Berms - Earthen		X		X	EC
F00103010011	Berms - Earthen		X		X	EC
F00103010012	Berms - Earthen		X		X	EC
F00103010013	Berms - Earthen		X		X	EC
F00103010014	Berms - Earthen		X		X	EC
F00103010015	Berms - Earthen		X		X	EC
F00103010017	Berms - Earthen		X		X	B
F00104010001	Channel/Swale - Earthen	X		X		CB

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

199.3 Storm Water Monitoring

SWMU 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.

SWMU 36-004(c): Potential contaminants associated with industrial materials historically managed at this site are barium, beryllium, copper, lead, mercury, DU, and explosive compounds. The discussion is organized by analyte.

- Aluminum—Aluminum was not detected above BV in soil samples collected in the drainage below SWMU 36-004(c) during the 2010 Consent Order investigation.
- Copper—Copper was detected above BVs in the Consent Order soil samples with the maximum concentration 3 times BV.
- Gross alpha—Uranium-238 was detected above BVs in the Consent Order soil samples with the maximum activity 2 times BV.

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

In summary, SWMU 36-004(c) is an active firing site impacted by continuing operations, and further Consent Order sampling is delayed until operations at the Site cease. Copper and uranium (which has alpha-emitting isotopes) are likely associated with industrial materials historically managed at the Site. Aluminum was not detected above BV, and copper and uranium-238 were detected only slightly above BVs during Consent Order sampling. This sampling was performed in the drainage below the site rather than within the active firing area where concentrations would likely be higher. In addition, uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site may be a source of copper above MTALs in storm water, but is an unlikely source of aluminum above MTAL and adjusted gross alpha above ATAL in storm water.

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—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 three storm events at F-SMA-2 during the 2012 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 199-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23364	05-16-2012
Enhanced Control Measure Verification	BMP-23503	05-16-2012
Storm Rain Event	BMP-25014	07-16-2012
Storm Rain Event	BMP-27100	08-28-2012
Storm Rain Event	BMP-27520	09-19-2012

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

Table 199-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25528	Repaired matting on berm F00103010011.	07-26-2012	10 day(s)	Maintenance conducted in timely manner.
BMP-27189	Repaired earthen channel/swale F00104010001.	09-06-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-27190	Modified berm F00103010015 spillway to direct flow to ISCO sampler location and extended south end to address rilling.	09-18-2012	21 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 2012

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

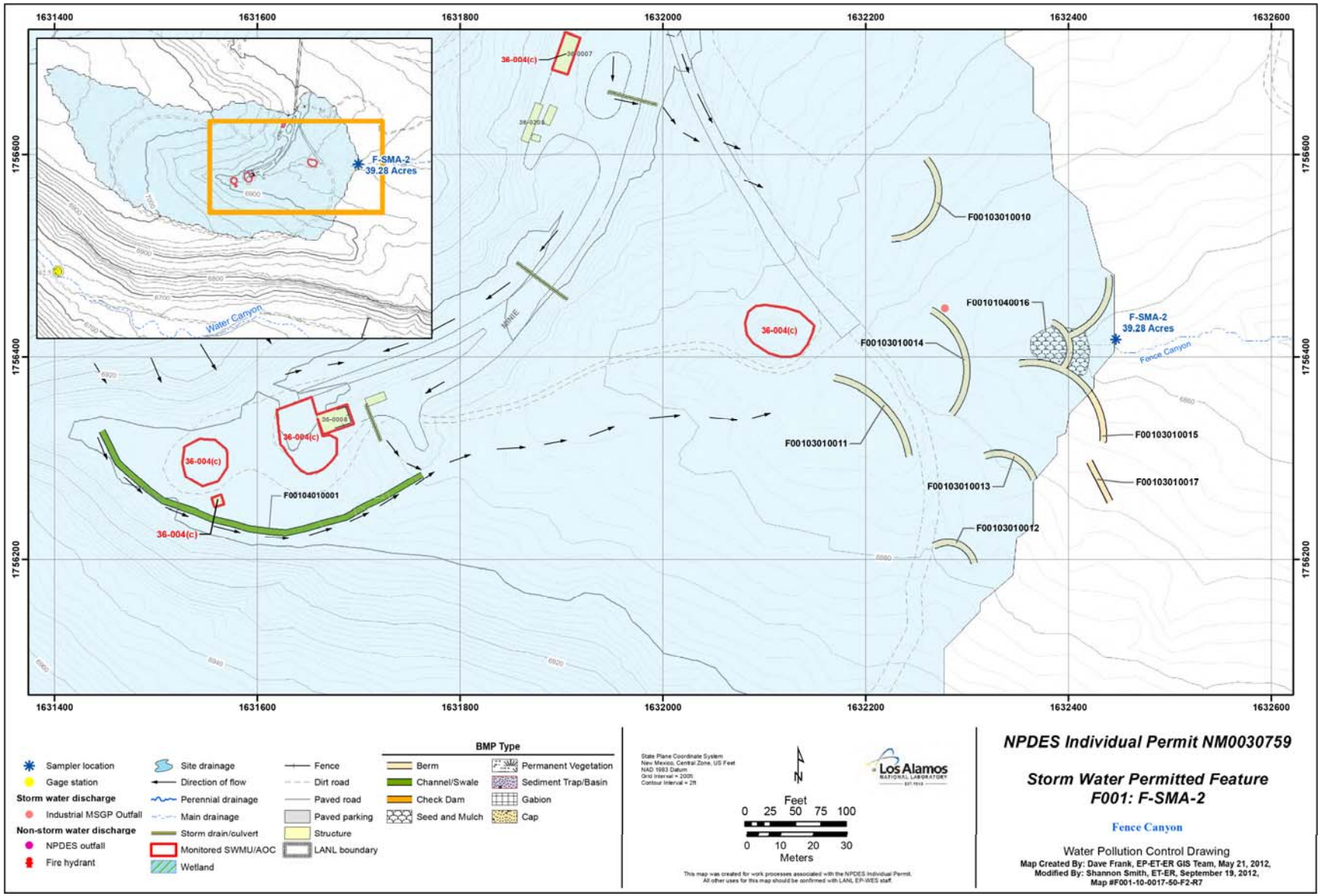
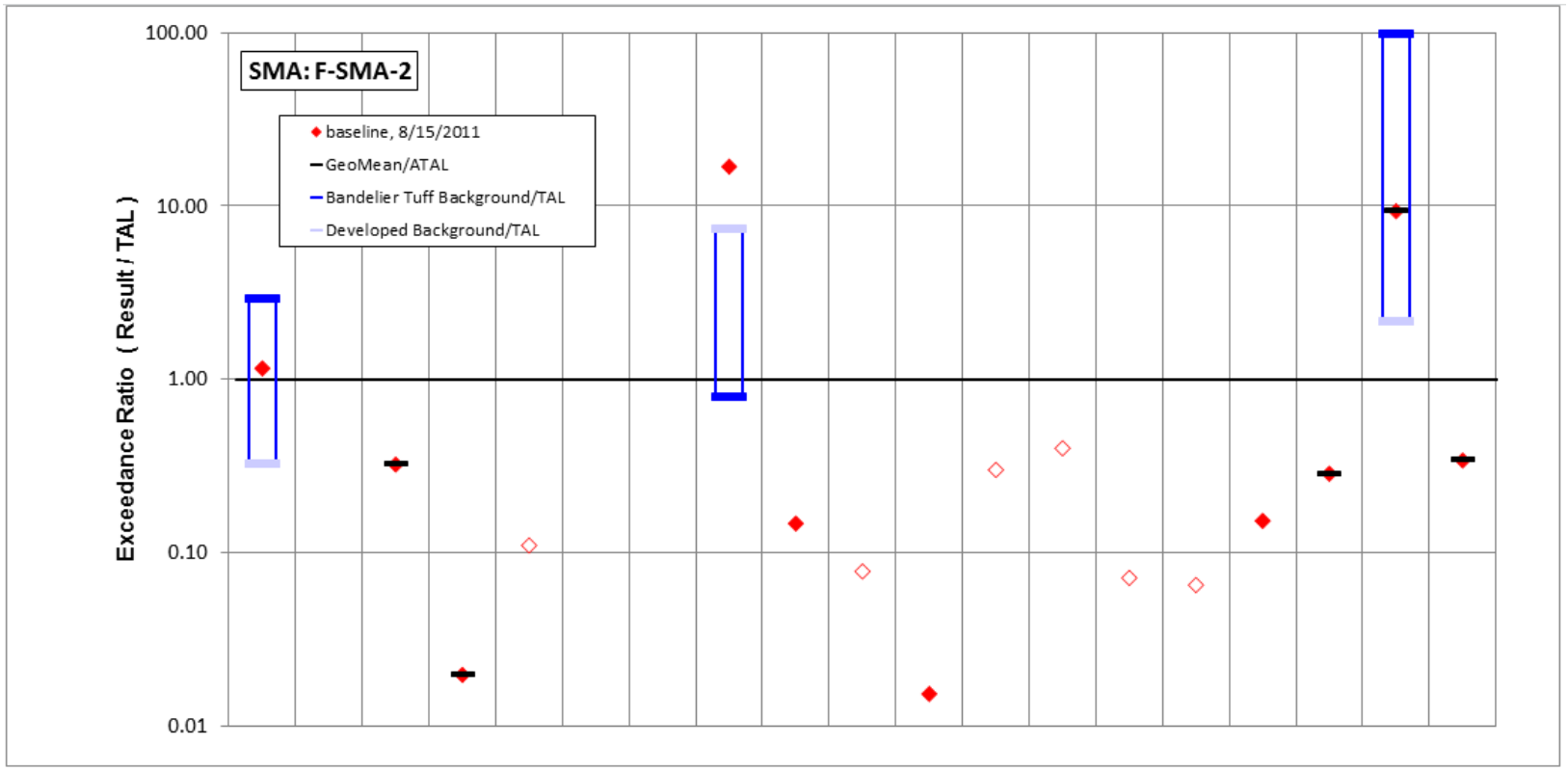


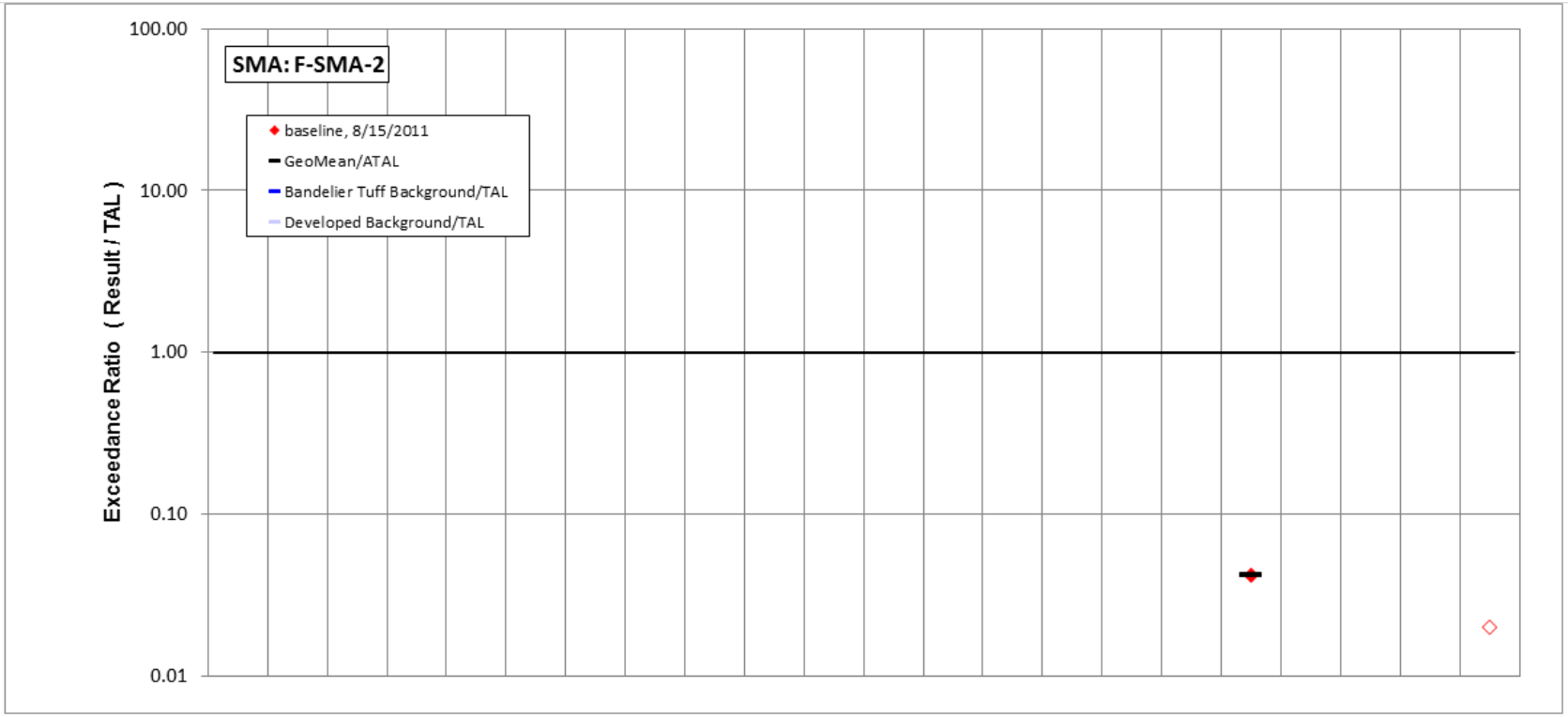
Figure 199-1 F-SMA-2 location map



	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	*0.06*	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	*0.078*	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	-	-	-	*0.4*
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 15-0072) at E-F Firing Site [SWMU 15-004(f)]. The septic tank was constructed in 1947 and received sanitary waste from the E-F Firing Site control building (15-0027), located approximately 175 ft northeast of the tank; the drainline goes around structure 15-0463, which is a transportable used for storage. The septic tank is constructed of 4- to 6-in. reinforced concrete and is 6 ft long × 9 ft wide × 7 ft deep. 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. No industrial materials were historically managed at this site, which only received sanitary wastewater.

AOC C-15-004, a former transformer station (former structure 15-0056), was located approximately 30 ft southwest of the former E-F Firing Site control room (building 15-0027). 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 of installation is also not known, but the transformers were removed from the site in 1989. No evidence was found of a release on the wooden platform or on the soil beneath the platform. Potential contaminants associated with industrial materials historically managed at this site are PCBs.

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	
I00101010005	Seed and Mulch - Seed and Wood Mulch			X		CB
I00102010001	Established Vegetation - Grasses and Shrubs			X		CB
I00103010002	Berms - Earthen		X		X	CB
I00103010006	Berms - Earthen		X		X	EC
I00103010007	Berms - Earthen		X		X	EC
I00103010008	Berms - Earthen	X			X	EC

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): No industrial materials were historically managed at this Site, which only received sanitary wastewater.

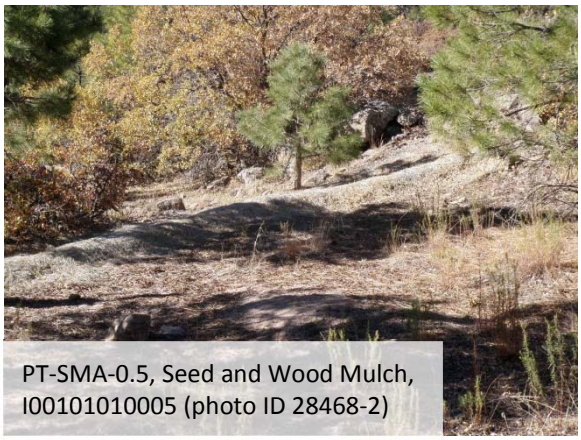
- Aluminum—Aluminum was not detected above BV in Consent Order samples.
- Copper—Copper was detected above BVs in soil samples collected from SWMU 15-009(e) during the 2010 Consent Order investigation. The maximum detected copper concentration was 1.1 times BV.
- Gross alpha—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in samples collected from SWMU 15-009(e) during the 2010 Consent Order investigation. Maximum detected activities of uranium-234, uranium-235/236, and uranium-238 were 3.4 times, 2.4 times, and 7 times BVs, respectively.

In summary, aluminum was not detected above BV, and copper was detected only slightly above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site although uranium isotopes were detected above BVs. In addition, uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial

materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

AOC C-15-004: Potential contaminants associated with industrial materials historically managed at this site are PCBs.

- Aluminum—Aluminum was not detected above BV.
- Copper—Copper was detected above BVs in samples collected from AOC C-15-004 during the 2010 Consent Order investigation. The maximum detected copper concentration was 3.6 times BV.
- Uranium—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in samples collected from AOC C-15-004 during the 2010 Consent Order investigation. Maximum detected activities of uranium-234, uranium-235/236, and uranium-238 were 2.4 times, 1.6 times, and 6.1 times BVs, respectively.



PT-SMA-0.5, Seed and Wood Mulch, I00101010005 (photo ID 28468-2)

In summary, aluminum was not detected above BV, and copper was detected above BV. Aluminum and copper are not known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site although uranium isotopes were detected above BVs. In addition, uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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 four storm events at PT-SMA-0.5 during the 2012 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 200-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21626	03-23-2012
Annual Erosion Evaluation	COMP-22920	04-30-2012
Storm Rain Event	BMP-24918	07-16-2012
Storm Rain Event	BMP-25897	08-08-2012
Storm Rain Event	BMP-27557	09-20-2012
Construction	COMP-28144	10-04-2012
Construction	COMP-28466	10-11-2012
Construction	COMP-28599	10-17-2012
Enhanced Control Measure verification	BMP-28468	10-29-2012

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

Table 200-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22340	Added matting on top of existing matting on berm I00103010002.	04-12-2012	20 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 2012

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

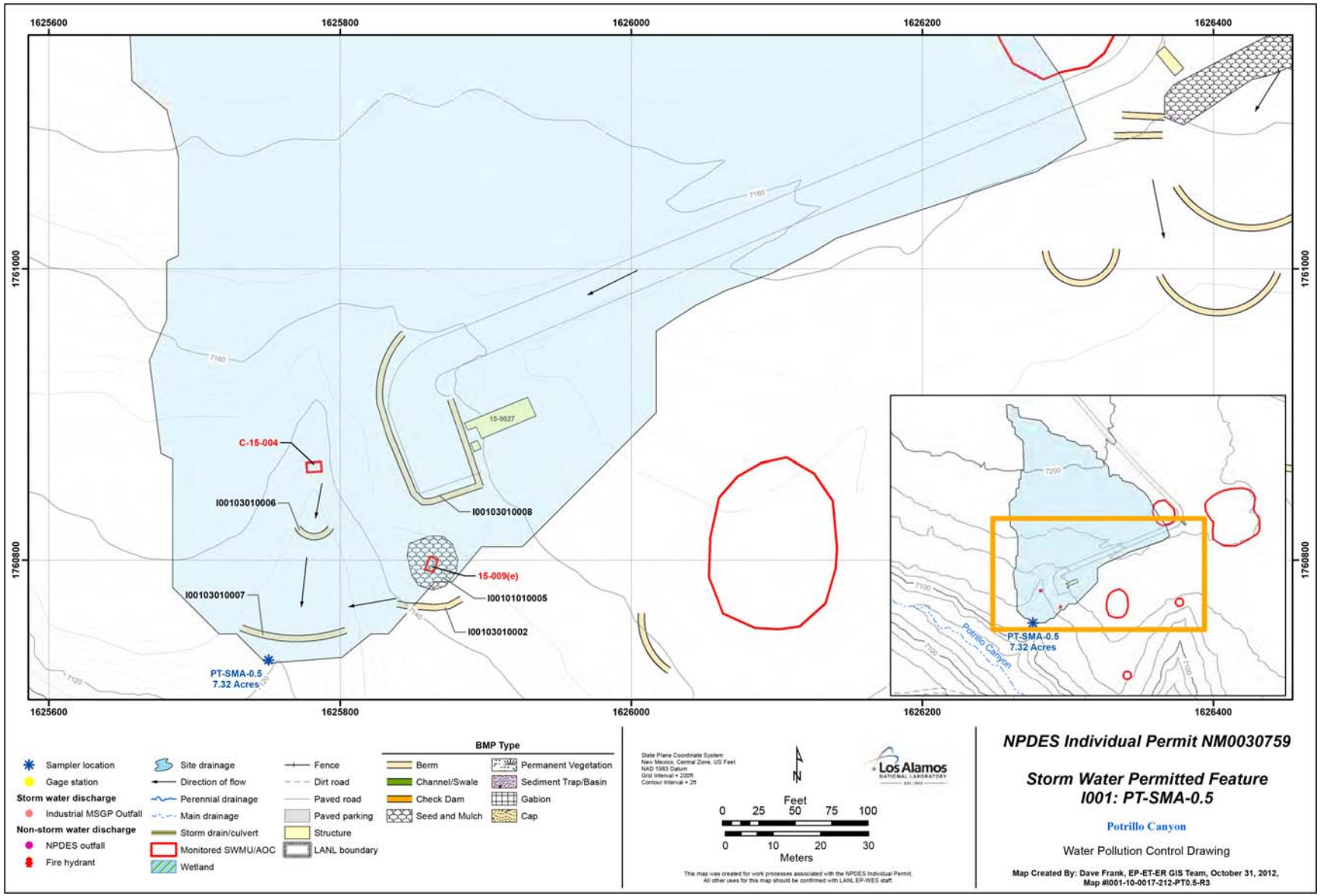
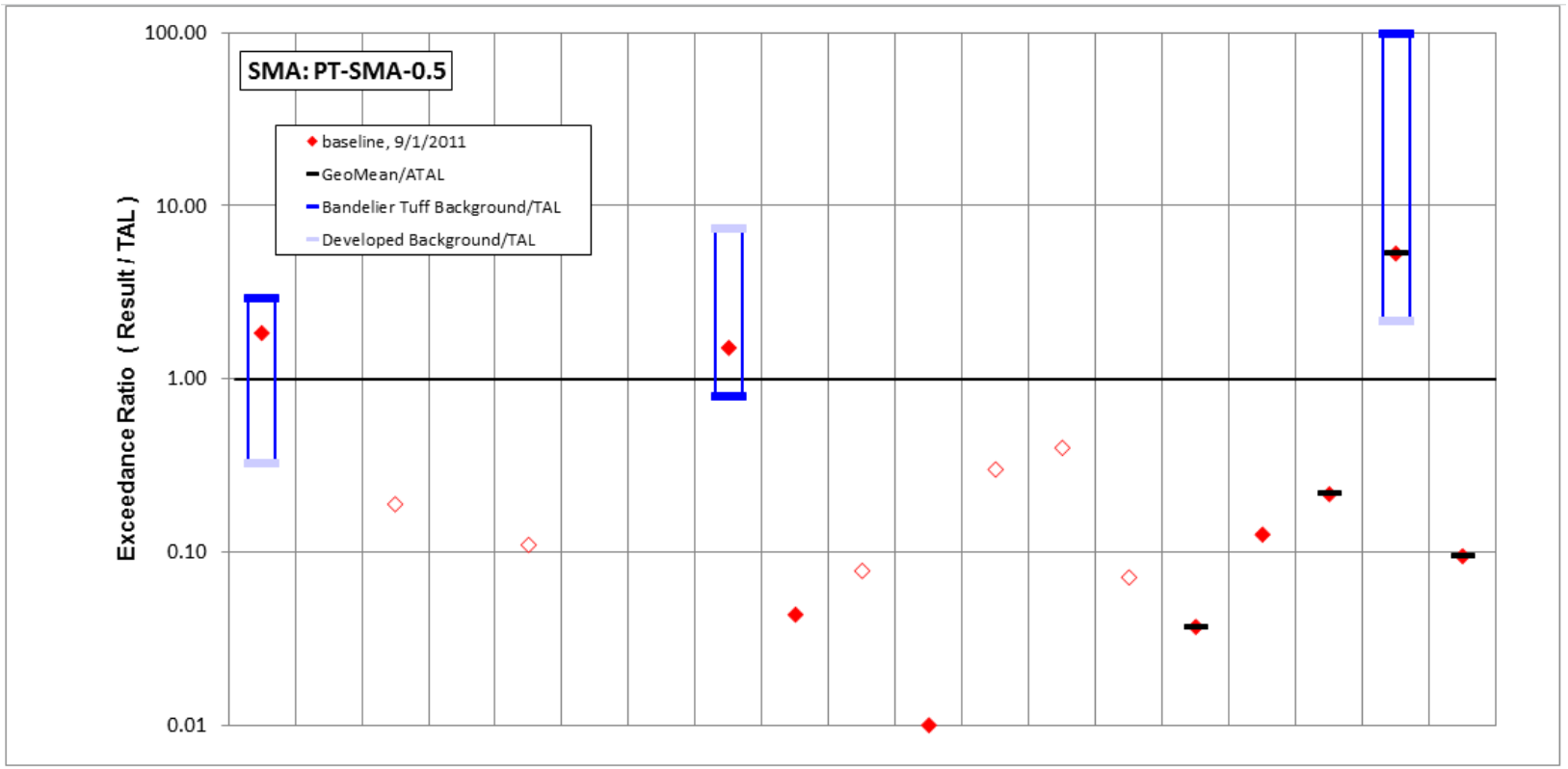


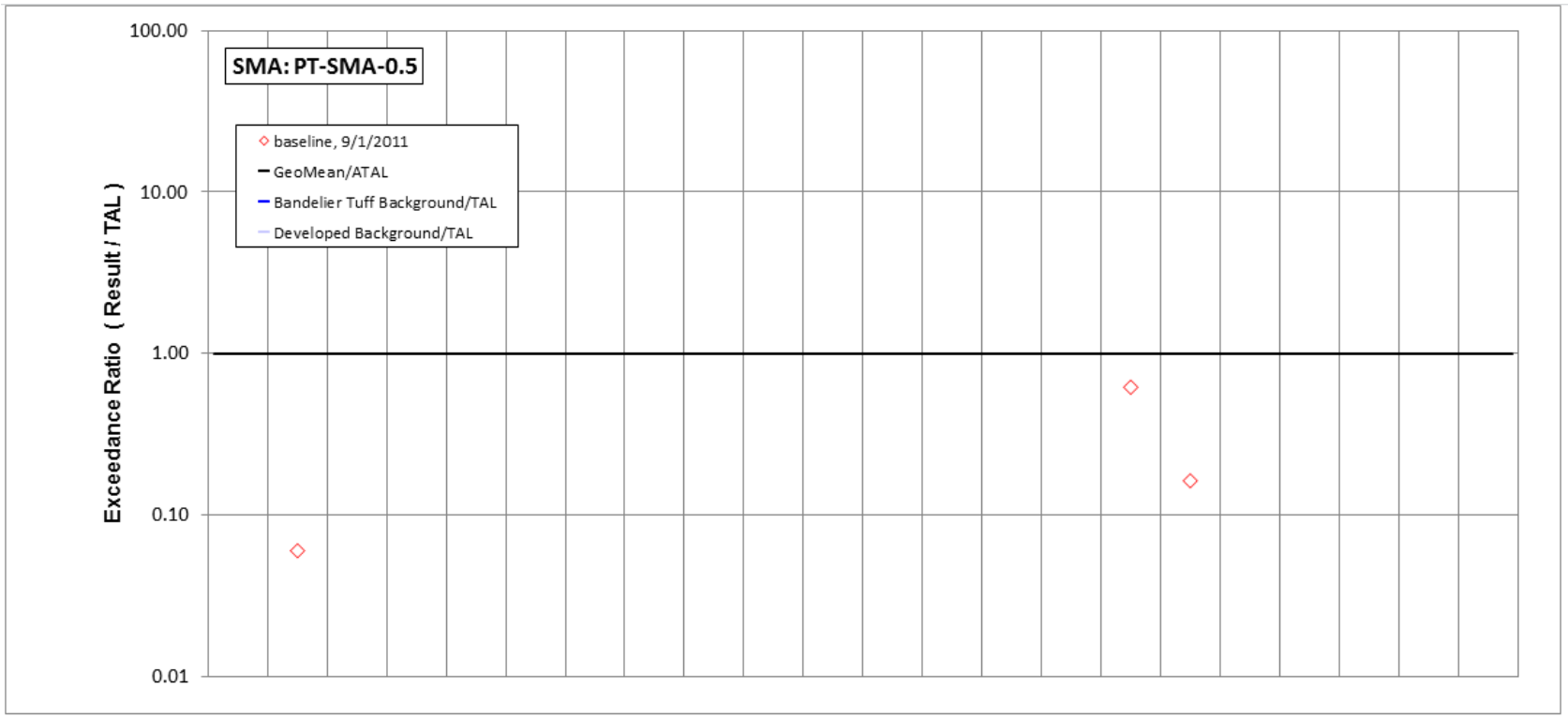
Figure 200-1 PT-SMA-0.5 location map



	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	*0.06*	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	*0.078*	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	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.09*	*3.09*	-	-	-	-	-
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*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) located at TA-15. 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 800 ft apart and were wired to an underground control bunker (structure 15-0027). 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 any depressions. Eventually, soil mounds were constructed on two sides of Firing Point E to protect TA-15 structures from shrapnel. Firing site operations at E-F Firing Site ceased in 1981. Tests at E-F Firing Site involved HE, uranium, beryllium, copper, lead, and mercury and these constituents are potential site contaminants. SWMU 15-004(f) is a component of Consolidated Unit 15-004(f)-99 along with SWMU 15 008(a).

SWMU 15-008(a) consists of two small surface disposal areas located on the edge of Potrillo Canyon directly south of E-F Firing Site [SWMU 15-004(f)] at TA-15. The disposal areas are located within 200 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at the E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, electrical accessories. The exact period of operation of the surface disposal sites is not known but probably falls within the period of operation for E-F Firing Site (1946 to 1981). All debris was removed from both surface disposal areas during the 2010 investigation. Potential contaminants associated with industrial materials historically managed at this site include beryllium, copper, lead, mercury, uranium, and explosive compounds.

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 Mulch - Seed and Wood Mulch			X		CB
I00202010002	Established Vegetation - Grasses and Shrubs			X		CB
I00203010018	Berms - Earthen		X		X	CB
I00203010019	Berms - Earthen		X		X	CB
I00203010020	Berms - Earthen		X		X	CB
I00203010021	Berms - Earthen		X		X	CB
I00203010023	Berms - Earthen		X		X	EC
I00203010024	Berms - Earthen		X		X	EC
I00203010025	Berms - Earthen		X		X	EC
I00203010026	Berms - Earthen		X		X	EC
I00203010027	Berms - Earthen		X		X	EC
I00203010028	Berms - Earthen		X		X	EC
I00203010029	Berms - Earthen		X		X	EC
I00203010030	Berms - Earthen		X		X	EC
I00203060033	Berms - Straw Wattles		X		X	EC
I00203120012	Berms - Rock	X			X	CB
I00203120013	Berms - Rock	X			X	CB
I00206010031	Check Dam - Rock		X		X	EC
I00206010032	Check Dam - Rock		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): Potential contaminants associated with industrial materials historically managed at this Site are HE, uranium, beryllium, copper, lead, mercury, and zinc.

- Aluminum—Aluminum was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of aluminum were 1.1 times BV.
- Copper—Copper was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of copper were 730 times BV.
- Zinc—Zinc was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of zinc were 15 times BV.
- Gross alpha—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum activities of uranium-234, uranium-235/236, and uranium-238 were 200 times BV, 360 times BV, and 1370 times BV, respectively.

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

In summary, aluminum was detected only slightly above BV. Based on previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water. Copper and zinc are associated with industrial materials historically managed at the Site and were detected substantially above BVs. Based on site history and previous sampling results, the Site is a likely source of copper and zinc above MTALs in storm water. Uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site, and uranium isotopes were detected substantially above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 15-008(a): Potential contaminants associated with industrial materials historically managed at this Site are HE, uranium, beryllium, copper, lead, mercury, and zinc.

- Aluminum—Aluminum was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of aluminum were 2.1 times BV.
- Copper—Copper was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of copper were 18 times BV.
- Zinc—Zinc was detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum concentrations of zinc were 3.3 times BV.
- Gross alpha—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in soil samples collected from during the 2010 Consent Order investigation. Maximum activities of uranium-234, uranium-235/236, and uranium-238 were 190 times BV, 130 times BV, and 300 times BV, respectively.

In summary, aluminum was detected only slightly above BVs. Based on previous sampling results, the Site is an unlikely source of aluminum and zinc above MTALs in storm water. Copper and zinc are associated with industrial materials historically managed at the Site and were detected substantially above BV. Based on site history and previous sampling results, the Site is a likely source of copper and zinc above MTAL in storm water. Uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site, and uranium isotopes were detected substantially above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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.

The monitoring station was relocated on July 18, 2012, and is situated approximately 75 ft north of the original sampler location. This minor adjustment places the sampler closer to SWMU 15-008(a) and closer to the new enhanced berms that intercept runoff from SWMU 15-004(f). The minor sampler move will provide samples more representative of storm water discharge from the SWMUs by reducing surface water contribution from the surrounding bare rock canyon walls that have no contact with the SWMUs. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

201.4 Inspections and Maintenance

RG262.4 recorded four storm events at PT-SMA-1 during the 2012 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 201-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Visual Inspection	COMP-21627	03-23-2012
Construction	COMP-22934	04-30-2012
Annual Erosion Evaluation	COMP-22921	04-30-2012
Construction	COMP-23202	05-07-2012
Enhanced Control Measure Verification	BMP-23587	05-30-2012
Storm Rain Event	BMP-24919	07-16-2012
Storm Rain Event	BMP-25898	08-08-2012
Storm Rain Event	BMP-27558	09-20-2012

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

Table 201-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22339	Restaked matting on berm I00203010018.	04-12-2012	20 day(s)	Maintenance conducted as soon as practicable.
BMP-25594	Added seed and wood mulch to seed/wood mulch I00201010022 as needed.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-25595	Rearranged rock on rock check dam I00206010031 to make a spillway.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-25596	Rearranged rock on rock check dam I00206010032 to make a spillway.	07-25-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-27973	Applied additional seed to seed/mulch I00201010022.	09-27-2012	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 2012

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

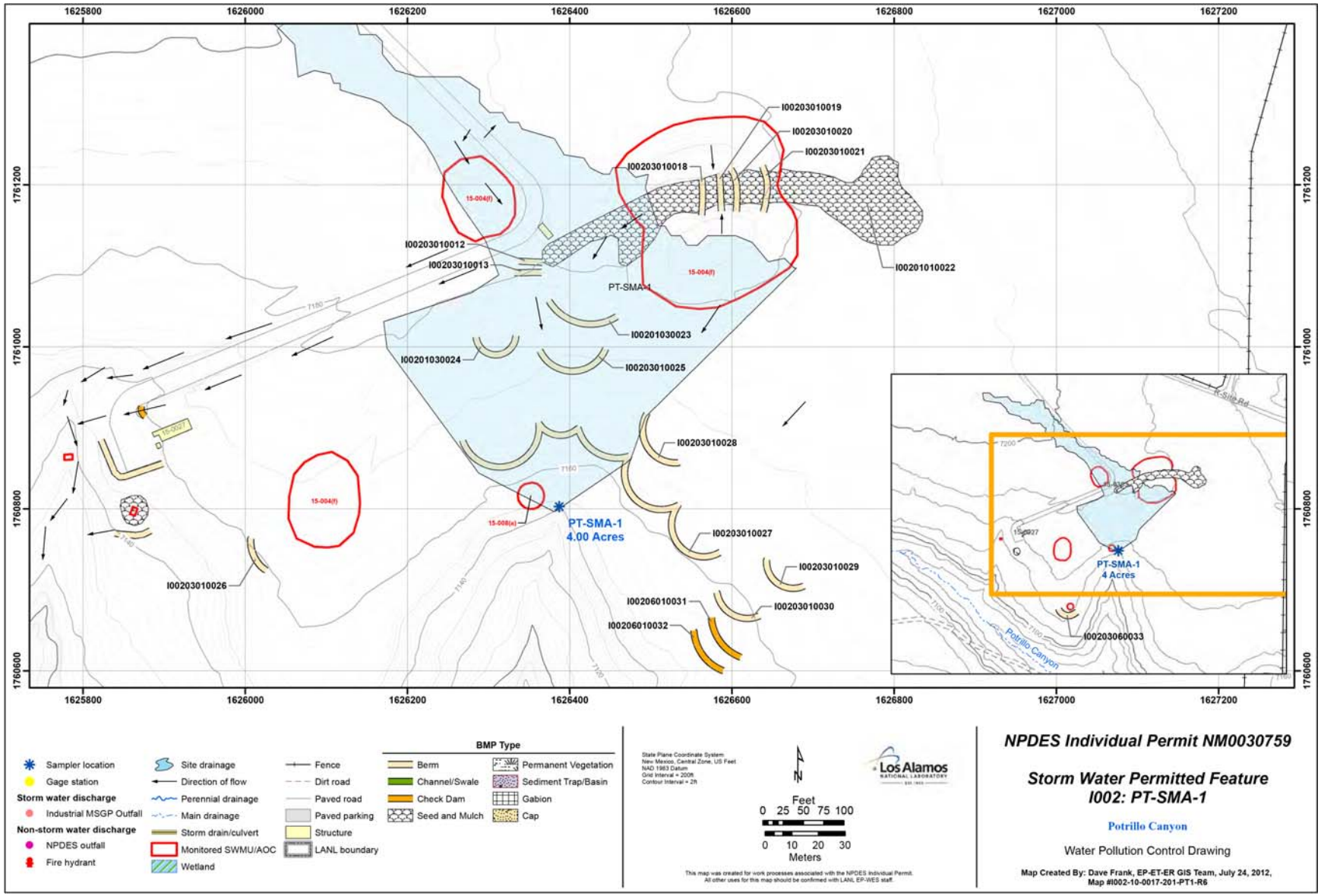
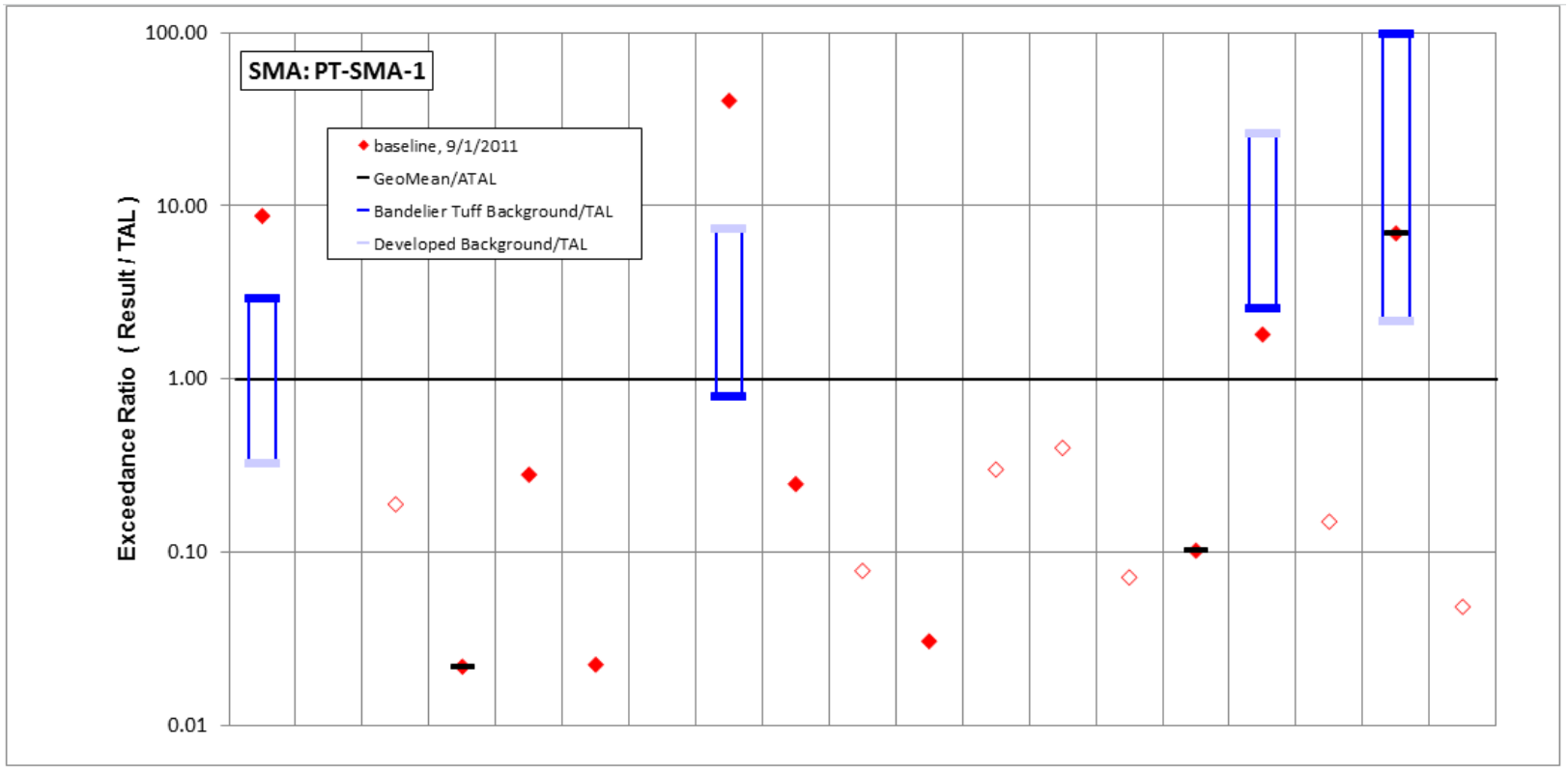


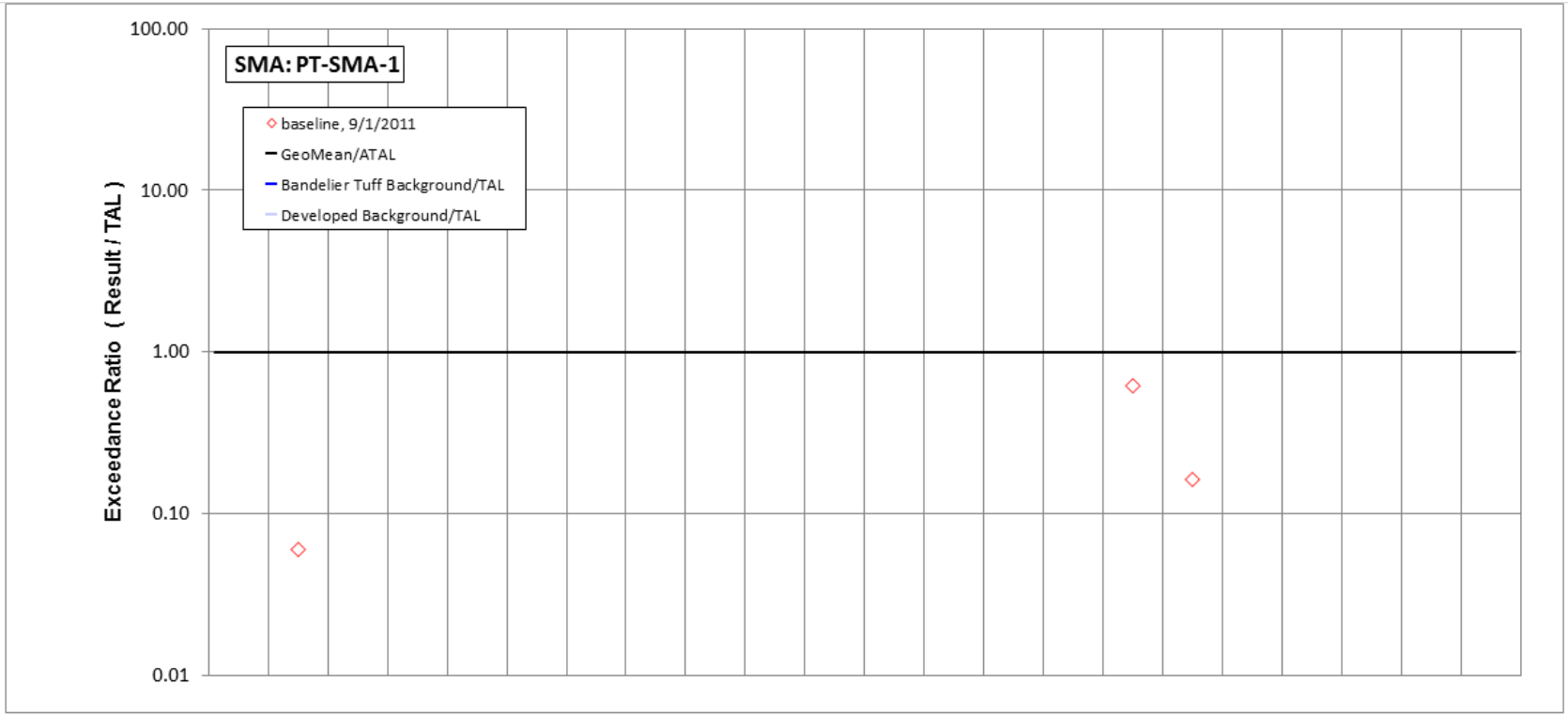
Figure 201-1 PT-SMA-1 location map



	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	*0.06*	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	*0.078*	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	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.09*	*3.09*	-	-	-	-	-
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*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) consists of PHERMEX chamber 15-184, located at TA-15. The firing chamber was constructed in 1961 and is the firing point for explosive detonation tests conducted at PHERMEX. SWMU 15-006(a), the PHERMEX firing site, is deferred for investigation per Table IV-2 of the Consent Order. SWMU 15-006(a), together with SWMU 15-003 (also deferred), comprises Consolidated Unit 15-003-00. Potential contaminants associated with industrial materials historically managed at the Site are metals, including beryllium, copper, lead, mercury, and thorium, DU, and explosive compounds.

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	
I00302010001	Established Vegetation - Grasses and Shrubs			X		CB
I00303060004	Berms - Straw Wattles		X		X	CB
I00303060012	Berms - Straw Wattles		X		X	B
I00303060013	Berms - Straw Wattles		X		X	B
I00303060015	Berms - Straw Wattles	X			X	B
I00303060016	Berms - Straw Wattles		X		X	B
I00306010010	Check Dam - Rock	X			X	CB
I00306010011	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls will be installed in the second quarter of 2013 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): Potential contaminants associated with industrial materials historically managed at this Site include beryllium, copper, lead, mercury, thorium, uranium, and explosive compounds.

- Gross alpha—Uranium-238 - Uranium-238 was detected above BV in soil samples collected in the drainage below SWMU 15-006(a) during the 2010 Consent Order investigation. The maximum detected uranium-238 activity was 1.8 times BV.

PT-SMA-1.7, Rock Check Dam, I00306010010 (photo ID 12975-1r)

In summary, SWMU 15-006(a) is an active firing site impacted by continuing operations, and further Consent Order sampling is delayed until operations at the Site cease. Thorium and uranium, which have alpha-emitting isotopes, are known to be associated with industrial material historically managed at this Site and uranium-238 was detected only slightly above BV. Thorium and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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 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—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

202.4 Inspections and Maintenance

RG262.4 recorded four storm events at PT-SMA-1.7 during the 2012 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 202-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22922	06-06-2012
Storm Rain Event	BMP-24920	07-17-2012
Storm Rain Event	BMP-25899	07-27-2012
Storm Rain Event	BMP-27559	09-21-2012
Visual	COMP-29205	10-29-2012

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

Table 202-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
COMP-22922	Retired straw wattle I00303060002, replaced with new wattle I00303060016.	06-06-2012	0 day(s)	Maintenance conducted upon inspection.

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 2012

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

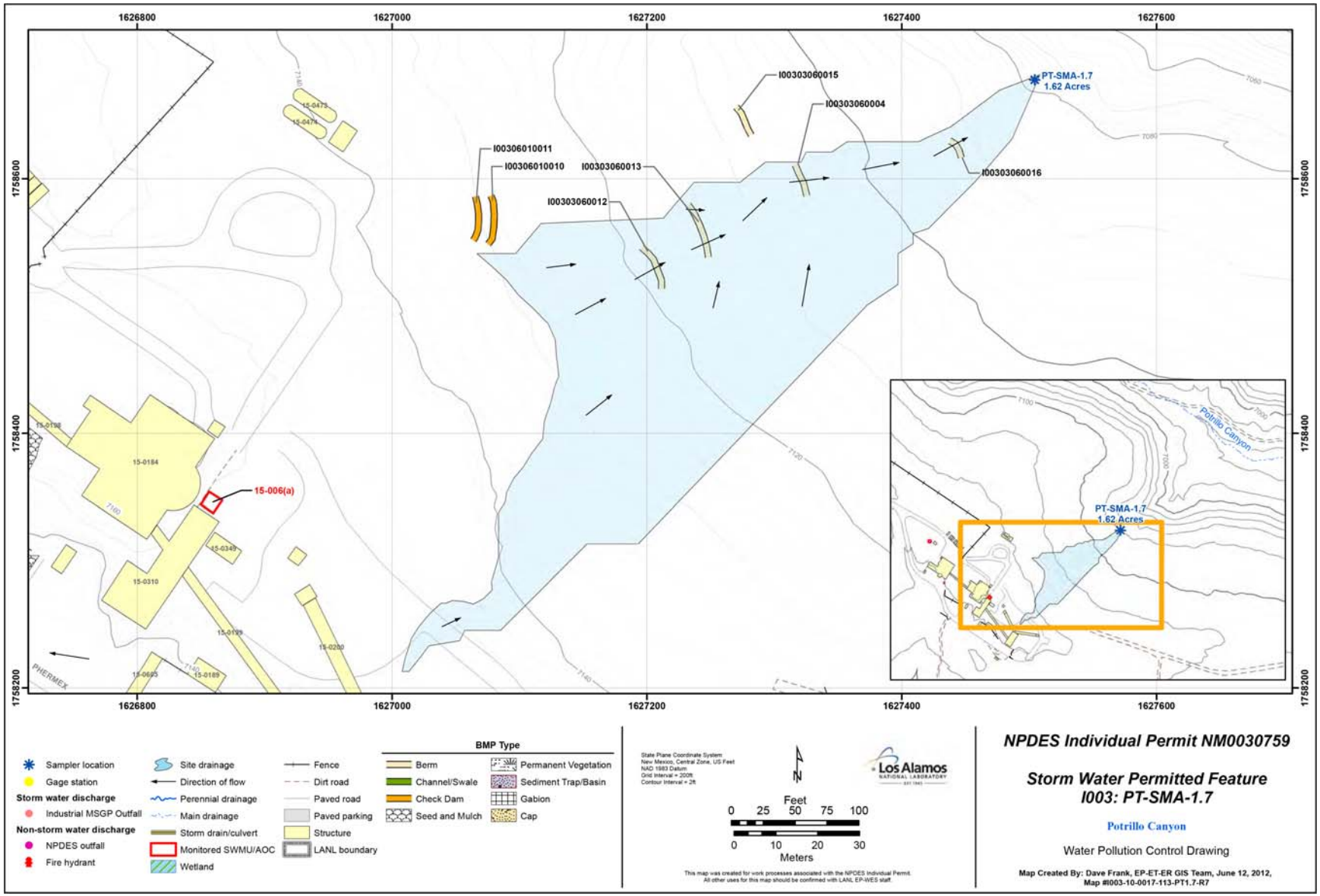
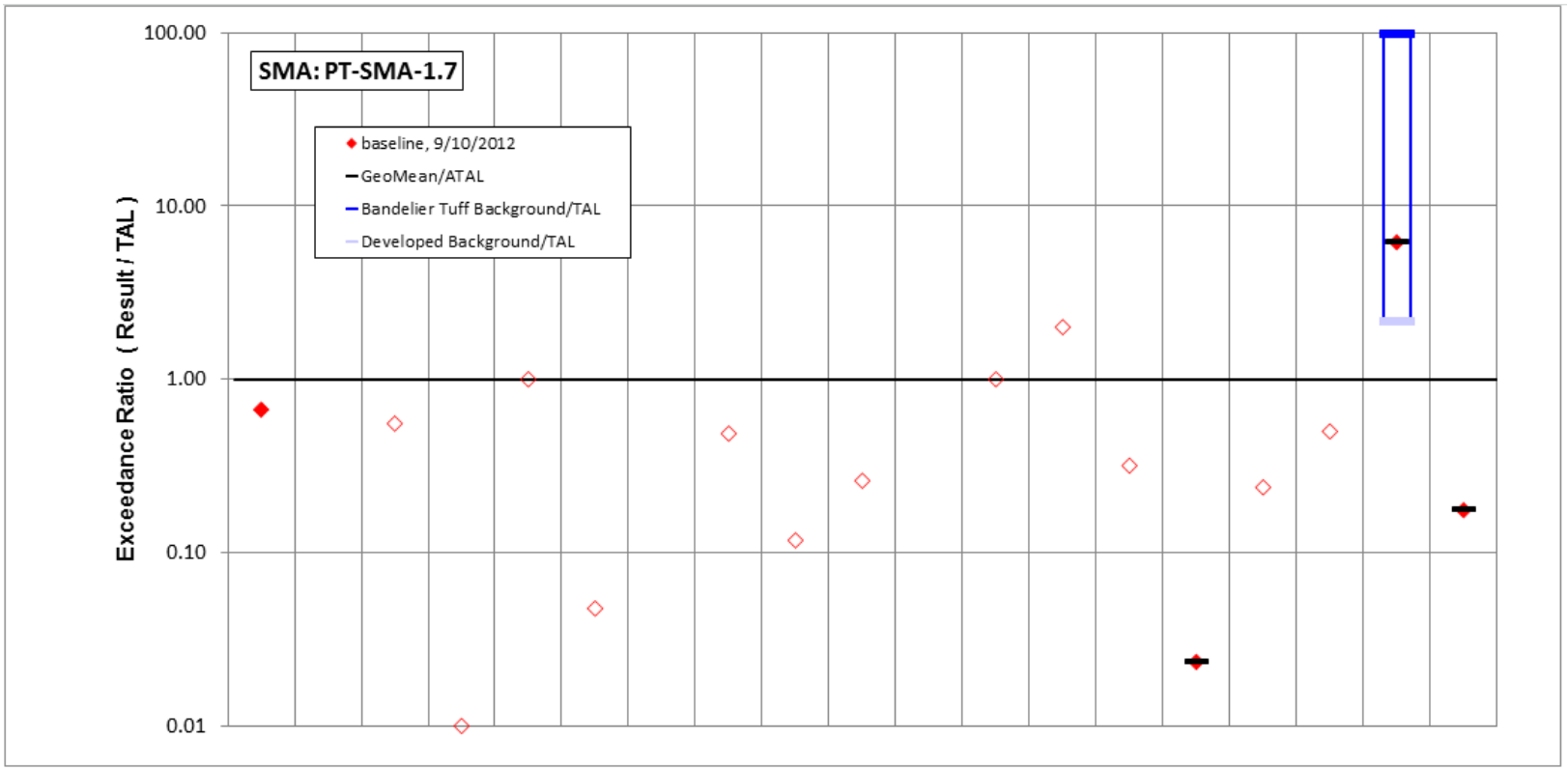


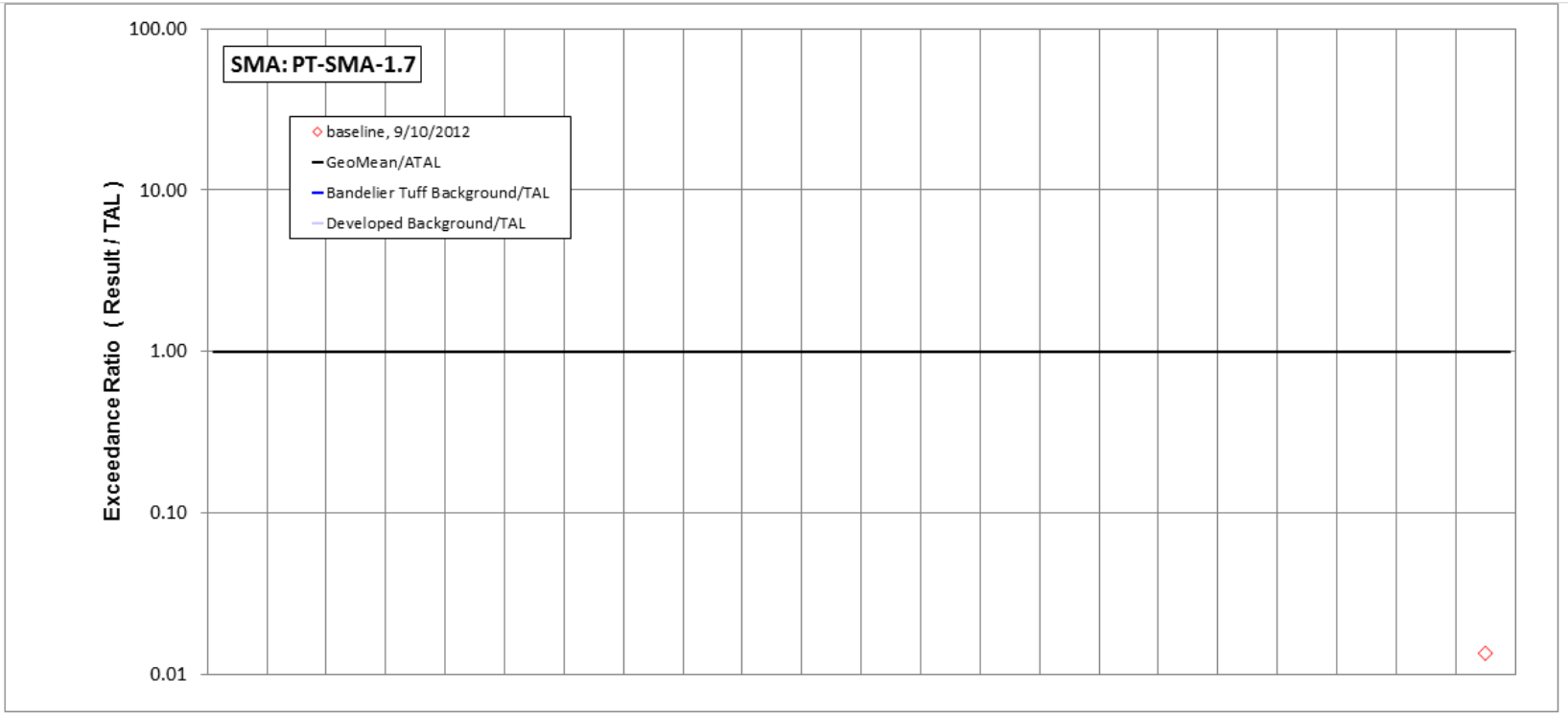
Figure 202-1 PT-SMA-1.7 location map



	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 and measures 7 ft long × 3.5 ft wide × 5.73 ft deep with a capacity of 420 gal. The tank has a buried overflow pipe that formerly 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, the tank contents were periodically removed and taken to a sanitary WWTP for treatment and disposal after the overflow pipe had been capped.

AOC 15-008(f) consists of several sand mounds located next to the I-J Firing Site [SWMU 36-004(e)] at TA-15. The 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, although it is now part of TA-36. AOC 15-008(f) is deferred for investigation per Table IV-2 of the Consent Order.

PT-SMA-2, Rock Berm, I00403120010 (photo ID 13420-1r)

AOC 36-004(e) is the I-J Firing Site located at the west end of TA-36 on Mesita del Potrillo along the north rim of Potrillo Canyon. AOC 36-004(e) is deferred for investigation per Table IV-2 of the Consent Order. The 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 the I-J Firing Site were conducted in fully enclosed containment vessels. These vessels were removed from the I-J Firing Site for use at TA-15, although one was later returned to the I-J Firing Site. The returned vessel was identified in the 1990 SWMU Report as AOC C-36-001 and was subsequently removed from the site in 1994 and disposed of at MDA G, TA-54. Other firing-site activities conducted at I-J Firing Site included tests in which DU projectiles were fired into an embankment. This projectile test area was designated as AOC C-36-006(e).

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	
I00402010005	Established Vegetation - Grasses and Shrubs			X		CB
I00403010009	Berms - Earthen		X		X	CB
I00403120010	Berms - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

203.3 Storm Water Monitoring

For calendar year 2012, 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 four storm events at PT-SMA-2 during the 2012 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 203-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22923	04-25-2012
Storm Rain Event	BMP-24921	07-16-2012
Storm Rain Event	BMP-25900	07-30-2012
Storm Rain Event	BMP-27560	09-20-2012

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

Table 203-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27974	Repaired south end of berm I00403010009.	10-03-2012	13 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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 36-003(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 15-008(f)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 36-004(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

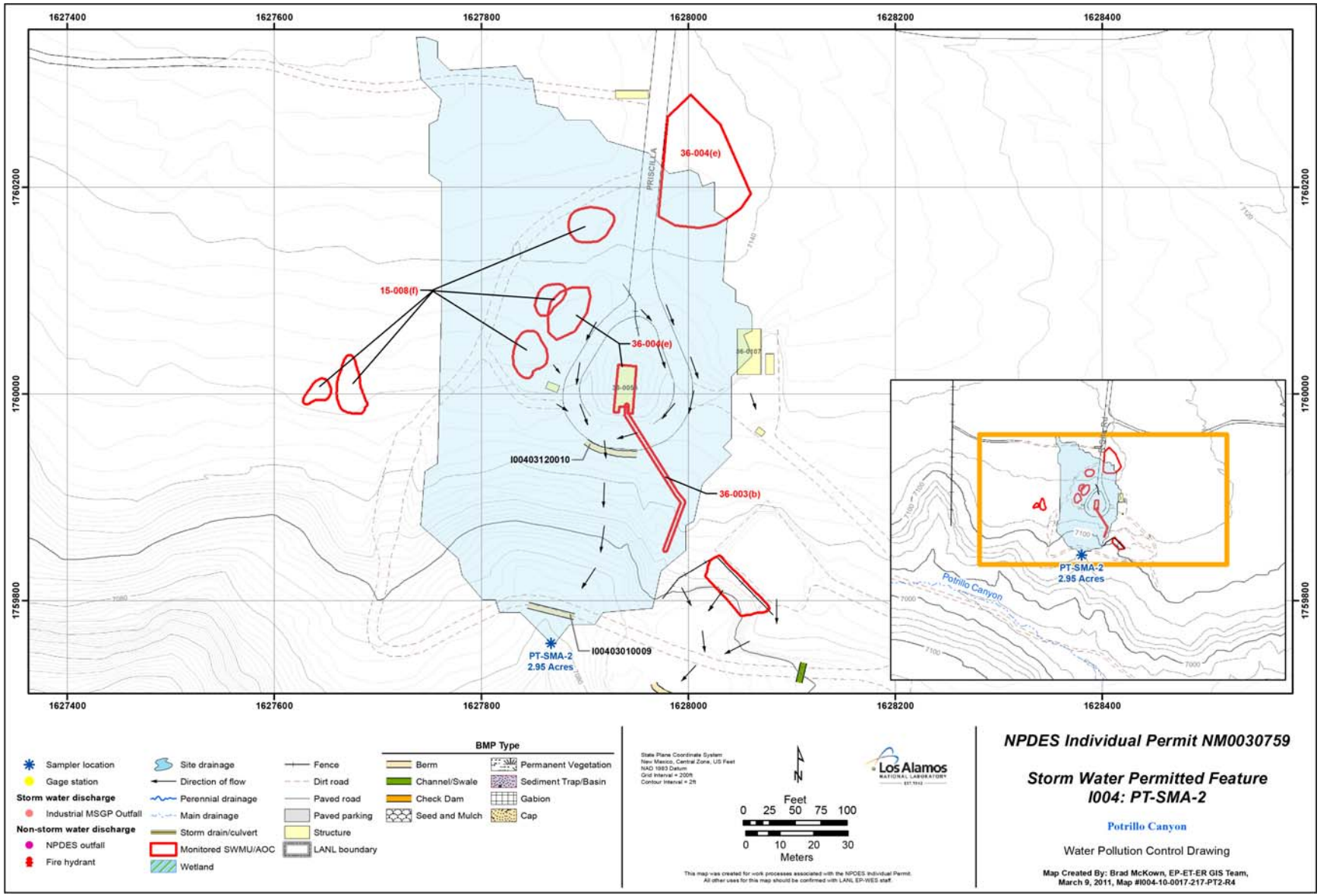


Figure 203-1 PT-SMA-2 location map

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 36-0055 where it remained until 1983 when it was removed. The containment vessel consisted of a 12-ft-diameter 19.5-ton steel sphere. 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 36-0055. Potential contaminants associated with industrial materials historically managed at this site are DU and explosive compounds.

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 the I-J Firing Site was located was transferred to TA-36. However, the 1990 SWMU Report is inconsistent in addressing the SWMUs and AOCs affected by the transfer. Although the SWMU Report addresses the I-J Firing Site as SWMU 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. The potential contaminant associated with industrial materials historically managed at this site is DU.

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	
I004A02010001	Established Vegetation - Grasses and Shrubs			X		CB
I004A03010004	Berms - Earthen		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: Potential contaminants associated with industrial materials historically managed at this site are DU and explosive compounds.

- Gross alpha—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in soil samples collected in the drainage below AOC C-36-001 during the 2010 Consent Order investigation. The maximum detected uranium-234, uranium-235/236, and uranium-238 activities were 1.02 times BV, 1.7 times BV, and 5 times BV, respectively.

In summary, uranium, which has alpha-emitting isotopes, is known to be associated with industrial material historically managed at this Site, and one uranium isotope was detected substantially above BV. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

AOC C-36-006(e): The potential contaminant associated with industrial materials historically managed at this site is DU.

- Gross alpha—Uranium-234, uranium-235/236, and uranium-238 were detected above BVs in soil samples collected in the drainage below AOC C-36-006(e) during the 2010 Consent Order investigation. The maximum detected uranium-234, uranium-235/236, and uranium-238 activities were 1.02 times BV, 1.7 times BV, and 5 times BV, respectively.

In summary, uranium, which has alpha-emitting isotopes, is known to be associated with industrial material historically managed at this Site, and one uranium isotope was detected substantially above BV. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically

managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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.

PT-SMA-2.01 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 gross-alpha ATAL exceedances. 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; the result from 2011 is less than this value.

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

The monitoring station was relocated on July 18, 2012, and is situated approximately 100 ft north to a position directly below the spillway on earthen berm I004A03010004. Installations of enhanced controls have isolated storm water from AOC C-36-006(e), and the proposed sampler location will collect a more representative sample than the original location. The proposed sampler location for PT-SMA-2.01 is representative of AOC C-36-006(e) because the new earthen berm will collect all storm water runoff from this AOC as any potential discharge occurs through the spillway. Sampler coordinates and SMA drainage area have been updated in Attachment 4.

204.4 Inspections and Maintenance

RG262.4 recorded four storm events at PT-SMA-2.01 during the 2012 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 204-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-22733	04-19-2012
Annual Erosion Evaluation	COMP-22924	04-27-2012
Enhanced Control Measure Verification	BMP-23589	05-30-2012
Storm Rain Event	BMP-25007	07-16-2012
Storm Rain Event	BMP-25901	07-30-2012
Storm Rain Event	BMP-27561	09-20-2012

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

Table 204-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23728	Re-matted earthen berm I004A03010003.	06-11-2012	12 day(s)	Maintenance conducted in timely manner.

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 204-4 Compliance Status during 2012

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

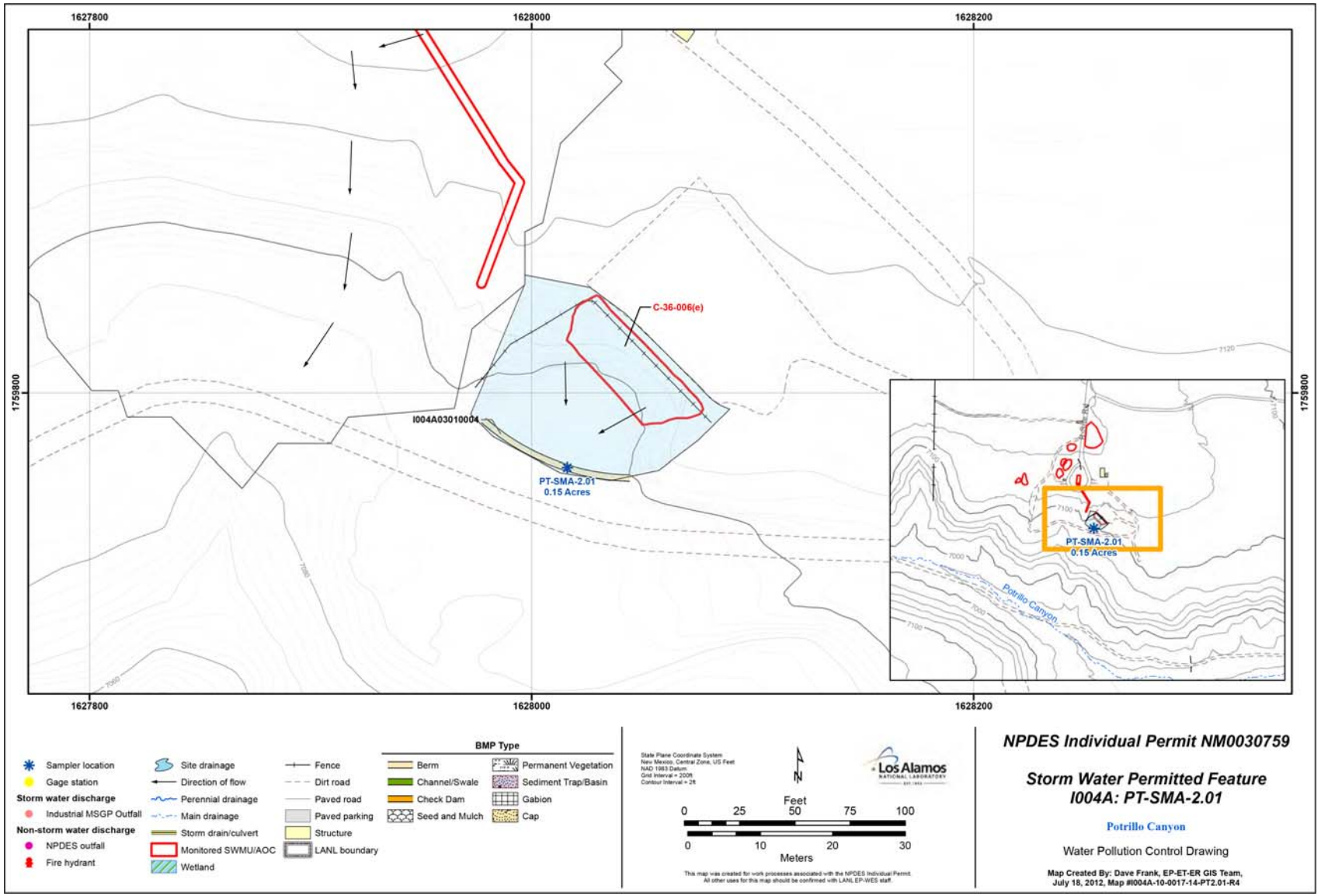
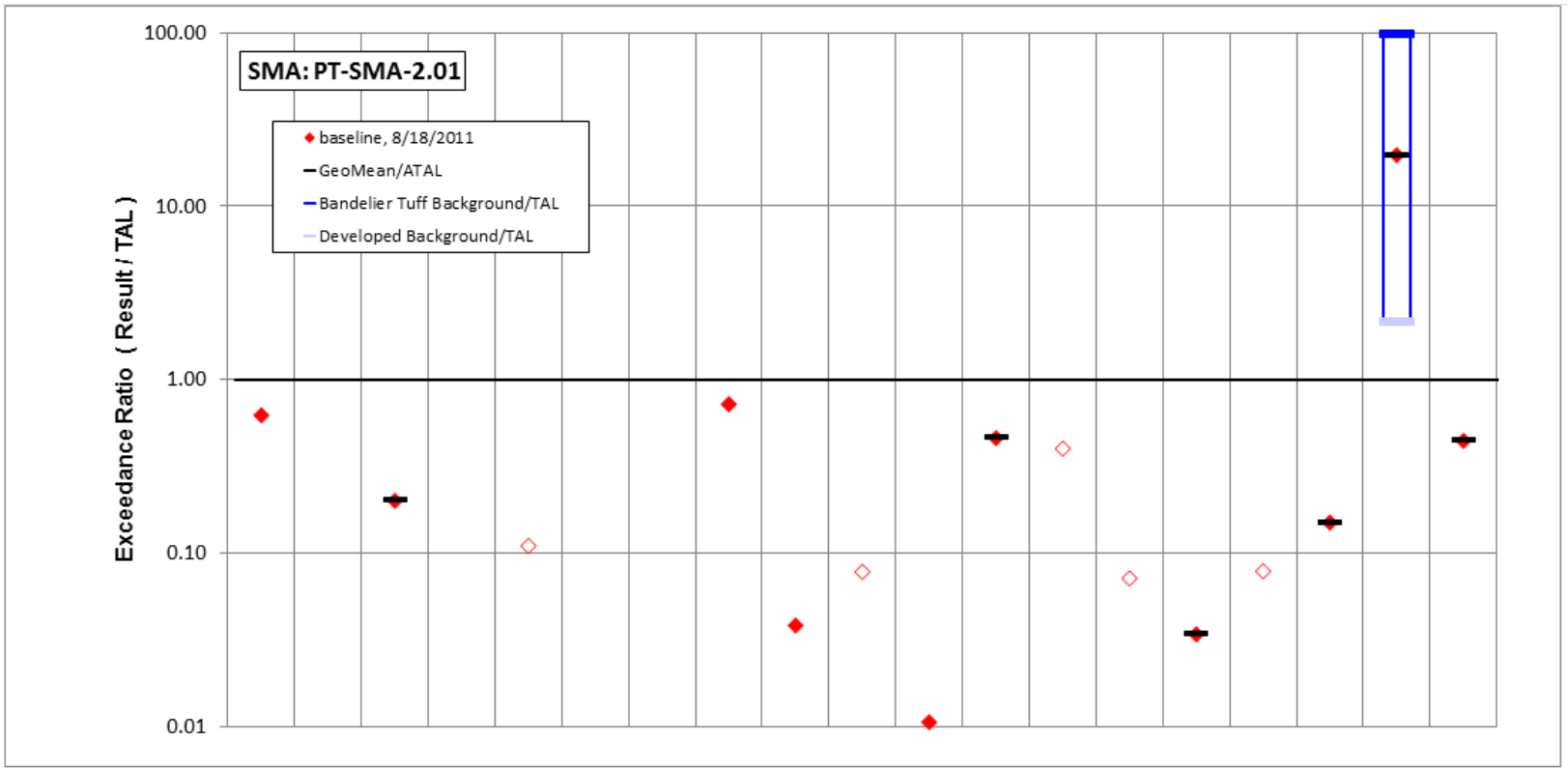


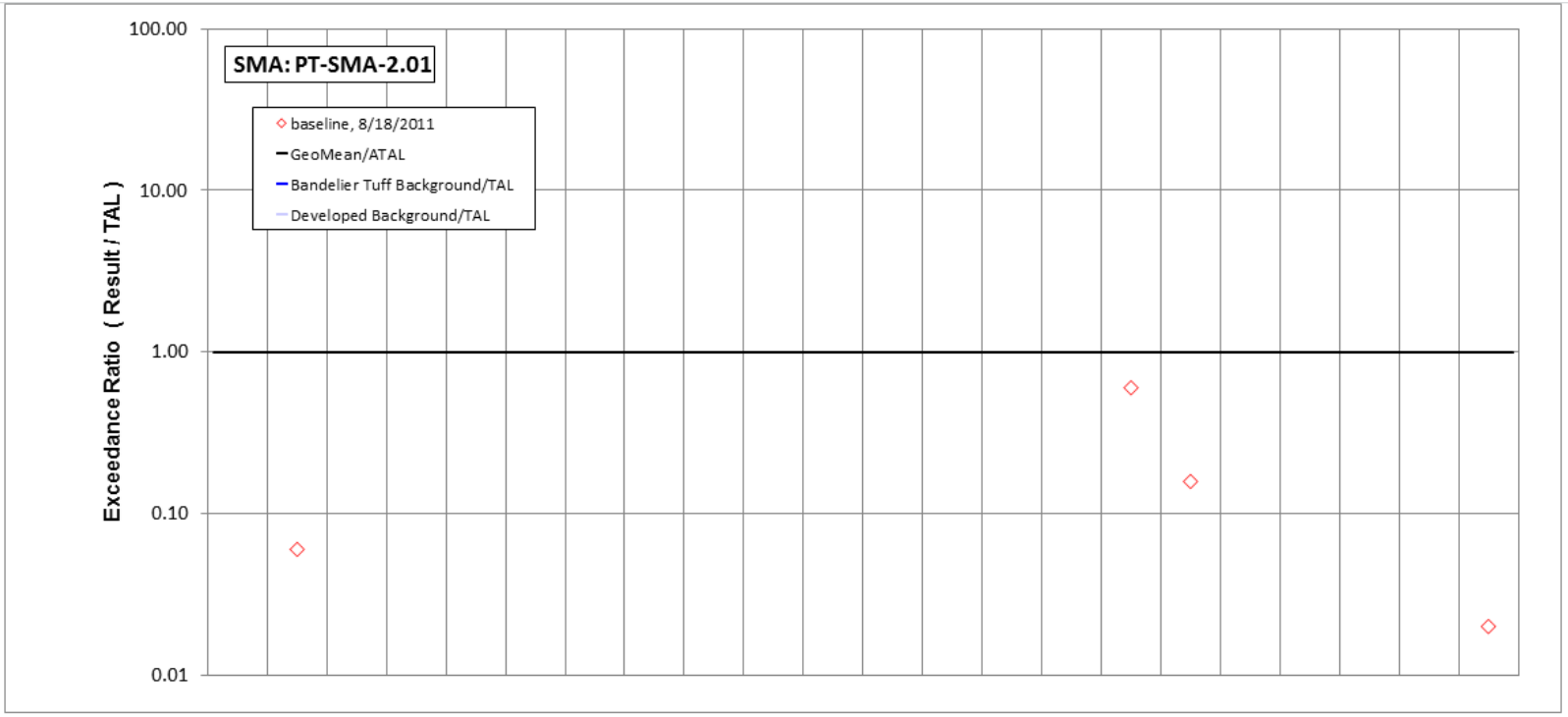
Figure 204-1 PT-SMA-2.01 location map



	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	*0.06*	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	*0.078*	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*	*0.4*	-	-	-	*0.4*
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 an inactive surface disposal area located on the southern slope of Potrillo Canyon, approximately 100 ft north of the Eenie Firing Site [AOC 36-004(a)]. SWMU 36-006, together with AOC 36-004(a), comprises Consolidated Unit 36-006-99. SWMU 36-006 was used to dispose of cables, metal, concrete, and other similar debris from the TA-36 firing sites. Most of the debris covers an approximately 75-ft-wide area that extends approximately 100 ft down the south canyon slope. The remainder of the debris is scattered laterally 300 ft along the south canyon slope. This debris was dumped into the canyon from trucks. SWMU 36-006 was used from 1955 to 1970. Although the TA-36 firing sites are still active, SWMU 36-006 is no longer used as a surface disposal area. All remaining debris was removed from the SWMU 36-006 surface disposal area during the 2010 investigation.

AOC 36-004(a) is the active Eenie Firing Site located 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. AOC 36-004(a) is deferred for investigation per Table IV-2 of the Consent Order.

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	
I00503020008	Berms - Base Course	X			X	B
I00504040005	Channel/Swale - Culvert	X		X		CB
I00504060004	Channel/Swale - Riprap	X		X		CB
I00504060007	Channel/Swale - Riprap	X		X		B
I00506010006	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

205.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at PT-SMA-3 during the 2012 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 205-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22925	06-08-2012
Storm Rain Event	BMP-25015	07-16-2012
Storm Rain Event	BMP-27101	08-29-2012
Storm Rain Event	BMP-27521	09-19-2012

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

Table 205-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27187	Installed riprap I00504060007 north of existing riprap to address rilling.	09-18-2012	20 day(s)	Maintenance conducted as soon as practicable.
BMP-27278	Installed base course diversion berm I00503020008 at the north end of existing riprap -0004 to redirect potential water away from firing site road.	09-19-2012	21 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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 36-006	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 36-004(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

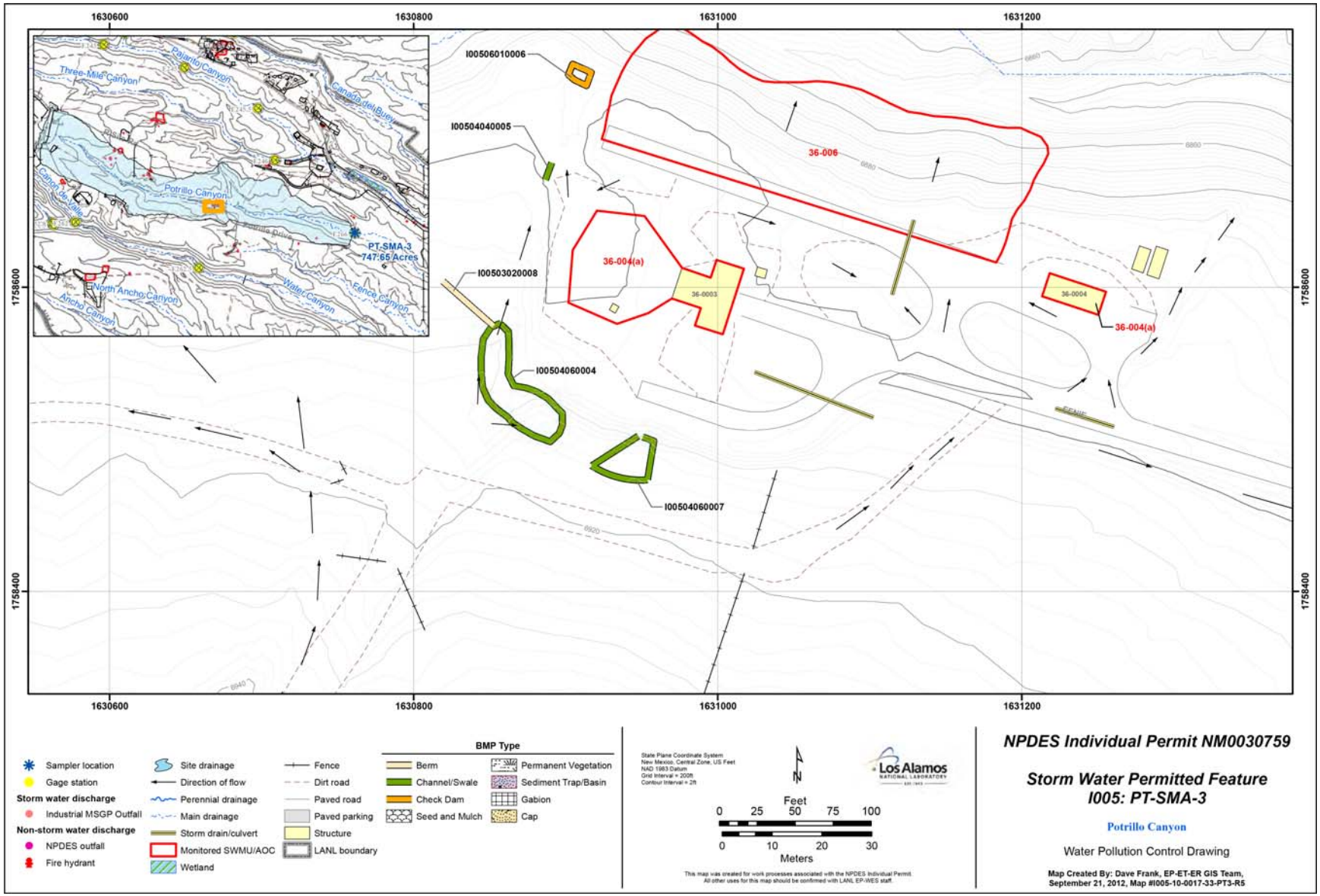


Figure 205-1 PT-SMA-3 location map

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 Lower Slobbovia Firing Site and the Skunk Works Firing Site, located in Potrillo Canyon, and three burn pits located on the mesa top next to Potrillo Canyon. The Lower Slobbovia Firing Site consists of two 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 involve HE. Less than 2% of the shots have 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-ft × 5.5-ft × 5-ft belowgrade structure that formerly 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 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. SWMU 36-004(d) is deferred for investigation per Table IV-2 of the Consent Order.

PT-SMA-4.2, Permanent Vegetation, I00702020006 (photo ID 7596-5r)

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	
I00702010001	Established Vegetation - Grasses and Shrubs			X		CB
I00702020006	Established Vegetation - Forested/Needle Cast			X		CB
I00703120007	Berms - Rock		X		X	B
I00704040005	Channel/Swale - Culvert	X		X		CB
I00704060002	Channel/Swale - Riprap		X	X		CB
I00704060003	Channel/Swale - Riprap	X		X		CB
I00706010004	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

206.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at PT-SMA-4.2 during the 2012 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 206-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22926	04-27-2012
Storm Rain Event	BMP-25016	07-16-2012
Storm Rain Event	BMP-27102	08-28-2012
Storm Rain Event	BMP-27522	09-20-2012

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

Table 206-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25781	Installed low rock berm I00703120007 along edge of firing pad to the north of existing riprap -0002, across low area.	08-09-2012	24 day(s)	Maintenance conducted as soon as practicable.
BMP-27102	Picked up and disposed of debris.	08-28-2012	0 day(s)	Maintenance conducted upon inspection.

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 206-4 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 36-004(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

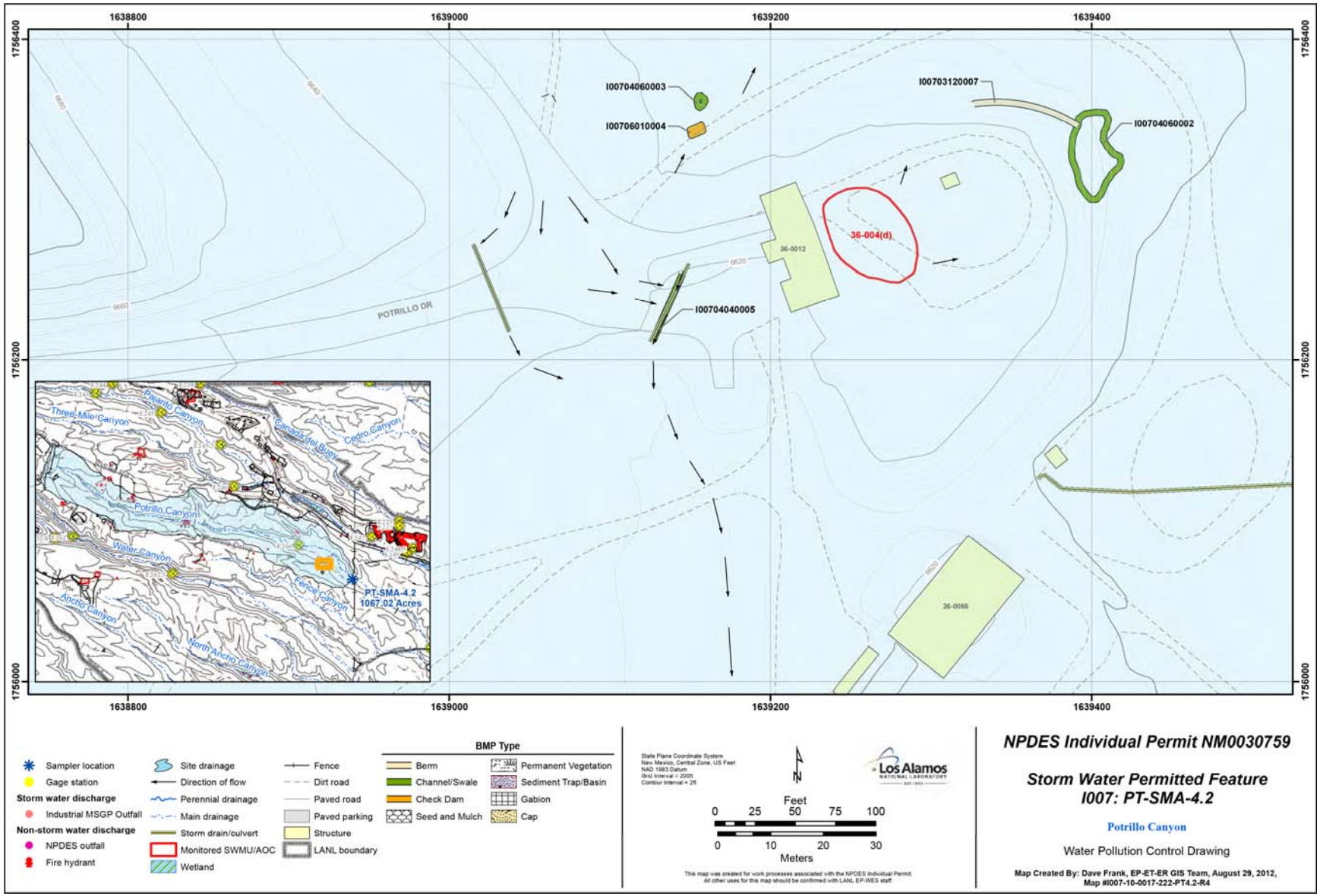


Figure 206-1 PT-SMA-4.2 location map

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 magazine (structure 16-63) at TA-16. The magazine was a 24 ft × 26 ft × 9 ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 and removed in 1998. This SWMU was originally designated as part of SWMU 16-017, a group of 24 structures in central TA-16. In 1999, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds.

SWMU 16-026(v) is an outfall that served decommissioned analytical chemistry laboratory building 16-460 at TA-16. The outfall is located approximately 60 ft southeast of the building. The outfall was NPDES-permitted (05A072) and received effluent from a sump [SWMU 16-003(c)], building floor drains, steam-cup drains, sink drains, and a drinking fountain. The outfall has been plugged and no longer receives effluent. It was removed from the NPDES permit effective September 19, 1997. Potential contaminants associated with industrial materials historically managed at this site are metals, explosive compounds, cyanide, VOCs, and semivolatile organic compounds (SVOCs).

SWMU 16-026(c2) 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. Potential contaminants associated with industrial materials historically managed at this site are metals, VOCs, and SVOCs.

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.

The Site boundaries for SWMUs 16-026(v) and 16-026(c2) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 207-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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).

Table 207-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00102010005	Established Vegetation - Grasses and Shrubs			X		CB
W00102020004	Established Vegetation - Forested/Needle Cast			X		CB
W00104060001	Channel/Swale - Rip Rap	X		X		CB
W00104060011	Channel/Swale - Rip Rap	X		X		CB
W00106010002	Check Dam - Rock		X		X	CB
W00106010003	Check Dam - Rock		X		X	CB
W00106010008	Check Dam - Rock		X		X	CB
W00106010009	Check Dam - Rock		X		X	CB
W00106010010	Check Dam - Rock		X		X	CB

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

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

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 and 1410 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 50.7 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(j)-99: Potential contaminants associated with industrial materials historically managed at this Site are explosive compounds.

- Consent Order sampling has not been performed at SWMU 16-017(j)-99. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

In summary, aluminum and alpha-emitting radionuclides are not associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of aluminum above MTAL and adjusted gross alpha above ATAL in storm water.

SWMU 16-026(c2): Potential contaminants associated with industrial materials historically managed at this Site are metals, VOCs, and SVOCs.

- Consent Order sampling has not been performed at SWMU 16-026(c2). No investigations were conducted at the Site before the Consent Order went into effect in 2005.

In summary, alpha-emitting radionuclides are not associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water. Aluminum may have been associated with industrial materials managed at the Site, but no analysis of aluminum has been performed at the Site; thus, it is not known if the Site is a source of aluminum observed above MTAL in storm water.

SWMU 16-026(v): Potential contaminants associated with industrial materials historically managed at this site are metals, explosive compounds, cyanide, VOCs, and SVOCs.

- Consent Order sampling has not been performed at SWMU 16-026(v). Aluminum was detected above BV in soil samples collected from SWMU 16-026(v) during the 1995 RFI. The maximum detected concentration of aluminum was 1.1 times BV.
- RFI samples were not analyzed for radionuclides because they were not chemicals of potential concern at this Site.

In summary, alpha-emitting radionuclides are not associated with industrial materials historically managed at this Site. Aluminum may have been associated with industrial materials managed at the Site but was detected only slightly above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL and adjusted gross alpha above ATAL in storm water.

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 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 2011 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 Annual Report.

207.4 Inspections and Maintenance

RG253 recorded seven storm events at W-SMA-1 during the 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21632	03-28-2012
Annual Erosion Evaluation	COMP-23473	03-28-2012
Storm Rain Event	BMP-23522	05-15-2012
Storm Rain Event	BMP-24689	07-11-2012
Storm Rain Event	BMP-25267	07-18-2012
Storm Rain Event	BMP-25846	08-08-2012
Storm Rain Event	BMP-26669	08-30-2012
Storm Rain Event	BMP-28756	10-18-2012
Remediation Construction	COMP-30558	12-21-2012

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

Table 207-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23522	Removed debris.	05-15-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-23592	Built up and extended riprap W00104060011.	05-24-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-26053	Added rock and rebuilt riprap W00104060001.	08-06-2012	19 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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-017(j)-99	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-08-2011
SWMU 16-026(c2)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-08-2011
SWMU 16-026(v)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-08-2011

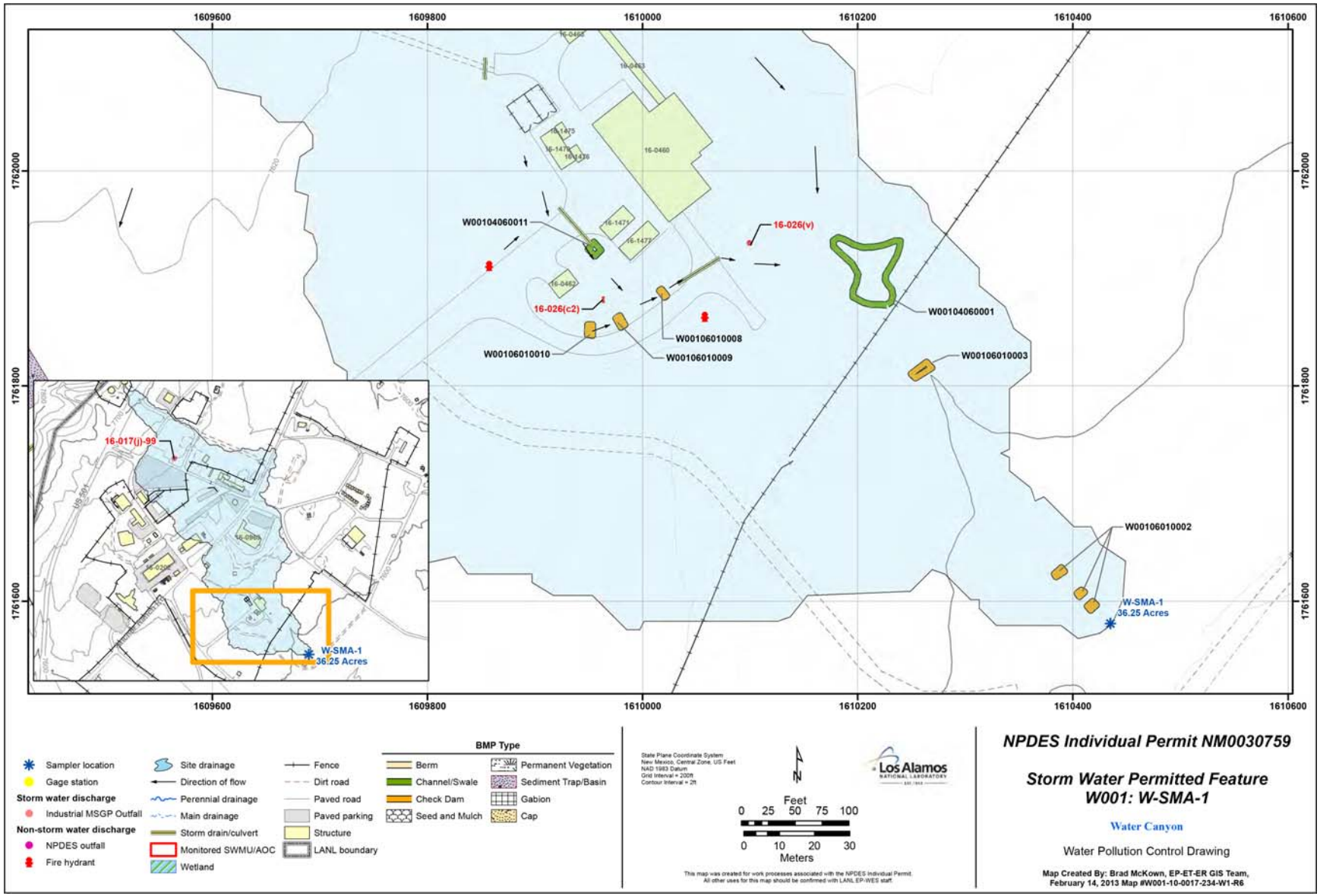
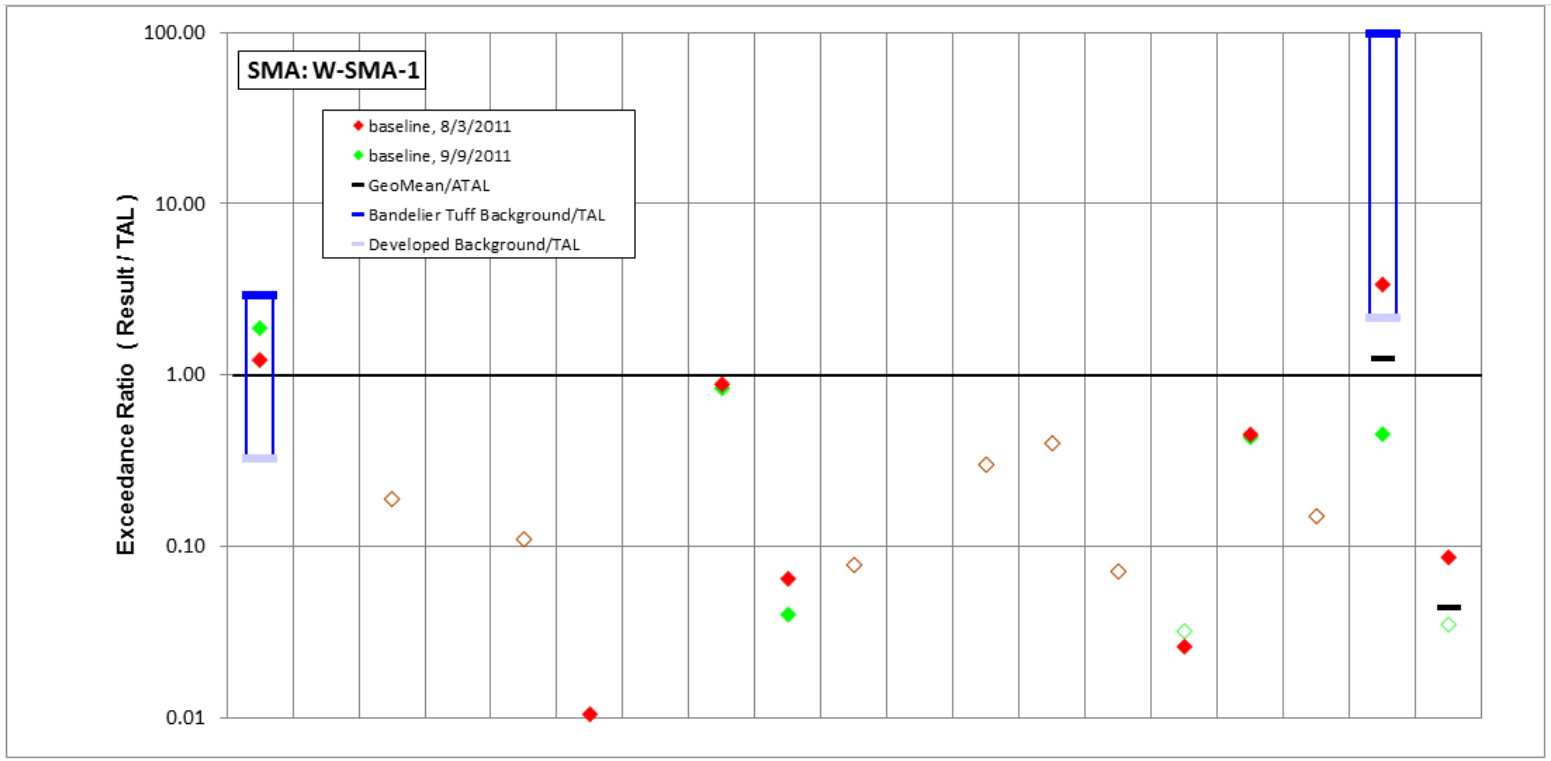


Figure 207-1 W-SMA-1 location map



	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
9/9/2011 result	**1410**	*1*	*1.7*	*15*	*0.11*	*2*	3.7	3.6	0.68	*0.06*	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	*0.078*	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	*0.06*	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	*0.078*	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 machine shop building 16-202 at TA-16. The outfall is located approximately 135 ft southeast of building 16-202 and daylights in the drainage ditch along Anchor Ranch Road. The outfall received discharge from an oil/water separator, which consisted of a 3 ft × 3 ft × 3 ft cement pit located below-floor-level. The separator was installed in 1952, when building 16-202 was built, and remains in place. The separator ceased to be used after 1977. Potential contaminants associated with industrial materials historically managed at this site are metals, solvents, and petroleum products.

SWMU 16-028(d) is a formerly NPDES-permitted outfall (04A083) located at TA-16 approximately 80 ft southeast of decommissioned building 16-202. The outfall formerly served decommissioned machine shop 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 only receives storm water from the building's roof drains. The outfall was removed from the NPDES permit effective September 19, 1997. Potential contaminants associated with industrial materials historically managed at this site are metals, solvents, and petroleum products.

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.

The Site boundaries for SWMUs 16-026(b2) and 16-028(d) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 208-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

208.2 Control Measures

The majority of 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	
W00202010001	Established Vegetation - Grasses and Shrubs			X		CB
W00203010015	Berms - Earthen		X		X	EC
W00203060004	Berms - Straw Wattles	X			X	CB
W00203060005	Berms - Straw Wattles	X			X	CB
W00204060007	Channel/Swale - Rip Rap		X	X		CB
W00204070002	Channel/Swale - Vegetated Swale		X	X		CB
W00204070003	Channel/Swale - Vegetated Swale		X	X		CB
W00205020013	Sediment Traps and Basins - Sediment Basin		X		X	EC
W00205020014	Sediment Traps and Basins - Sediment Basin		X		X	EC
W00206010008	Check Dam - Rock	X			X	CB
W00206010009	Check Dam - Rock	X			X	CB
W00206010010	Check Dam - Rock		X		X	CB
W00206010011	Check Dam - Rock		X		X	CB
W00206010016	Check Dam - Rock		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 (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): Potential contaminants associated with industrial materials historically managed at this site are metals, solvents, and petroleum products.

- Consent Order sampling has not been performed at SWMU 16-026(b2). No investigations were conducted at SWMU 16-026(b2) before the Consent Order went into effect in 2005.

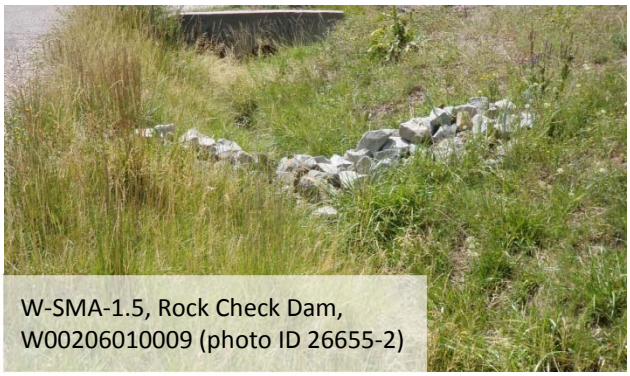
In summary, copper and zinc may have historically been used in the building 16-0202 machine shop and, therefore, may be associated with industrial materials historically managed at this Site. Based on site history, the Site may be a source of copper and zinc above MTALs in storm water. Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Based on site history, the site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 16-028(d): Potential contaminants associated with industrial materials historically managed at this site are metals, solvents, and petroleum products.

- Consent Order sampling has not been performed at SWMU 16-028(d). No investigations were conducted at SWMU 16-028(d) before the Consent Order went into effect in 2005.

In summary, copper and zinc may have historically been used in the building 16-0202 machine shop and, therefore, may be associated with industrial materials historically managed at this site. Based on site history, the Site may be a source of copper and zinc above MTALs in storm water. Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23523	05-17-2012
Annual Erosion Evaluation	COMP-23474	06-07-2012
Storm Rain Event	BMP-24690	07-11-2012
Storm Rain Event	BMP-25268	07-19-2012
Construction	COMP-26101	08-02-2012
Storm Rain Event	BMP-25847	08-08-2012
Construction	COMP-26382	08-09-2012
Construction	COMP-26513	08-15-2012
Construction	COMP-26653	08-20-2012
Enhanced Control Measure Verification	BMP-26655	08-21-2012
Storm Rain Event	BMP-26670	08-30-2012
Storm Rain Event	BMP-28757	10-18-2012

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

Table 208-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23523	Picked up trash that was in channel. Replaced Straw Wattles W00203060004 and -0005. Repositioned rock on Rock Check Dams W00206010008, -0009, and -0010.	05-17-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-27280	Riprap installed in small gully forming approx 10 ft south of building 16-0203. This application will not be a tracked control measure.	09-11-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29097	Repaired erosion control matting on berm portion of sediment basin W00205020014.	10-31-2012	13 day(s)	Maintenance conducted in timely manner.

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 208-4 Compliance Status during 2012

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

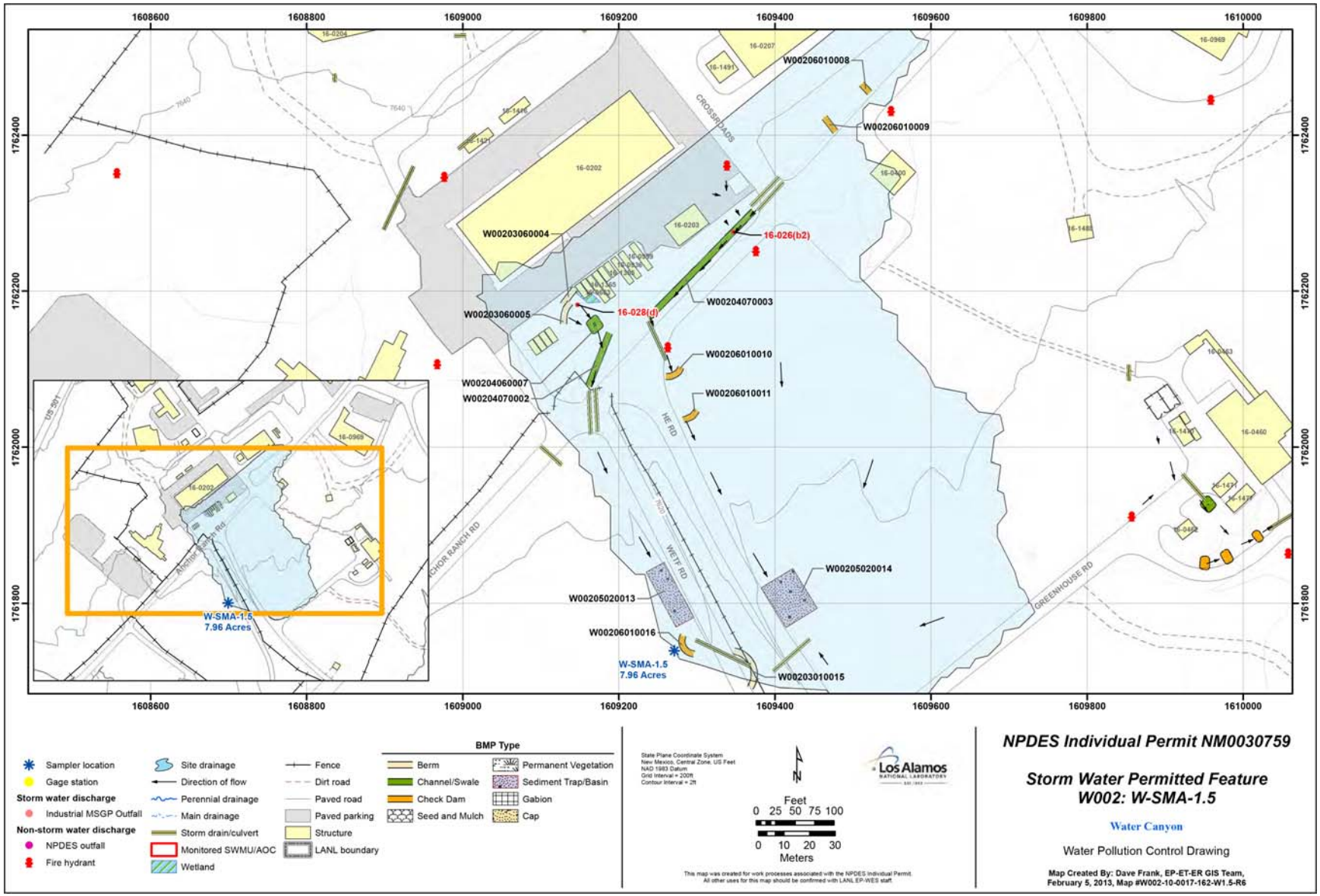
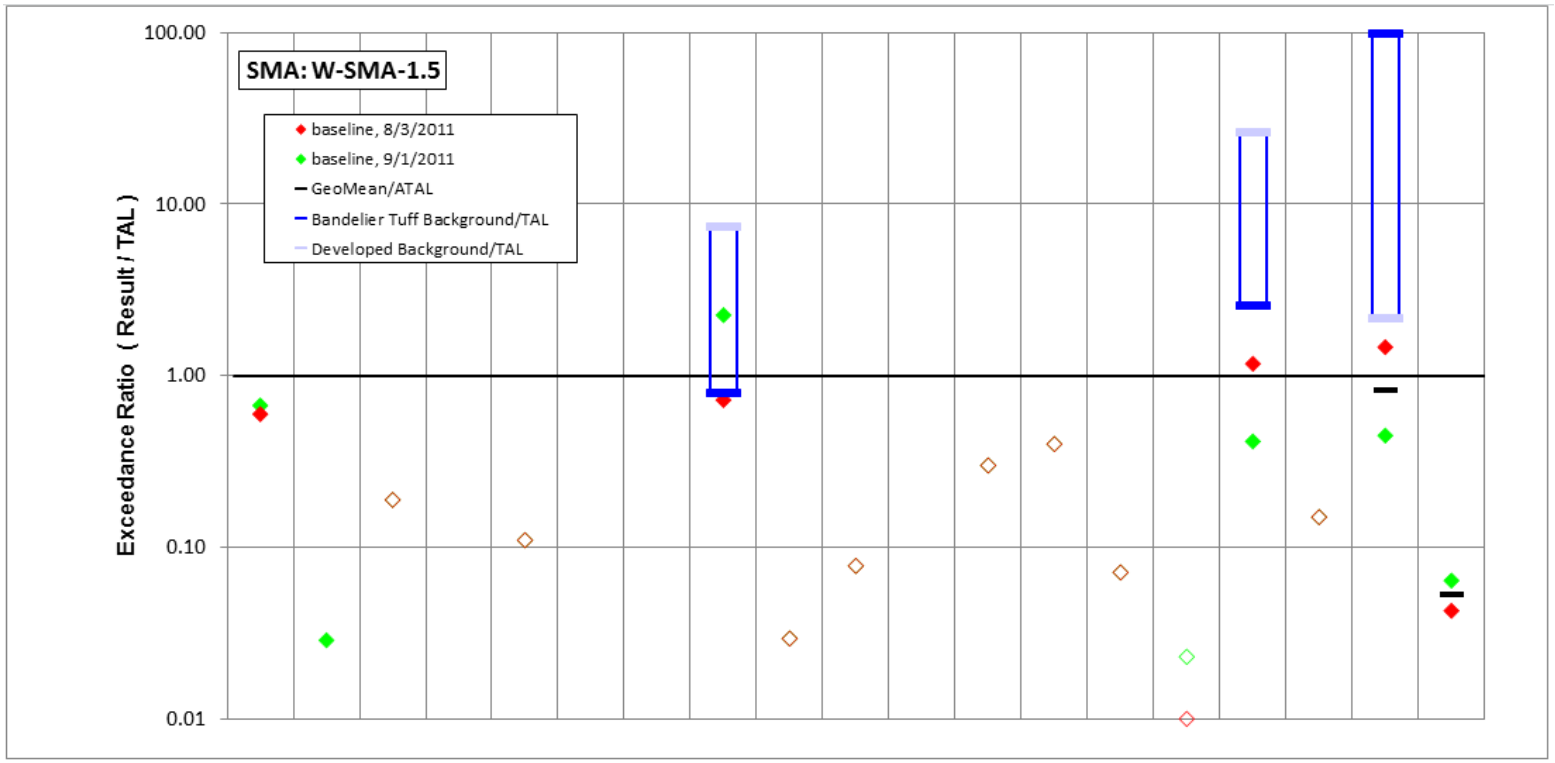


Figure 208-1 W-SMA-1.5 location map



	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*	*0.06*	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*	*0.078*	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*	*0.06*	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*	*0.078*	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 outfall drainline was plugged but left in place. The outfall was removed from the NPDES permit effective September 19, 1997. Potential contaminants associated with industrial materials historically managed at this site are metals, VOCs, and SVOCs.

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.

The Site boundary for SWMU 16-028(e) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 209.1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W00302010001	Established Vegetation - Grasses and Shrubs			X		CB
W00302020002	Established Vegetation - Forested/Needle Cast			X		CB
W00303010007	Berms - Earthen		X		X	EC
W00303010008	Berms - Earthen		X		X	EC
W00306010004	Check Dam - Rock		X		X	CB
W00306010005	Check Dam - Rock		X		X	CB
W00306010009	Check Dam - Rock		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): Potential contaminants associated with industrial materials historically managed at this site are metals, VOCs, and SVOCs.

- Aluminum—Consent Order sampling has not been performed at SWMU 16-028(e). Aluminum was not detected above BV in RFI soil samples collected in 1995.

In summary, aluminum was not detected above BV in sampling previously performed at the Site. Based on previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water.

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 2012 season. These rain events triggered six 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 2012

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23524	05-16-2012
Annual Erosion Evaluation	COMP-23480	06-06-2012
Storm Rain Event	BMP-24691	07-11-2012
Storm Rain Event	BMP-25269	07-18-2012
Storm Rain Event	BMP-25848	08-08-2012
Construction	COMP-26654	08-20-2012
Enhanced Control Measure Verification	BMP-26805	08-23-2012
Storm Rain Event	BMP-26671	08-30-2012
Storm Rain Event	BMP-28758	10-18-2012

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

Table 209-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23524	Repositioned rock on Rock Check Dam W00306010005.	05-16-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-26054	Rebuilt and extended rock check dam W00306010004.	08-06-2012	19 day(s)	Maintenance conducted as soon as practicable.

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 209-4 Compliance Status during 2012

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

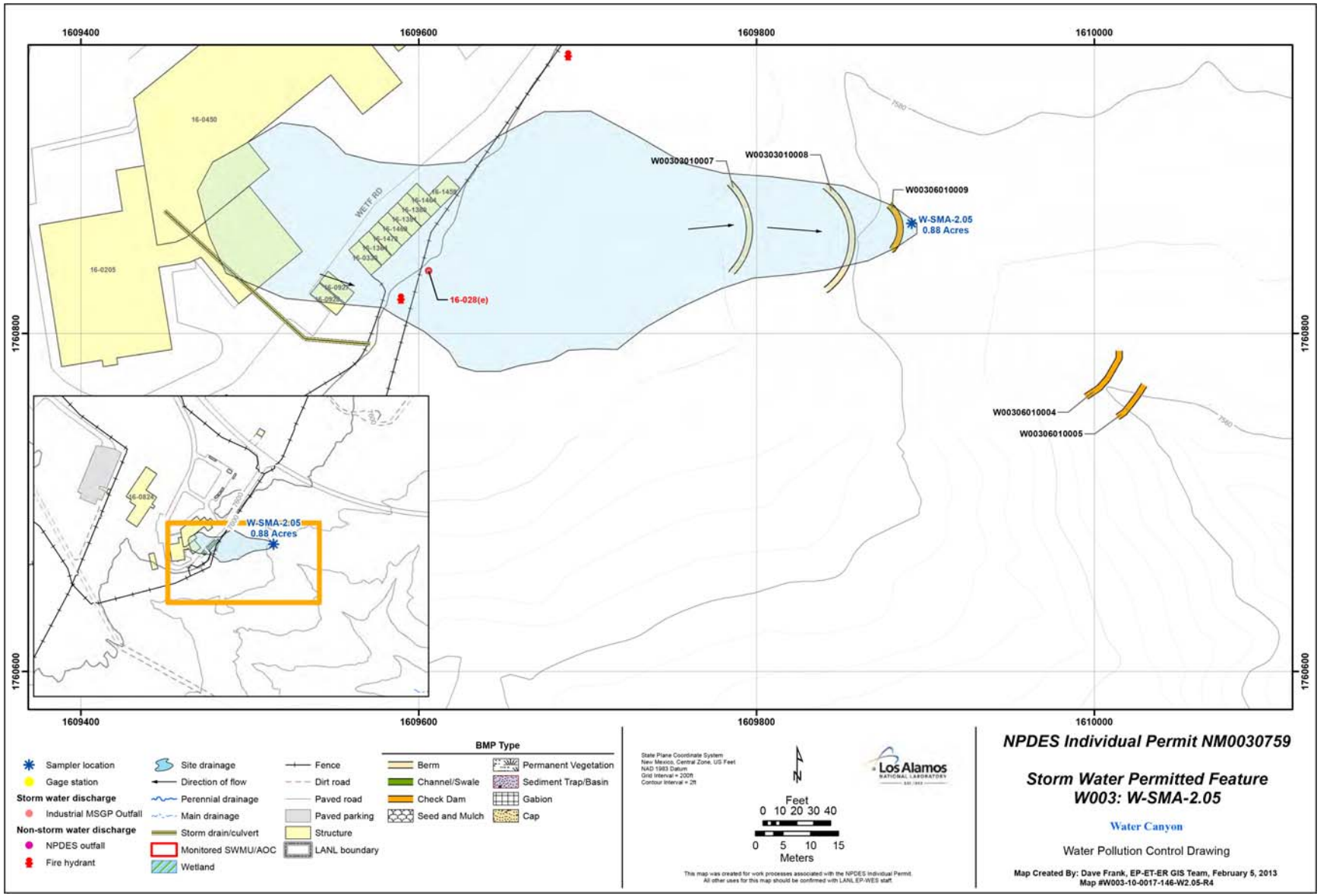
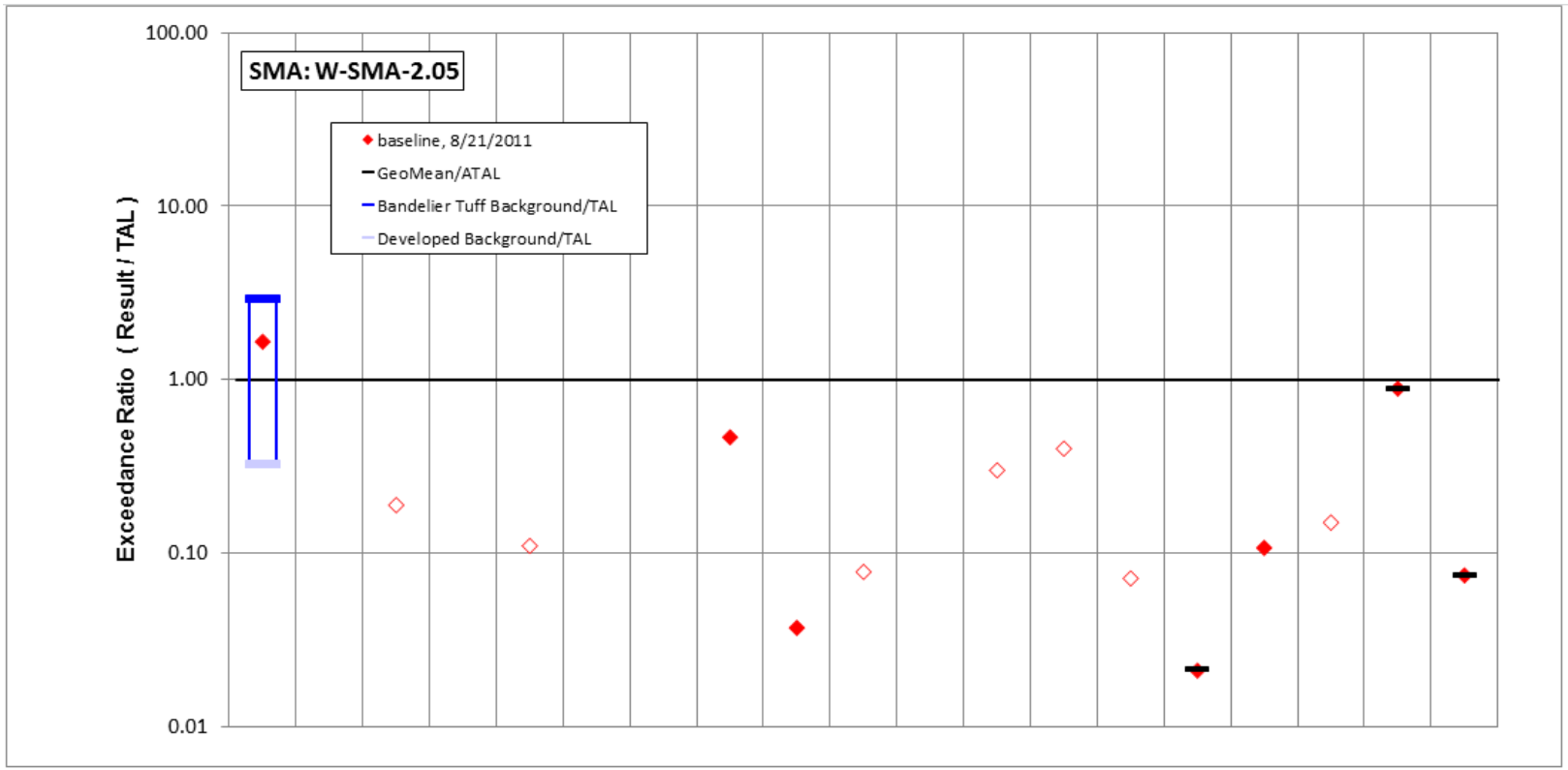


Figure 209-1 W-SMA-2.05 location map



	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	*0.06*	*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	*0.078*	*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 an outfall at TA-16 that serves building 16-411. The drainline to the outfall is a 4-in.-diameter VCP that exits building 16-411 on its west side and turns south to terminate at its discharge point on the hill slope of Water Canyon. The discharge point is located south of a double security fence at the edge of Water Canyon. Building 16-411 was built in 1951 and used to assemble 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 the other drains were either plugged or rerouted to a holding tank.

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.

The Site boundary for SWMU 16-026(y) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 210-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W00402010002	Established Vegetation - Grasses and Shrubs			X		CB
W00403060004	Berms - Straw Wattles	X			X	CB
W00403060005	Berms - Straw Wattles	X			X	CB
W00403060006	Berms - Straw Wattles	X			X	CB
W00404060003	Channel/Swale - Rip Rap		X	X		CB
W00406010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

210.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-3.5 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23481	06-06-2012
Storm Rain Event	BMP-24903	07-17-2012
Storm Rain Event	BMP-28214	10-10-2012

There were no maintenance activities conducted at W-SMA-3.5 in 2012.

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 210-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-026(y)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-3.5, Rock Check Dam, W00406010007 (photo ID 8794-3r)

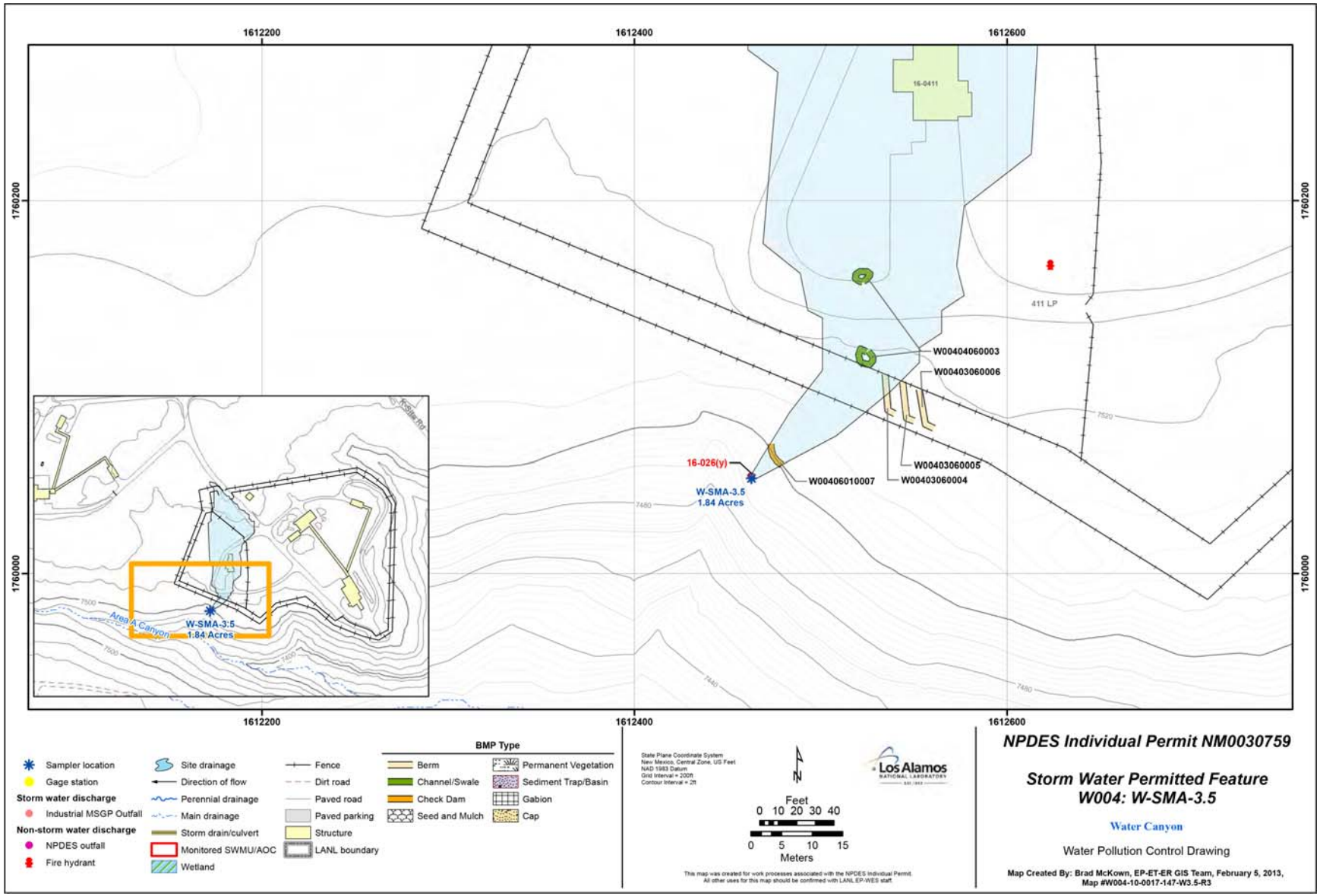


Figure 210-1 W-SMA-3.5 location map

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 outfall that served assembly building 16-410 at TA-16. The concrete sump is located on the exterior southeast wall of the building and is 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, which is located approximately 320 ft southeast of the building. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. The outfall was NPDES-permitted (05A053) and was removed from the permit effective January 14, 1998.

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	
W00502010001	Established Vegetation - Grasses and Shrubs			X		CB
W00503060002	Berms - Straw Wattles		X		X	CB
W00503060003	Berms - Straw Wattles	X			X	CB
W00503060004	Berms - Straw Wattles	X			X	CB
W00503060005	Berms - Straw Wattles	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

211.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-4.1 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23482	06-06-2012
Storm Rain Event	BMP-24904	07-17-2012
Storm Rain Event	BMP-28215	10-09-2012

There were no maintenance activities conducted at W-SMA-4.1 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-003(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

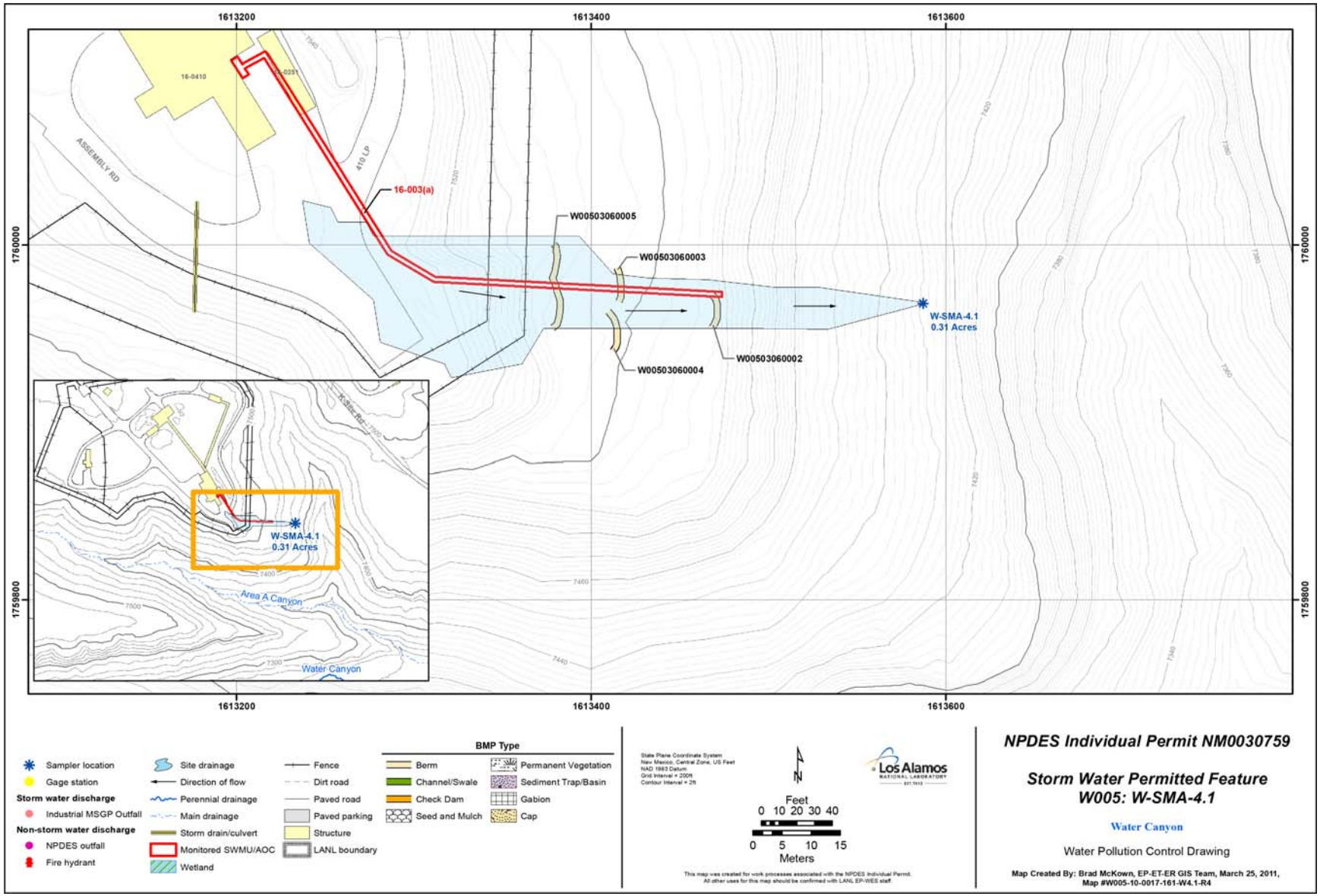


Figure 211-1 W-SMA-4.1 location map

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. Potential contaminants associated with industrial materials historically managed at the site are explosive compounds, barium, and solvents.

SWMU 16-003(f) consists of two inactive HE sumps at TA-16 associated with building 16-304. The sumps are located on the exterior northeast side of the building. Constructed between 1951 and 1953, building 16-304 was used to develop and fabricate plastic components for the weapons program. Chemical solvents were used in the building. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

SWMU 16-026(b) is an outfall located to the east of a rest house (building 16-307). The outfall formerly received discharges from two HE sumps [SWMU 16-029(a)] located near the exterior southeast wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990–1991. Used to store molds and materials for plastics development, the rest house also previously housed a solvent disassembly tank used to remove HE from test devices. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

SWMU 16-026(c) is an outfall located at TA-16 to the south of a rest house (building 16-305). The outfall formerly received discharges from two HE sumps [SWMU 16-029(b)] located near the exterior southwest wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990–1991. Used to store chemicals and solvents for plastics development and production, the rest house was also used for filament winding of developmental weapons components. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

SWMU 16-026(d) is an outfall located to the southeast of a rest house (building 16-303). The outfall formerly received discharges from two HE sumps [SWMU 16-029(c)] located on the exterior southwest wall of the rest house. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990–1991. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds.

SWMU 16-026(e) is an 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. The sumps were plugged in 1990–1991. 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. Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

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.

The Site boundaries for SWMUs 16-001(e) and 16-003(f) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 212-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W00602010009	Established Vegetation - Grasses and Shrubs			X		CB
W00603060001	Berms - Straw Wattles	X			X	CB
W00603060019	Berms - Straw Wattles	X			X	B
W00604040011	Channel/Swale - Culvert	X		X		CB
W00604060006	Channel/Swale - Rip Rap	X		X		CB
W00604060007	Channel/Swale - Rip Rap	X		X		CB
W00606010003	Check Dam - Rock		X		X	CB
W00606010012	Check Dam - Rock		X		X	CB
W00606010013	Check Dam - Rock		X		X	CB
W00606010014	Check Dam - Rock		X		X	CB
W00606010015	Check Dam - Rock		X		X	CB
W00606010017	Check Dam - Rock		X		X	CB
W00606010021	Check Dam - Rock		X		X	B
W00606010022	Check Dam - Rock		X		X	B
W00606010023	Check Dam - Rock		X		X	B
W00606010024	Check Dam - Rock		X		X	B
W00606010025	Check Dam - Rock	X			X	B
W00606010026	Check Dam - Rock	X			X	B
W00606010027	Check Dam - Rock	X			X	B
W00606010028	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

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): Potential contaminants associated with industrial materials historically managed at the site are explosive compounds, barium, and solvents.

- Copper—Copper was detected above BVs in soil samples collected from SWMU 16-001(e) during the 2010 Consent Order investigation. The maximum detected concentration was 1.9 times BV.

In summary, copper was detected only slightly above BV and is not known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL in storm water.

SWMU 16-003(f): Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

- Copper—Copper was detected above BV in one soil sample collected from SWMU 16-003(f) during the 2010 Consent Order investigation. The maximum detected concentration was 1.1 times BV.

In summary, copper was detected only slightly above BV and is not known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL in storm water.

SWMU 16-026(b): Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

- Copper—Copper was not detected above BV in any of the soil samples collected from SWMU 16-026(b) during the 2010 Consent Order investigation.

In summary, copper was not detected above BV in samples collected during the Consent Order investigation and is not known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL in storm water.

SWMU 16-026(c): Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

- Copper—Copper was detected above BVs in soil samples collected from SWMU 16-026(c) during the 2010 Consent Order investigation. The maximum detected concentration was 3.8 times BV.

In summary, copper was detected above BV but is not known to be associated with industrial materials historically managed at the Site. Based on site history (an inactive HE sump), the Site is an unlikely source of copper above MTAL in storm water.

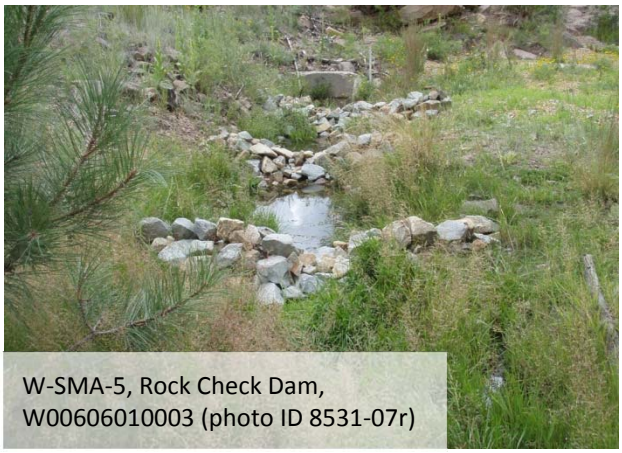
SWMU 16-026(d): Potential contaminants associated with industrial materials historically managed at this site are explosive compounds.

- Copper—Copper was detected above BVs in soil samples collected from SWMU 16-026(d) during the 2010 Consent Order investigation. The maximum detected concentration was 4.5 times BV.

In summary, copper was detected above BV but is not known to be associated with industrial materials historically managed at the Site. Based on site history (inactive HE sump), the Site is an unlikely source of copper above MTAL in storm water.

SWMU 16-026(e): Potential contaminants associated with industrial materials historically managed at this site are explosive compounds and solvents.

- Copper—Copper was detected above BVs in soil samples collected from SWMU 16-026(e) during the 2010 Consent Order investigation. The maximum detected concentration was 23,605 times the BV in one tuff sample collected from a depth interval of 8 to 8.5 ft below ground surface. The maximum detected concentration in a surface or near-surface sample was 1.04 times BV.



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

In summary, copper is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above BV in surface or near surface samples. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL in storm water.

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 three storm events at W-SMA-5 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23483	06-06-2012
Storm Rain Event	BMP-24905	07-17-2012
Visual	COMP-27865	09-24-2012
Storm Rain Event	BMP-28216	10-10-2012

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

Table 212-3 Maintenance during 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23999	Removed plastic in channel below culvert outlet near rock check dam W00606010003.	06-13-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-25516	Extended both ends of rock check dam W00606010012.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25517	Extended both ends of rock check dam W00606010013.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25518	Extended east end of rock check dam W00606010014.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25519	Extended east end of rock check dam W00606010015.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25520	Extended east end of rock check dam W00606010017.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25521	Installed new rock check dam W00606010028 in same location as rock check dam -0020, which was retired.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25522	Extended east end of rock check dam W00606010021.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25523	Extended east end of rock check dam W00606010022.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25524	Extended east end of rock check dam W00606010023.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25525	Extended east end of rock check dam W00606010024.	08-01-2012	15 day(s)	Maintenance conducted as soon as practicable.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-001(e)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-003(f)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(b)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(c)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(d)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(e)	Baseline Monitoring	Corrective Action Initiated	Initiated 09-18-2012

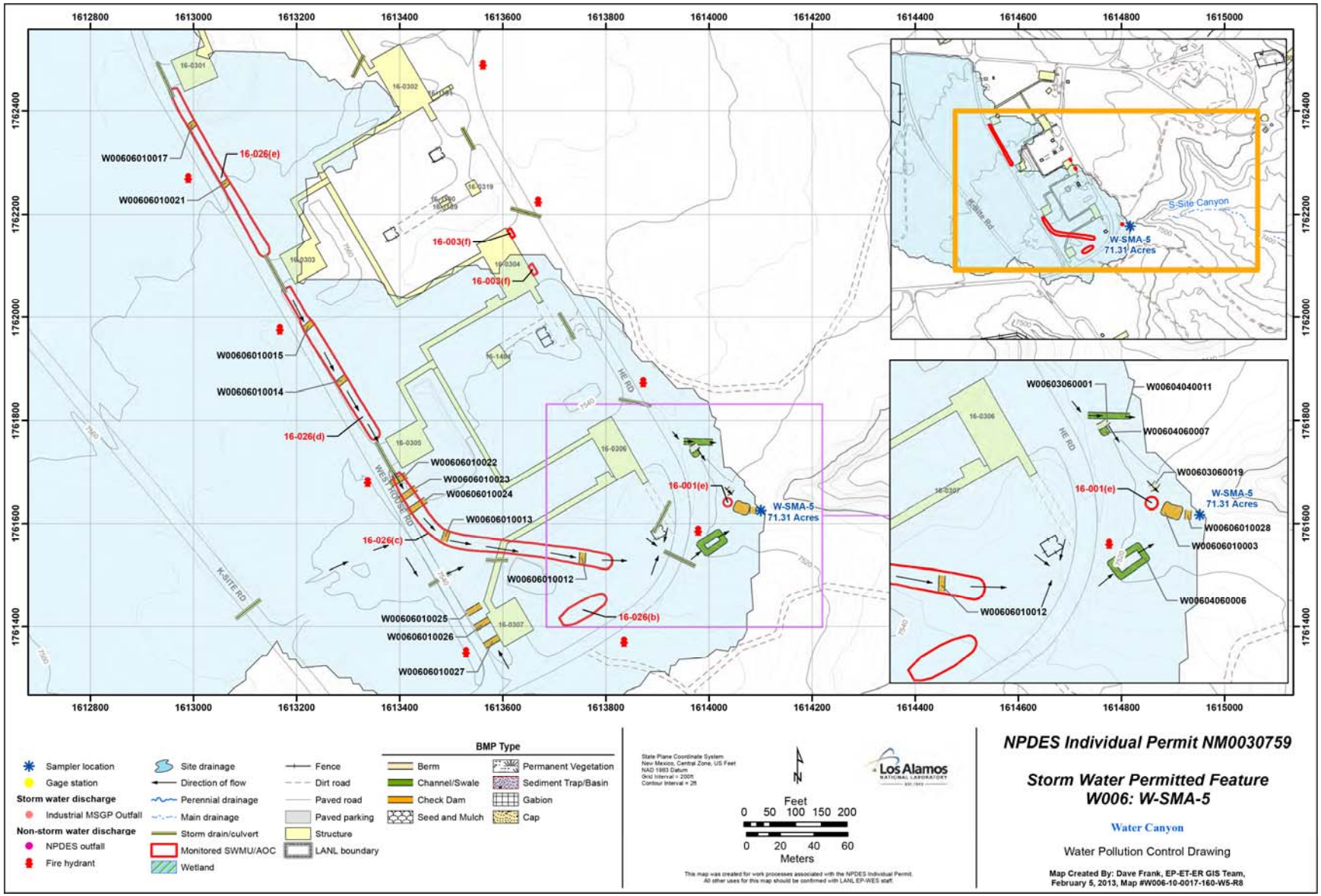
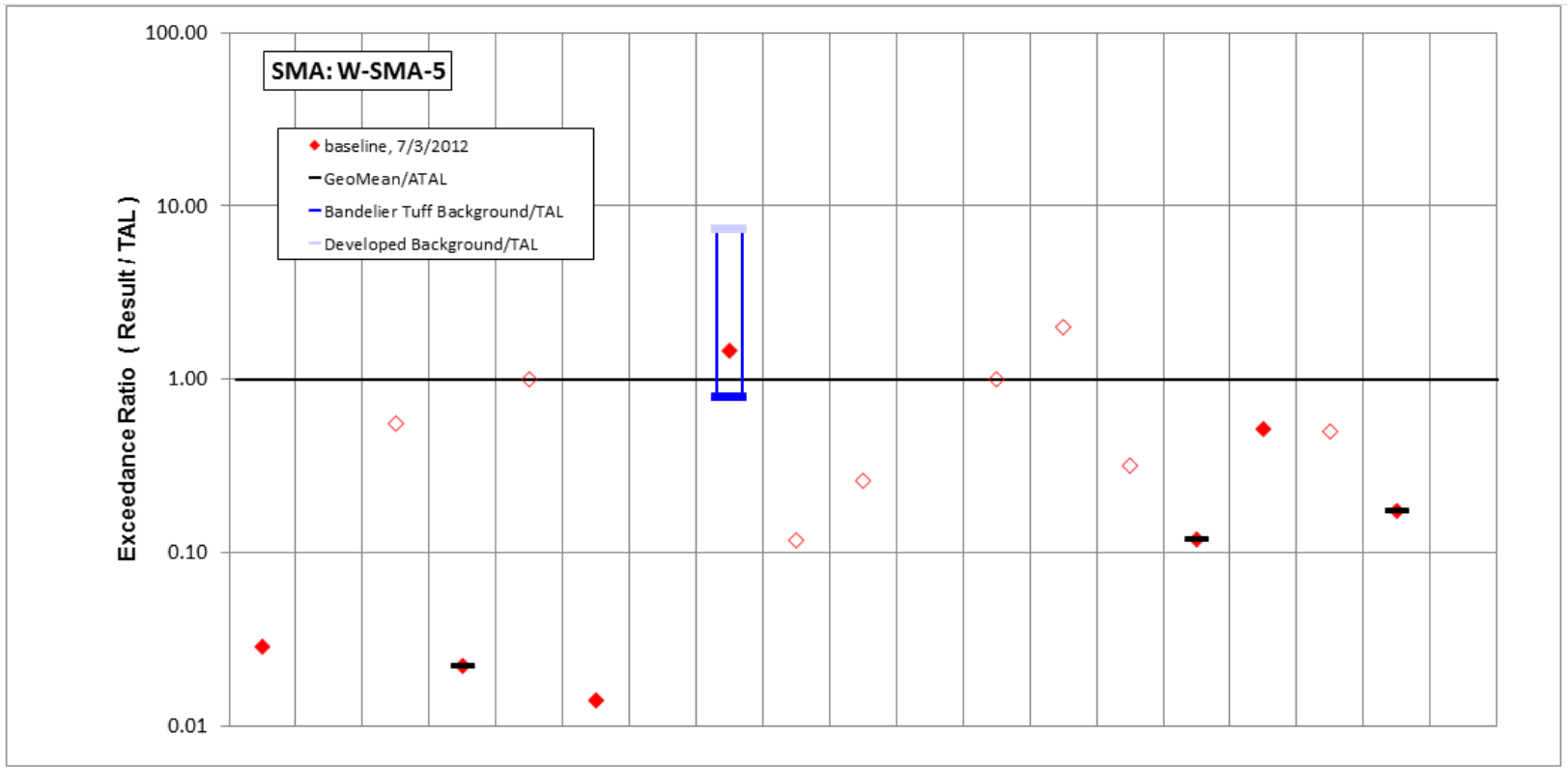


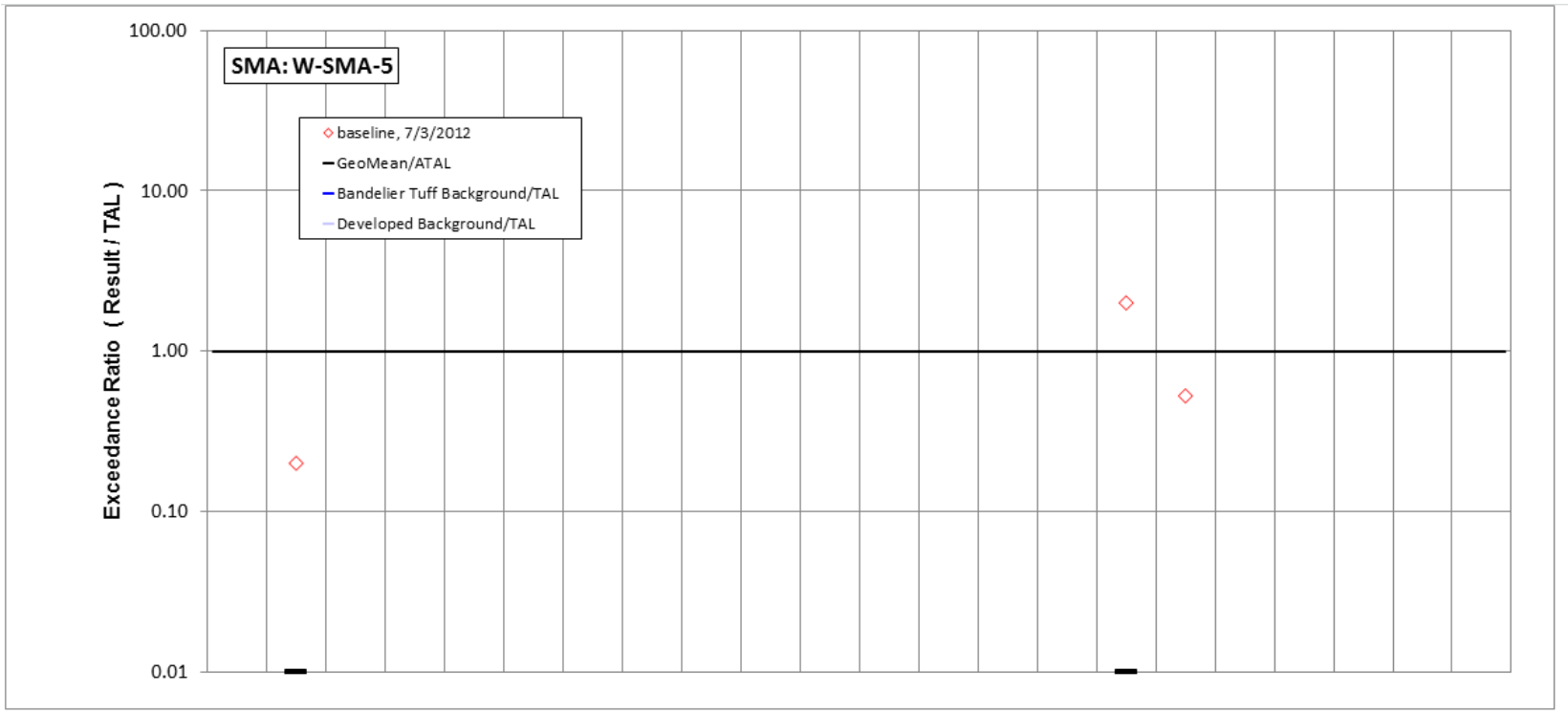
Figure 212-1 W-SMA-5 location map



	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*	0.53	*5*	***1***	*2*	11.9	21.7	*0.005*	2.61	*0.22*
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	*0.007*

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 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	
W00702010001	Established Vegetation - Grasses and Shrubs			X		CB
W00702020002	Established Vegetation - Forested/Needle Cast			X		CB
W00703060003	Berms - Straw Wattles		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

213.3 Storm Water Monitoring

For calendar year 2012, 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.

213.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-6 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23484	06-06-2012
Storm Rain Event	BMP-24906	07-17-2012
Storm Rain Event	BMP-28217	10-09-2012

There were no maintenance activities conducted at W-SMA-6 in 2012.

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 213-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 11-001(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-6, Permanent Vegetation, W00702020002 (photo ID 8795-2r)

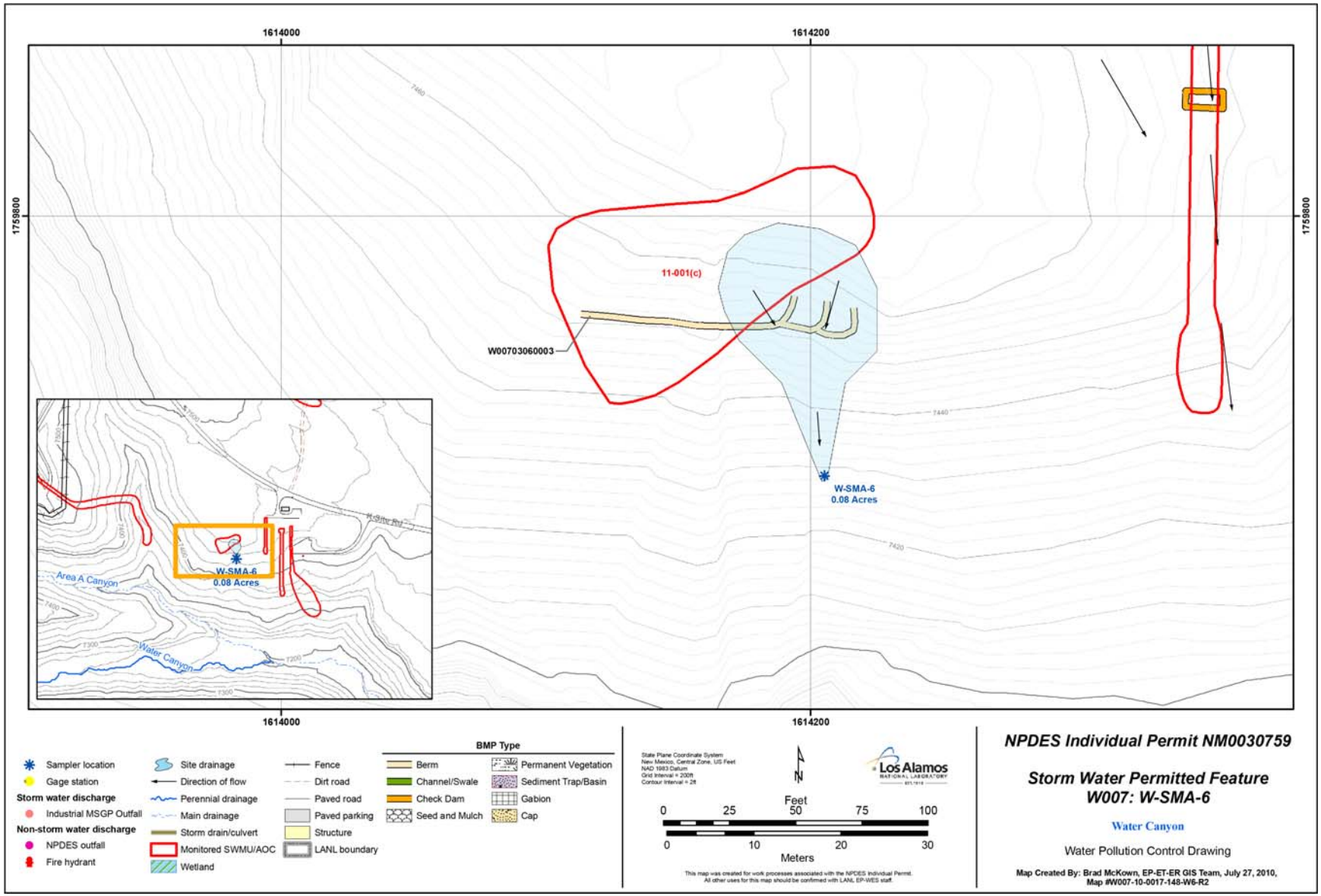


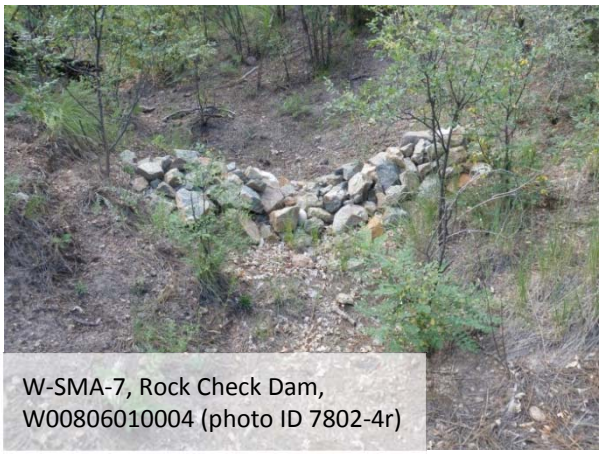
Figure 213-1 W-SMA-6 location map

214.0 W-SMA-7: SWMU 16-026(h2) and 16-029(e)

214.1 Site Descriptions

Two historical industrial activity areas are associated with W008, W-SMA-7: Sites 16-026(h2) and 16-029(e).

A recent review of the justification to include SWMU 16-026(h2) in the IP and review of the neighboring SWMUs identified a typographical error: in the Final Supplemental Information Submittal, Volume 1, an outfall receiving discharge from a sump associated with building 16-360 was identified as a proposed site for inclusion in the IP. The matching site descriptions in the 1990 SWMU Report and the Final Supplemental Information Submittal, Volume 1, make it clear that the intended SWMU was 16-029(e), not SWMU 16-026(h2). SWMU 16-029(e) is described as an "HE sump and formerly NPDES-permitted outfall" associated with building 16-360, while SWMU 16-026(h2) is described as four outfalls, including steam pit and roof drains, that are also associated with building 16-360. SWMU 16-029(e) is located within the current SMA boundary, and no changes to the SMA boundary are required. The sampler location will not change, and samples previously collected are representative of the SWMU 16-029(e). An explanation of the error will be incorporated in the IP renewal application.



W-SMA-7, Rock Check Dam, W00806010004 (photo ID 7802-4r)

SWMU 16-026(h2) consists of four outfalls at TA-16 that served HE equipment assembly building 16-360. The western outfall received discharge from a steam pit drain. The southern outfall received condensate from three floor drains. The remaining two outfalls are located to the east of the building and discharge storm water from roof drains. In the 1990s, the steam pit drain and floor drains were rerouted to the sanitary sewer system.

SWMU 16-029(e) consists of an HE sump and former NPDES-permitted outfall (05A159) at TA-16 that served building 16-360, which was used to package explosive components for storage or shipment. The sump is a 12 ft × 4 ft × 5 ft reinforced concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. In the 1990s, the sump outlet was plugged. The outfall was removed from the NPDES permit effective August 16, 1995. Potential contaminants associated with industrial materials historically managed at this Site are explosive compounds.

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	
W00802010002	Established Vegetation - Grasses and Shrubs			X		CB
W00802020009	Established Vegetation - Forested/Needle Cast			X		CB
W00803060010	Berms - Straw Wattles	X			X	CB
W00803060011	Berms - Straw Wattles	X			X	CB
W00803060012	Berms - Straw Wattles	X			X	CB
W00803060013	Berms - Straw Wattles	X			X	CB
W00806010001	Check Dam - Rock		X		X	CB
W00806010003	Check Dam - Rock		X		X	CB
W00806010004	Check Dam - Rock		X		X	CB

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

214.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-7 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23485	06-06-2012
Storm Rain Event	BMP-24907	07-17-2012
Storm Rain Event	BMP-28218	10-09-2012

There were no maintenance activities conducted at W-SMA-7 in 2012.

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 214-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-026(h2)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

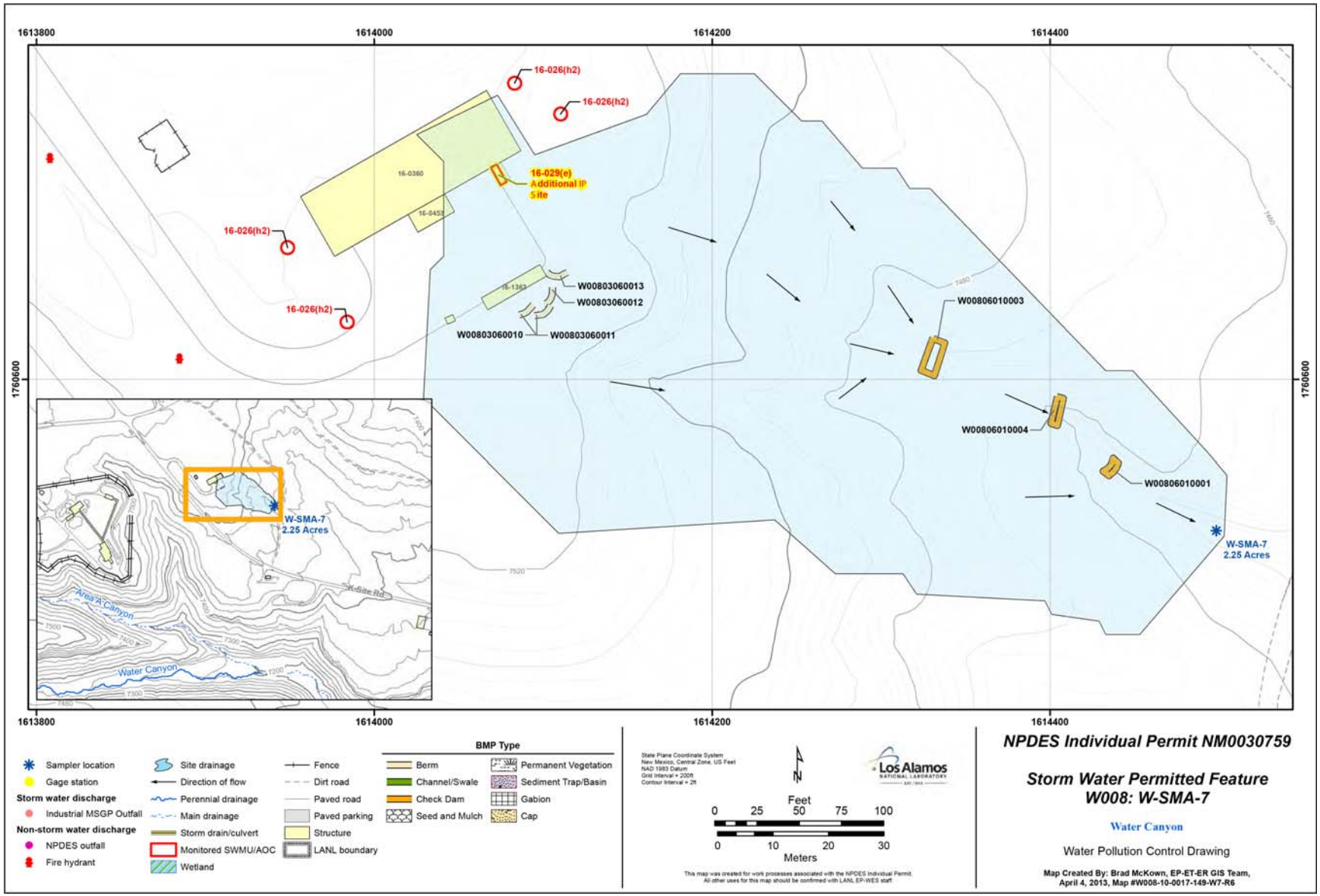


Figure 214-1 W-SMA-7 location map

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 during the Cerro Grande fire in 2000. The concrete foundation remains in place.

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.

The Site boundary for SWMU 16-031(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 215-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W00902010002	Established Vegetation - Grasses and Shrubs			X		CB
W00903010004	Berms - Earthen	X			X	CB
W00904060003	Channel/Swale - Rip Rap	X		X		CB
W00906010001	Check Dam - Rock	X			X	CB
W00906010005	Check Dam - Rock	X			X	CB
W00906010006	Check Dam - Rock	X			X	CB
W00906010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

215.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-7.8 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23486	06-06-2012
Storm Rain Event	BMP-24908	07-17-2012
Storm Rain Event	BMP-28219	10-09-2012

There were no maintenance activities conducted at W-SMA-7.8 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-031(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-7.8, Rock Check Dam, W00906010005 (photo ID 7801-4r)

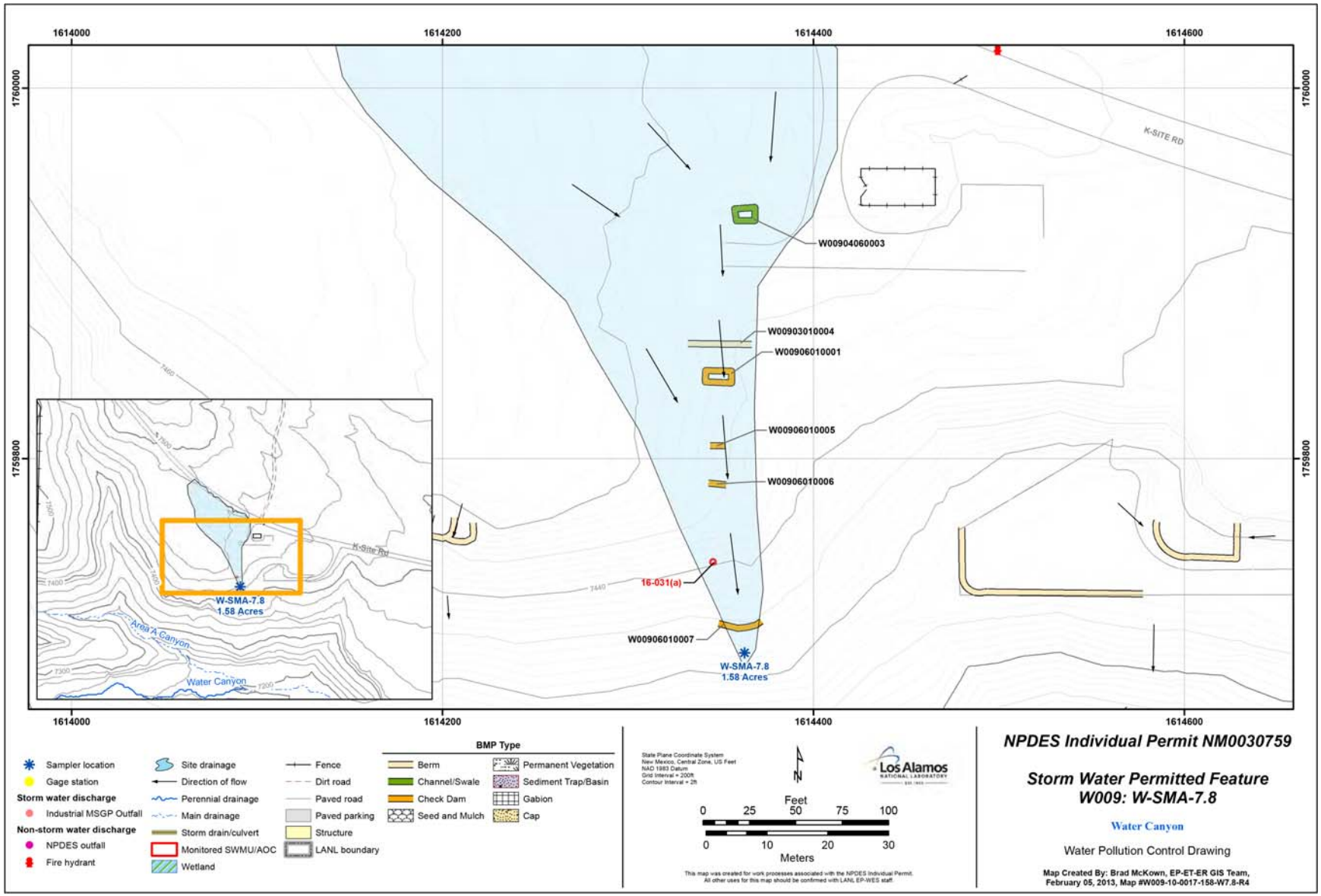


Figure 215-1 W-SMA-7.8 location map

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 a septic system located at TA-16, 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 that the septic tank discharged to a drain field. However, engineering drawings do not verify the existence of a drain field. 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, the tank was pumped regularly during the time building 16-370 remained operational.

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.

The Site boundary for SWMU 16-006(c) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 216-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W01002020002	Established Vegetation - Forested/Needle Cast			X		CB
W01006010003	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

216.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-7.9 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23487	06-06-2012
Storm Rain Event	BMP-24898	07-17-2012
Storm Rain Event	BMP-28209	10-09-2012

There were no maintenance activities conducted at W-SMA-7.9 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-006(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-7.9, Permanent Vegetation, W01002020002 (photo ID 8796-2r)

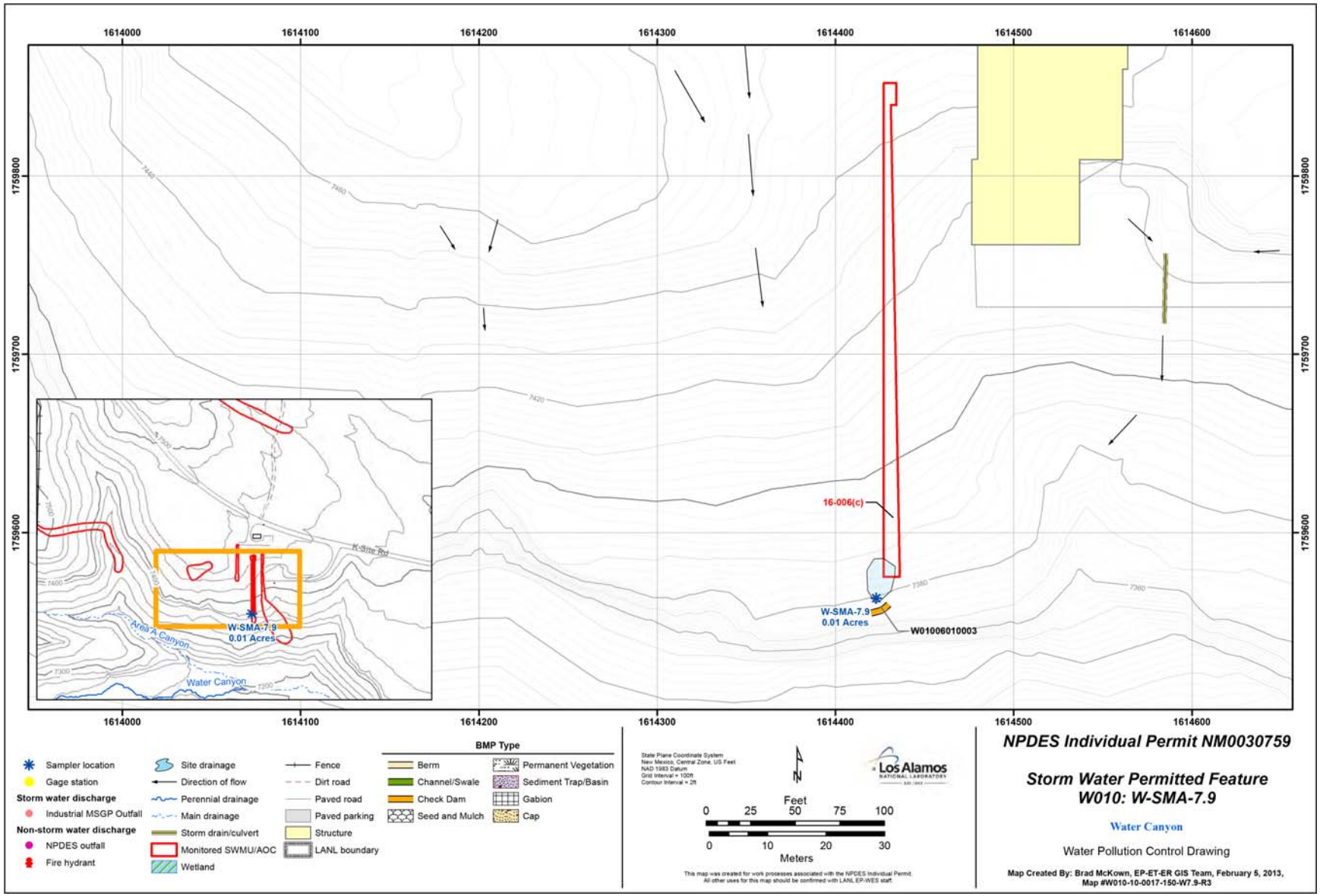


Figure 216-1 W-SMA-7.9 location map

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 at TA-16 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.

SWMU 16-028(b) is a formerly NPDES-permitted outfall (04A092) at TA-16 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. All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998.

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.

The Site boundaries for SWMUs 16-0016(g) and 16-028(b) has been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 217-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W01102010003	Established Vegetation - Grasses and Shrubs			X		CB
W01102020004	Established Vegetation - Forested/Needle Cast			X		CB
W01103010007	Berms - Earthen	X			X	B
W01103020008	Berms - Base Course	X			X	B
W01106010002	Check Dam - Rock		X		X	CB
W01106010006	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

217.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at W-SMA-8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

217.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-8 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23488	06-06-2012
Storm Rain Event	BMP-24899	07-17-2012
Storm Rain Event	BMP-28210	10-09-2012

There were no maintenance activities conducted at W-SMA-8 in 2012.

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 217-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-016(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-028(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-8, Rock Check Dam, W01106010006 (photo ID 7806-1r)

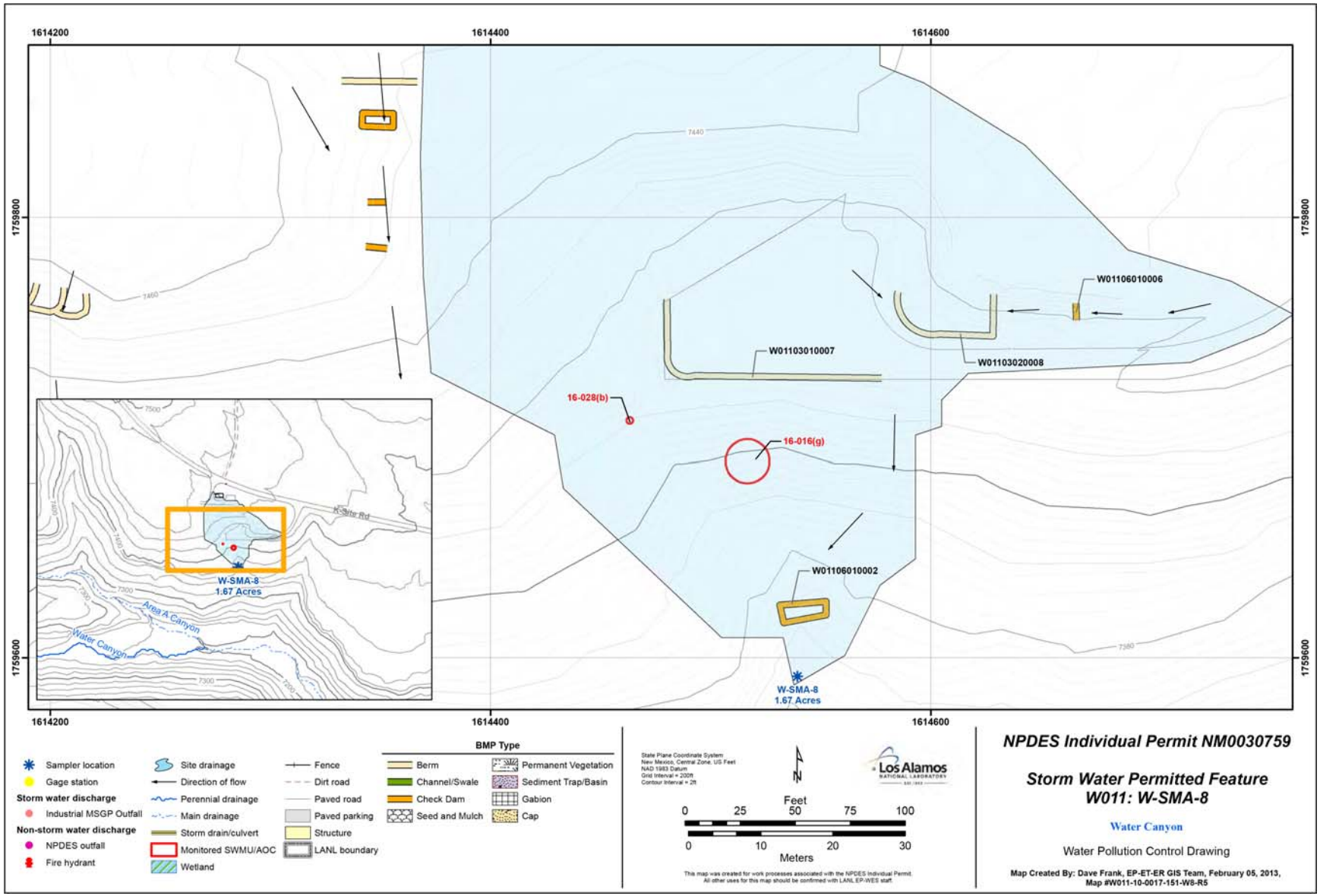


Figure 217-1 W-SMA-8 location map

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 at TA-16. 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.

SWMU 13-002 is a surface disposal area located east of former building 16-340 at TA-16. 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 on top of the southern tip of the surface disposal area.

W-SMA-8.7, Permanent Vegetation, W01202020002 (photo ID 8530-2r)

SWMU 16-004(a) is the inactive Imhoff tank (structure 16-530) that was used for sewage treatment at the TA-16 sanitary WWTP. 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 before it was discharged to drying beds [SWMUs 16-004(d) and 16-004(f)].

SWMU 16-026(j2) consists of the outfall from a former HE sump [SWMU 16-029(f)] associated with a former rest house (structure 16-345) located on the 340 Line at TA-16. The resthouse and sump were constructed in 1952 and served as an 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 16-029(h) consists of the outfall and drainline from the HE sump [AOC 16-003(p)] located on the south side of former building 16-478. The 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 was thought to be present and was described as a French drain that extended south of the sump. During the investigation activities conducted in 2009–2010, no evidence of the French drain was found. 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. It should be noted that SWMU 16-029(h) was identified as an HE sump in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designate as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 work plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump next to former building 16-478.

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 as 16-476). The control bunker was one of several buildings constructed at TA-13 in 1944 to support the Manhattan Project. The control bunker was removed during D&D activities in 2005.

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	
W01202010004	Established Vegetation - Grasses and Shrubs			X		CB
W01202020002	Established Vegetation - Forested/Needle Cast			X		CB
W01203020009	Berms - Base Course	X			X	CB
W01203060010	Berms - Straw Wattles		X		X	CB
W01206010006	Check Dam - Rock		X		X	CB
W01206010007	Check Dam - Rock		X		X	CB
W01206010008	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

218.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at W-SMA-8.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

218.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-8.7 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23489	06-05-2012
Storm Rain Event	BMP-24900	07-17-2012
Storm Rain Event	BMP-28211	10-10-2012

There were no maintenance activities conducted at W-SMA-8.7 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 13-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 13-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-004(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-026(j2)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-029(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 16-035	Baseline Monitoring	Baseline Monitoring Extended	No Comment

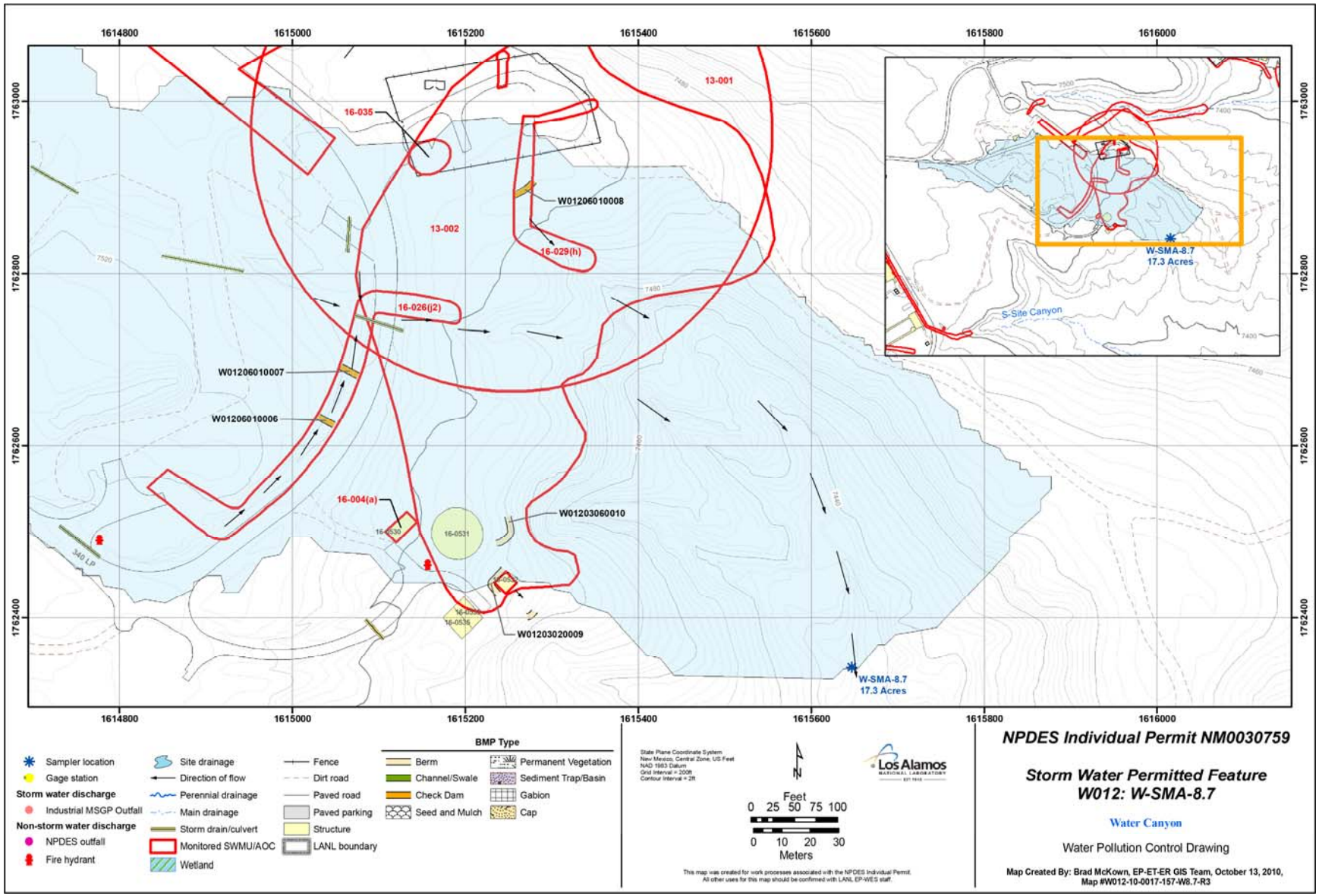


Figure 218-1 W-SMA-8.7 location map

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 TA-16 sanitary WWTP. 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. Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides present at low concentrations in sanitary wastewater from TA-16 facilities.

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	
W012A02010001	Established Vegetation - Grasses and Shrubs			X		CB
W012A03010004	Berms - Earthen		X		X	EC
W012A03010005	Berms - Earthen	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).

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): Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides.

- Gross alpha—Uranium-235/236 was detected with a maximum activity 2.2 times BV in soil samples collected during the 2010 Consent Order investigation.

In summary, with the exception of uranium-235/236, which was detected above BV, alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site and were not detected above BVs/fallout values (FVs). In addition, uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. Based on site history and previous soil sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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.

- 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 less than both of these values.

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

The monitoring station was relocated on July 26, 2012, and is situated approximately 200 ft southeast of the original location below the newly installed enhanced controls. This sampler location is positioned to test the performance of the newly installed enhanced controls and will provide a more representative sample of storm water discharge from SWMU 16-004(c). Sampler coordinates and SMA drainage area have been updated in Attachment 4.

219.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-8.71 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22067	03-28-2012
Annual Erosion Evaluation	COMP-23490	03-28-2012
Storm Rain Event	BMP-24909	07-17-2012
Storm Rain Event	BMP-28220	10-10-2012
Construction	COMP-29135	10-25-2012
Enhanced Control Measure Verification.	BMP-29448	11-06-2012

There were no maintenance activities conducted at W-SMA-8.71 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 16-004(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

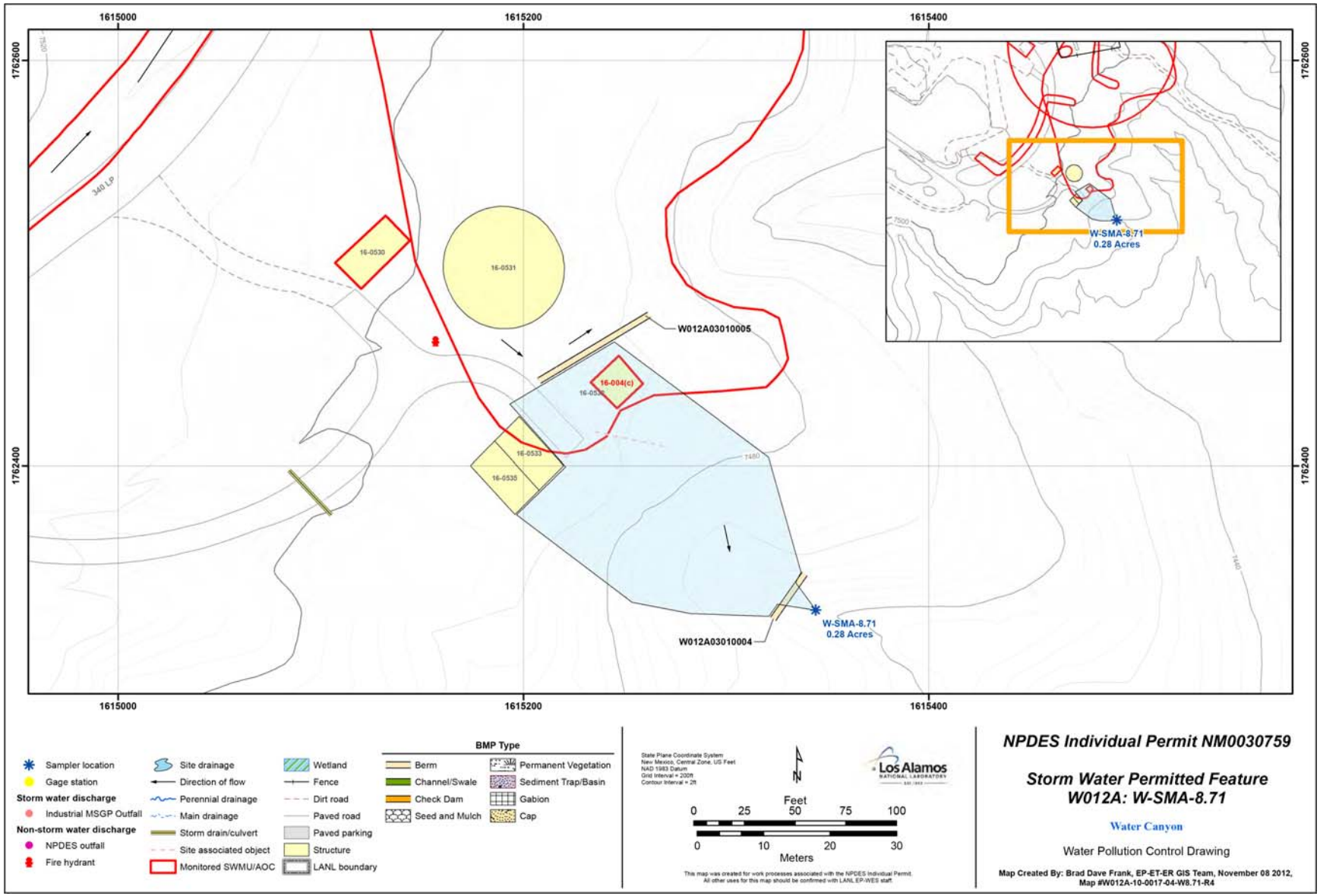
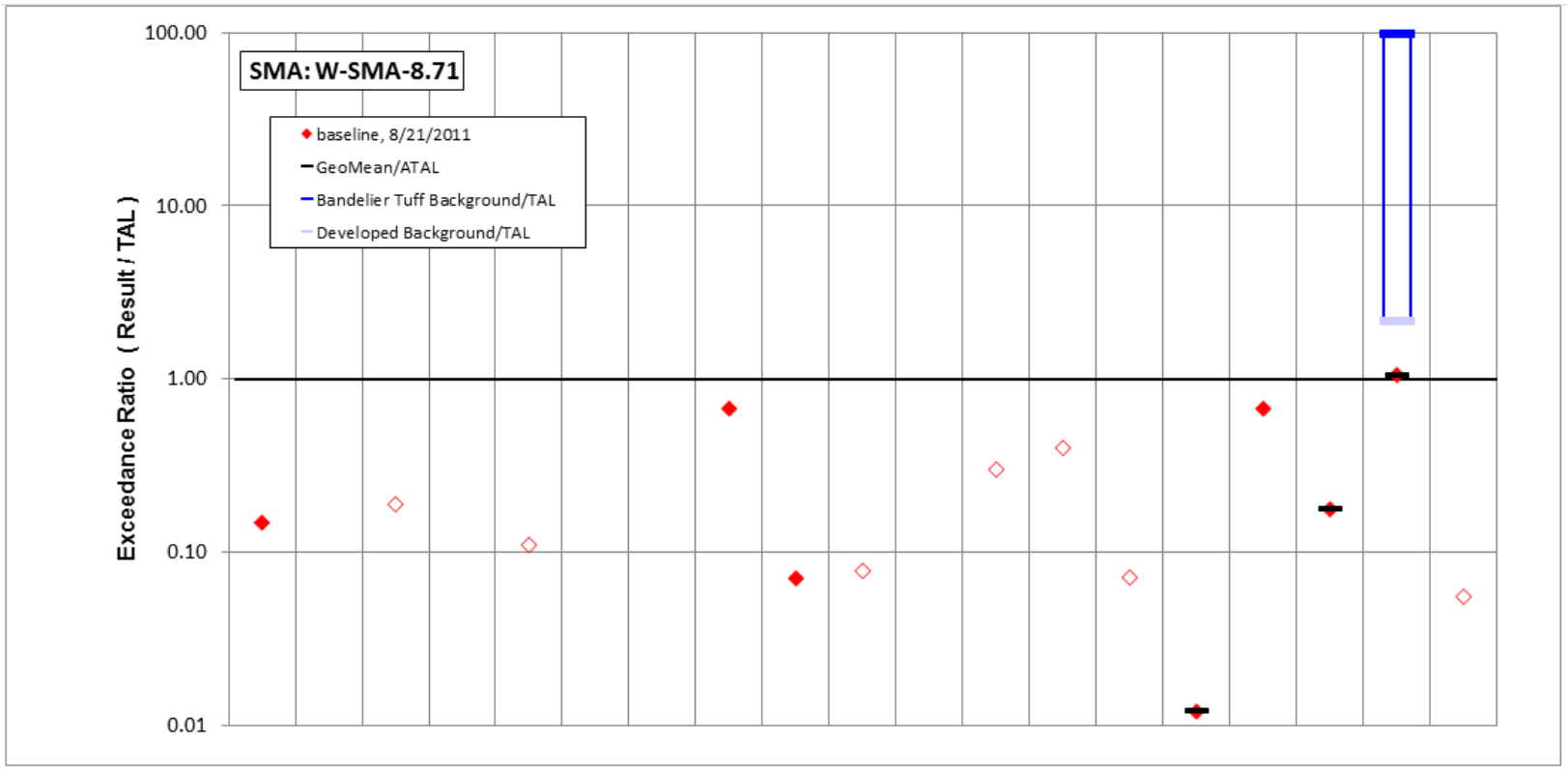


Figure 219-1 W-SMA-8.71 location map



	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
8/21/2011 result	111	*1*	*1.7*	15.5	*0.11*	*2*	2	2.9	1.2	*0.06*	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	*0.078*	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 an outfall 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. The outfall was NPDES-permitted (05A052) and discharged to Water Canyon. It 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.

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.

The Site boundary for AOC 16-030(g) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 220-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W01302010002	Established Vegetation - Grasses and Shrubs			X		CB
W01303010003	Berms - Earthen	X			X	CB
W01303010010	Berms - Earthen		X		X	B
W01303010011	Berms - Earthen		X		X	B
W01304010004	Channel/Swale - Earthen	X		X		CB
W01306010001	Check Dam - Rock		X		X	CB
W01306010012	Check Dam - Rock		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

220.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at W-SMA-9.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

220.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-9.05 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23491	06-05-2012
Storm Rain Event	BMP-24897	07-17-2012
Storm Rain Event	BMP-28208	10-02-2012

There were no maintenance activities conducted at W-SMA-9.05 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 16-030(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-9.05, Earthen Berm, W01303010003 (photo ID 7805-2r)

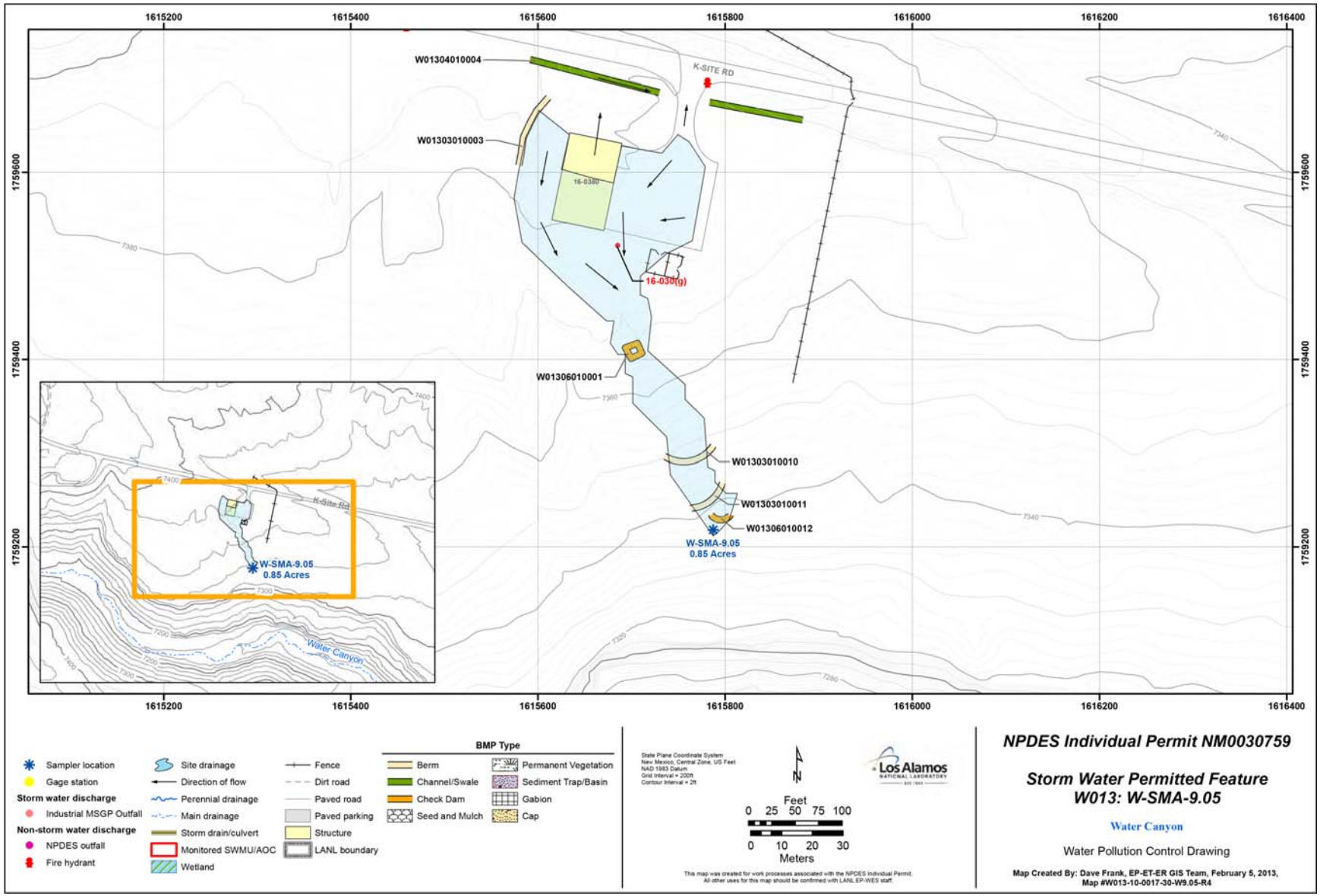


Figure 220-1 W-SMA-9.05 location map

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.

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	
W01402010001	Established Vegetation - Grasses and Shrubs			X		CB
W01403010006	Berms - Earthen	X			X	B
W01403010007	Berms - Earthen	X			X	B
W01403060002	Berms - Straw Wattles		X		X	CB
W01403060003	Berms - Straw Wattles		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

221.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-9.5 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23492	05-08-2012
Storm Rain Event	BMP-24901	07-17-2012
Storm Rain Event	BMP-28212	10-10-2012

There were no maintenance activities conducted at W-SMA-9.5 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 11-012(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-9.5, Straw Wattles, W01403060002 (photo ID 10874-4r)

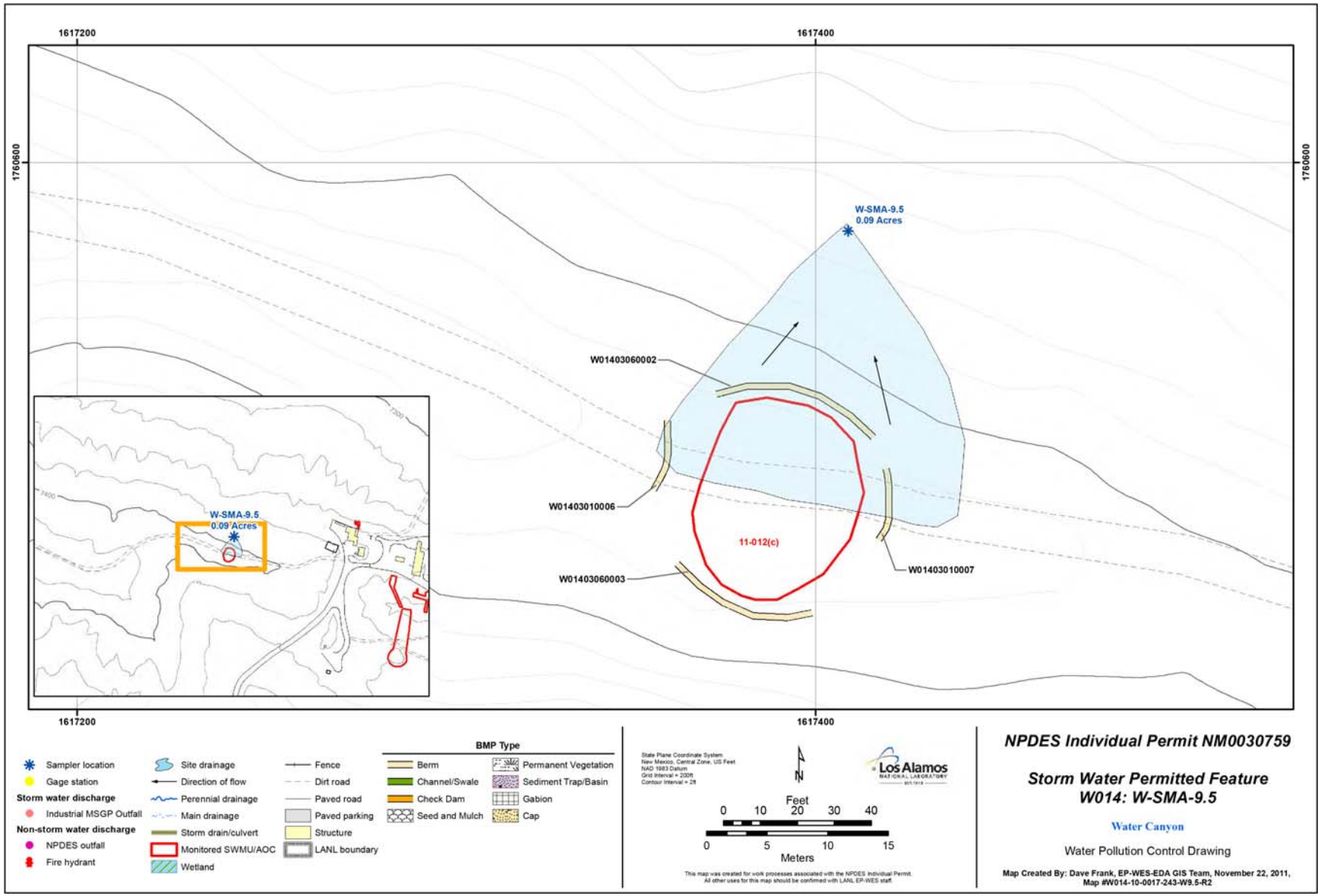


Figure 221-1 W-SMA-9.5 location map

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 active 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). The outfall consists of a 2-in. pipe that discharges to a drainage channel. The outfall receives untreated cooling tower blowdown and discharges from floor drains in building 11-30A (an adjunct of building 11-30).

SWMU 11-011(b) is an outfall located at TA-11 north of the Electrodynamics Vibration Test Facility (building 11-30). The outfall consists of a 3-in. pipe that extends about 10 in. beyond the side of a hill. The outfall receives discharge from floor drains in building 11-30. A sink drain that formerly discharged to the outfall has been removed.

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	
W01502010001	Established Vegetation - Grasses and Shrubs			X		CB
W01503060002	Berms - Straw Wattles		X		X	CB
W01503060007	Berms - Straw Wattles		X		X	B
W01506030004	Check Dam - Juniper Bales	X			X	CB
W01506030005	Check Dam - Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

222.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at W-SMA-9.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

222.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-9.7 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23493	05-08-2012
Storm Rain Event	BMP-24910	07-17-2012
Storm Rain Event	BMP-28221	10-11-2012

There were no maintenance activities conducted at W-SMA-9.7 in 2012.

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 222-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 11-011(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 11-011(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-9.7, Juniper Bales, W01506030005 (photo ID 10875-1r)

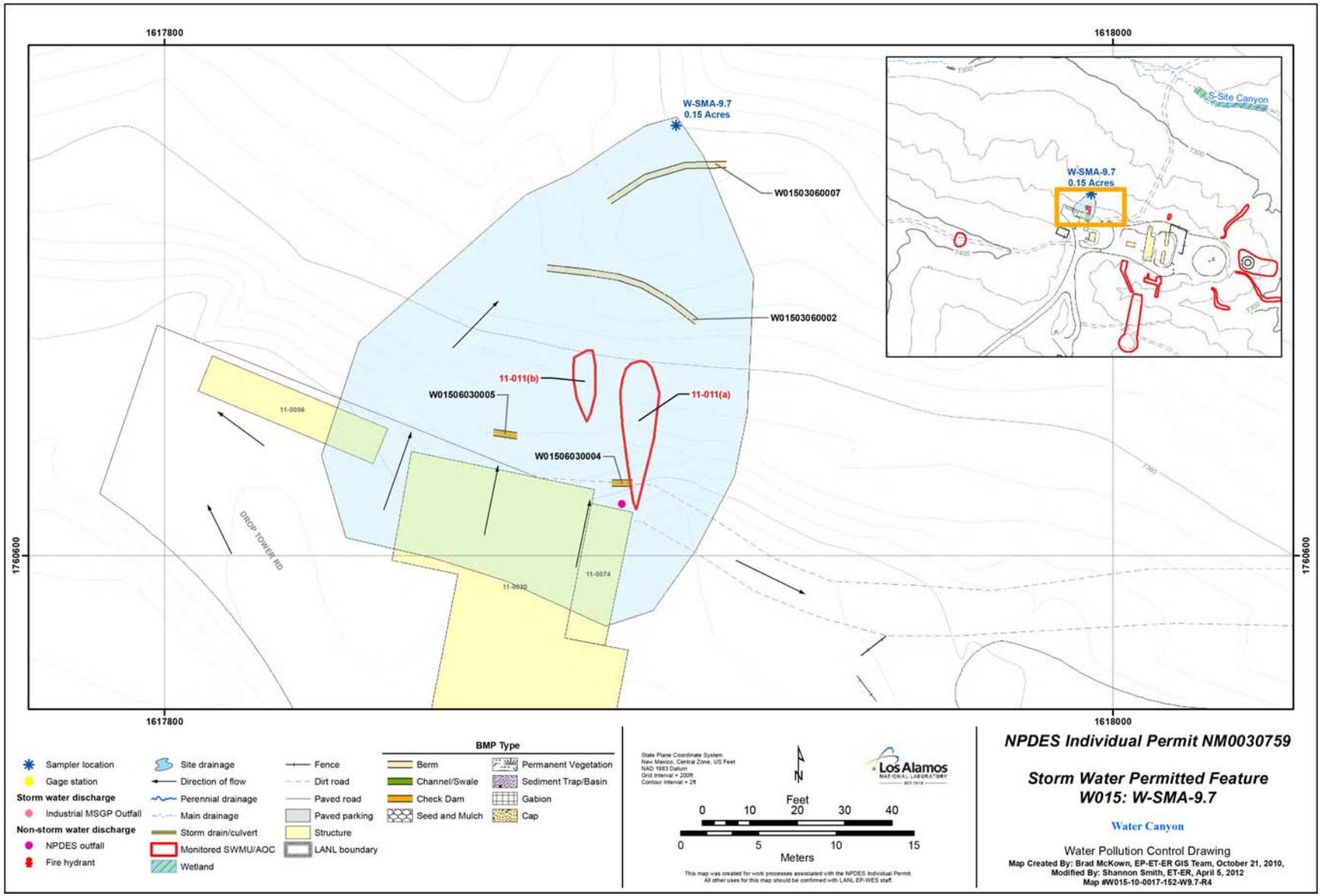


Figure 222-1 W-SMA-9.7 location map

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 an inactive outfall at TA-11 located approximately 50 ft north of former building 11-2, the Betatron Building. The outfall received discharge from a drainline in building 11-2. The drainline was installed in 1944 and served a sink, water heater, and floor drain. During construction of the drop tower complex in 1956, the drainline was capped, making the outfall inactive.

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	
W01602010005	Established Vegetation - Grasses and Shrubs			X		CB
W01603020007	Berms - Base Course	X			X	CB
W01603060010	Berms - Straw Wattles		X		X	CB
W01603060011	Berms - Straw Wattles		X		X	B
W01604060003	Channel/Swale - Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

223.3 Storm Water Monitoring

For calendar year 2012, 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 three storm events at W-SMA-9.8 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23494	05-08-2012
Storm Rain Event	BMP-24911	07-17-2012
Storm Rain Event	BMP-28222	10-10-2012

There were no maintenance activities conducted at W-SMA-9.8 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 11-005(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-9.8, Base Course Berm, W01603020007 (photo ID 10876-2r)

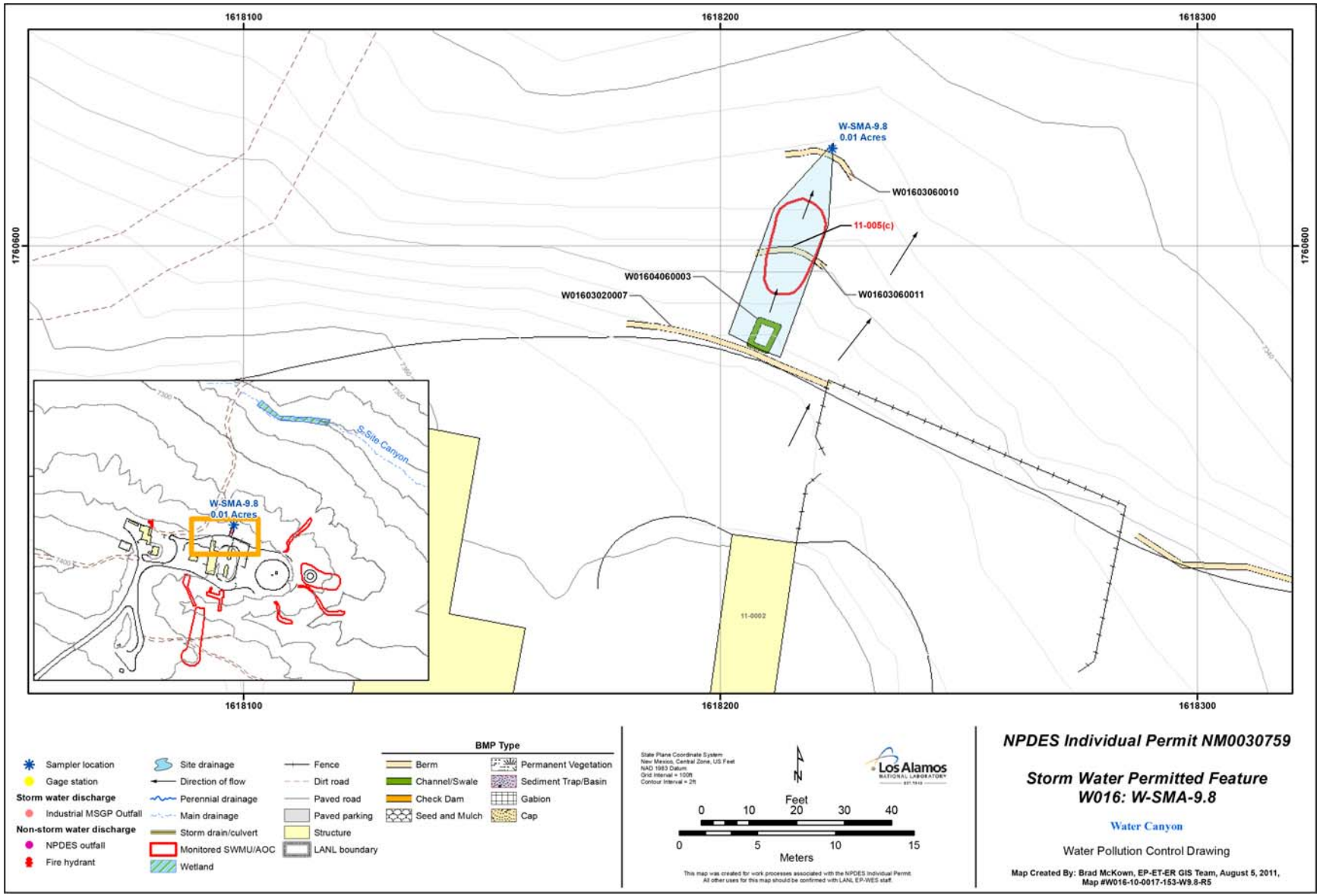


Figure 223-1 W-SMA-9.8 location map

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 catch basins and its associated outfall located 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 ft × 4 ft × 2 ft, an overflow drain, and a former NPDES-permitted outfall (EPA 05A069) located to the northeast that drains into Water Canyon. 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 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. Currently, the catch basin is capped and sealed; however, the outfall still receives storm water runoff. Because EPA-05A069 was removed from the NPDES permit, 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 [SWMUs 11-006(c) and 11-006(d)]. Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

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	
W01701060021	Seed and Mulch - Erosion Control Blankets			X		EC
W01702010002	Established Vegetation - Grasses and Shrubs			X		CB
W01703010017	Berms - Earthen	X			X	EC
W01703010018	Berms - Earthen		X		X	EC
W01703010019	Berms - Earthen		X		X	EC
W01703010020	Berms - Earthen		X		X	EC
W01703090001	Berms - 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).

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): Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

- Aluminum—Aluminum was detected above BVs in tuff samples collected from SWMU 11-006(b) during the 2010 Consent Order investigation. The maximum detected concentration was 2.0 times BV.
- Gross alpha—Maximum detected activities of plutonium-238, plutonium-239/240, uranium-234, and uranium-238 were 1.7 times, 1.1 times, 1.1 times, and 1.4 times BVs/FVs, respectively in soil samples collected during the 2010 Consent Order investigation.

W-SMA-9.9, Earthen Berm, W01703010019 (photo ID 23505-4)

In summary, aluminum may have been associated with industrial materials historically associated with managed at this Site but was detected only slightly above BV. Based on previous sampling results, the Site is an unlikely source of aluminum above MTAL in stormwater. Uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site; however, uranium isotopes were detected only slightly above BVs. The other detected alpha-emitting radionuclides, plutonium-238 and plutonium-239/240 are not known to be associated with industrial materials historically managed at this Site and were detected only slightly above FVs. In addition, uranium isotopes and plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous soil sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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.

W-SMA-9.9 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 and gross-alpha exceedances.

- Aluminum—Aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Gross alpha—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.

224.4 Inspections and Maintenance

RG257 recorded three storm events at W-SMA-9.9 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23495	05-15-2012
Enhanced Control Measure Verification	BMP-23505	05-15-2012
Storm Rain Event	BMP-24912	07-17-2012
Storm Rain Event	BMP-28223	10-10-2012

There were no maintenance activities conducted at the W-SMA-9.9 in 2012.

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 224-4 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 11-006(b)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 06-27-2012

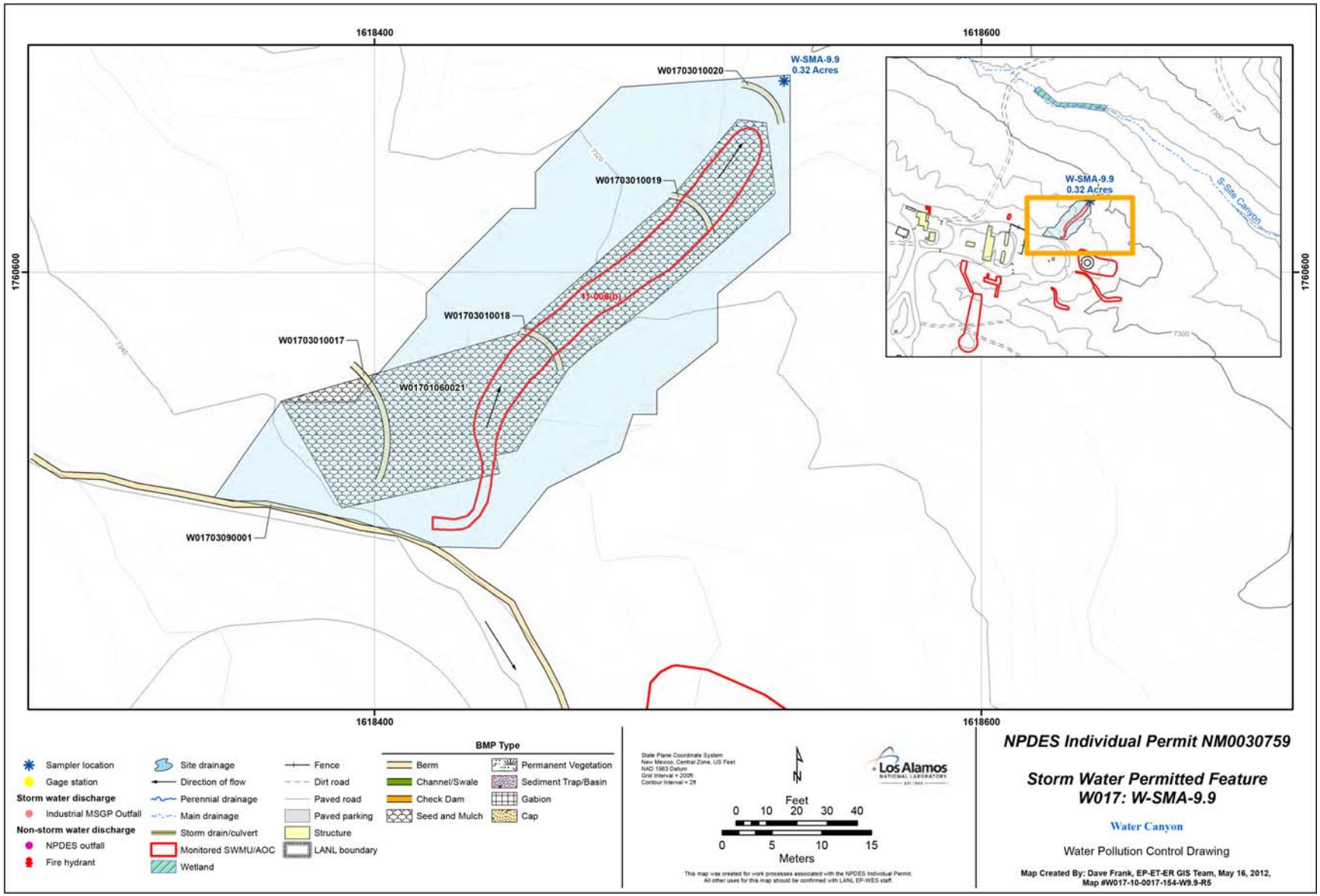
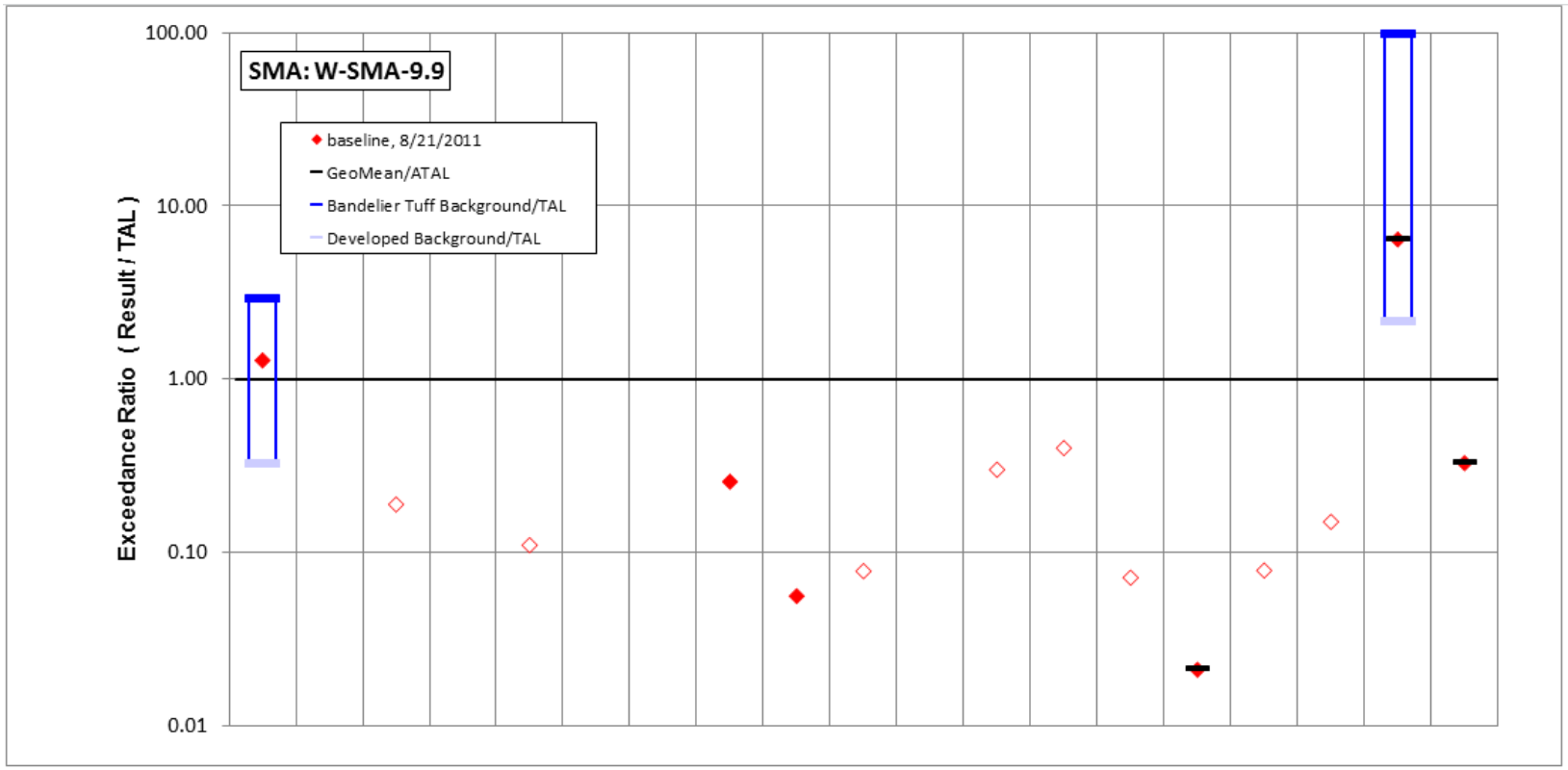


Figure 224-1 W-SMA-9.9 location map



	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
8/21/2011 result	**962**	*1*	*1.7*	*15*	*0.11*	*2*	*4.4*	1.1	0.95	*0.06*	*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	*0.078*	*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-topped steel containment tank. Burning area activities continued through 1992. Potential contaminants associated with industrial materials historically managed at this Site include explosive compounds and propellants, aluminum, DU, and petroleum products.

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 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 unknown. The outflow line from SWMU 11-005(a) (structure 11-20) is now plugged, and the septic tank is pumped on a regular basis. Potential contaminants associated with industrial materials historically managed at this Site are metals, cyanide, solvents, and petroleum products.

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 the restroom added to the exterior of building 11-3 and may have served building 11-24, a former air gun facility that now houses a machine shop. Potential contaminants associated with industrial materials historically managed at this Site are metals, solvents, and petroleum products.

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 ft × 4 ft × 2 ft and a former NPDES-permitted outfall (EPA05A096), located to the southeast that drains 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 to a natural drainage and the NPDES-permitted outfall. The outfall is located on the southeast side of the catch basin and flows east into Water Canyon. 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. Currently, this catch basin collects storm water runoff that is pumped to SWMU 11-006(d). Potential contaminants associated with industrial

materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

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 ft × 4 ft × 2 ft and a former NPDES-permitted outfall (EPA05A097), located to the southeast of the catch basin. 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 and then east into Water Canyon. Waste collected from the catch basin was disposed of at the burning grounds at TA-16. Currently, this catch basin collects storm water runoff that drains to the outfall. Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

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 and serviced 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. Potential contaminants associated with industrial materials historically managed at this Site are metals, solvents, and petroleum products.

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 immediately adjacent to the active 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-square, 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. Potential contaminants associated with industrial materials historically managed at this Site are metals, explosive compounds, and DU.

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.

The Site boundary for SWMU 11-005(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 225-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

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	
W01802010009	Established Vegetation - Grasses and Shrubs			X		CB
W01803010022	Berms - Earthen		X		X	EC
W01803010023	Berms - Earthen		X		X	EC
W01803010024	Berms - Earthen		X		X	EC
W01803040010	Berms - Asphalt	X			X	CB
W01803040016	Berms - Asphalt	X			X	CB
W01803090002	Berms - Curbing	X			X	CB
W01804060004	Channel/Swale - Rip Rap			X		CB
W01804060013	Channel/Swale - 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: Potential contaminants associated with industrial materials historically managed at this Site include explosive compounds and propellants, aluminum, DU, and petroleum products. Consent Order soil sampling has not been performed at this Site. No investigations were conducted before the Consent Order went into effect in 2005. Investigation of SWMU 11-002 is deferred per Table IV-2 of the Consent Order. Uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this site. Uranium isotopes, however, are excluded from the definition of adjusted gross alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 11-005(a): Potential contaminants associated with industrial materials historically managed at this Site are metals, cyanide, solvents, and petroleum products.

- Gross alpha—Maximum detected activities for americium-241, plutonium-239/240, uranium-234, uranium-235/236, and uranium-238 were 3.3 times, 3.6 times, 1.5 times, 1.1 times, and 1.6 times BVs/FVs, respectively in soil samples collected during the 2010 Consent Order investigation.

In summary, americium, uranium, and plutonium, which have alpha-emitting isotopes, are not known to be associated with industrial materials historically managed at this Site, but were detected above BVs/FVs. Uranium isotopes, americium-241, and plutonium-239/240 are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 11-005(b): Potential contaminants associated with industrial materials historically managed at this Site are metals, solvents, and petroleum products.

- Gross alpha—Plutonium-239/240 was detected and uranium-238 was detected above BV in soil samples collected during the 2010 Consent Order investigation. The maximum detected activities of plutonium-239/240 and uranium-238 were 0.6 times and 1.2 times BVs/FVs, respectively.

In summary, uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site, and the isotope uranium-238 was detected only slightly above BV. The other detected alpha-emitting radionuclide, plutonium-239/240, is not known to be associated with industrial materials historically managed at this Site and was detected slightly below FV in a subsurface sample where FVs are not applicable. In addition, uranium isotopes and plutonium-239/240 are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 11-006(c): Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

- Gross alpha—The maximum detected activity of plutonium-239/240 was 1.1 times FV in soil samples collected during the 2010 Consent Order investigation.

In summary, plutonium-239/240, an alpha-emitting radionuclide, is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above FV. In addition, plutonium-239/240 is excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 11-006(d): Potential contaminants associated with industrial materials historically managed at this Site are metals, particularly beryllium, lead, and nickel; explosive compounds; and uranium.

- Gross alpha—Maximum detected activities of plutonium-239/240, uranium-234, and uranium-238 were 0.8 times, 1.5 times, and 1.7 times BVs/FVs, respectively in soil samples collected during the 2010 Consent Order investigation.

In summary, uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site; however, uranium isotopes were detected only slightly above BVs. The other detected alpha-emitting radionuclide, plutonium-239/240, is not known to be associated with industrial materials historically managed at this Site and was detected slightly below FV in a subsurface sample where FVs are not applicable. In addition, uranium isotopes and plutonium-239/240 are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

SWMU 11-011(d): Potential contaminants associated with industrial materials historically managed at this Site are metals, solvents, and petroleum products.

- Gross alpha—Maximum detected activities of plutonium-239/240, uranium-234, uranium-235/236, and uranium-238 were 2.7 times, 1.8 times, 1.1 times, and 2.3 times BVs/FVs, respectively in soil samples collected during the 2010 Consent Order investigation.

In summary, uranium and plutonium, which have alpha-emitting isotopes, are not known to be associated with industrial materials historically managed at this Site, but were detected only slightly above BVs/FVs. Uranium isotopes and plutonium-239/240, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

W-SMA-10, Permanent Vegetation, W01802010009 (photo ID 26065-5)

AOC 11-003(b): Potential contaminants associated with industrial materials historically managed at this Site are metals, explosive compounds, and DU.

Consent Order sampling has not been performed at AOC 11-003(b). No investigations were conducted at this Site before the Consent Order went into effect in 2005. Investigation of this AOC is deferred per Table IV-2 of the Consent Order. Uranium, which has alpha-emitting isotopes, is known to be associated with industrial materials historically managed at this Site. Uranium isotopes, however, are excluded from the definition of adjusted gross alpha radioactivity. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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 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 three storm events at W-SMA-10 during the 2012 season. These rain events triggered two 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 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22068	04-05-2012
Annual Erosion Evaluation	COMP-23475	04-05-2012
Storm Rain Event	BMP-24902	07-17-2012
Construction	COMP-24708	07-26-2012
Enhanced Control Measure Verification	BMP-26065	07-31-2012
Storm Rain Event	BMP-28213	10-10-2012

There were no maintenance activities conducted at W-SMA-10 in 2012.

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 225-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 11-002	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-005(a)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-005(b)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-006(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-006(d)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-011(d)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
AOC 11-003(b)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012

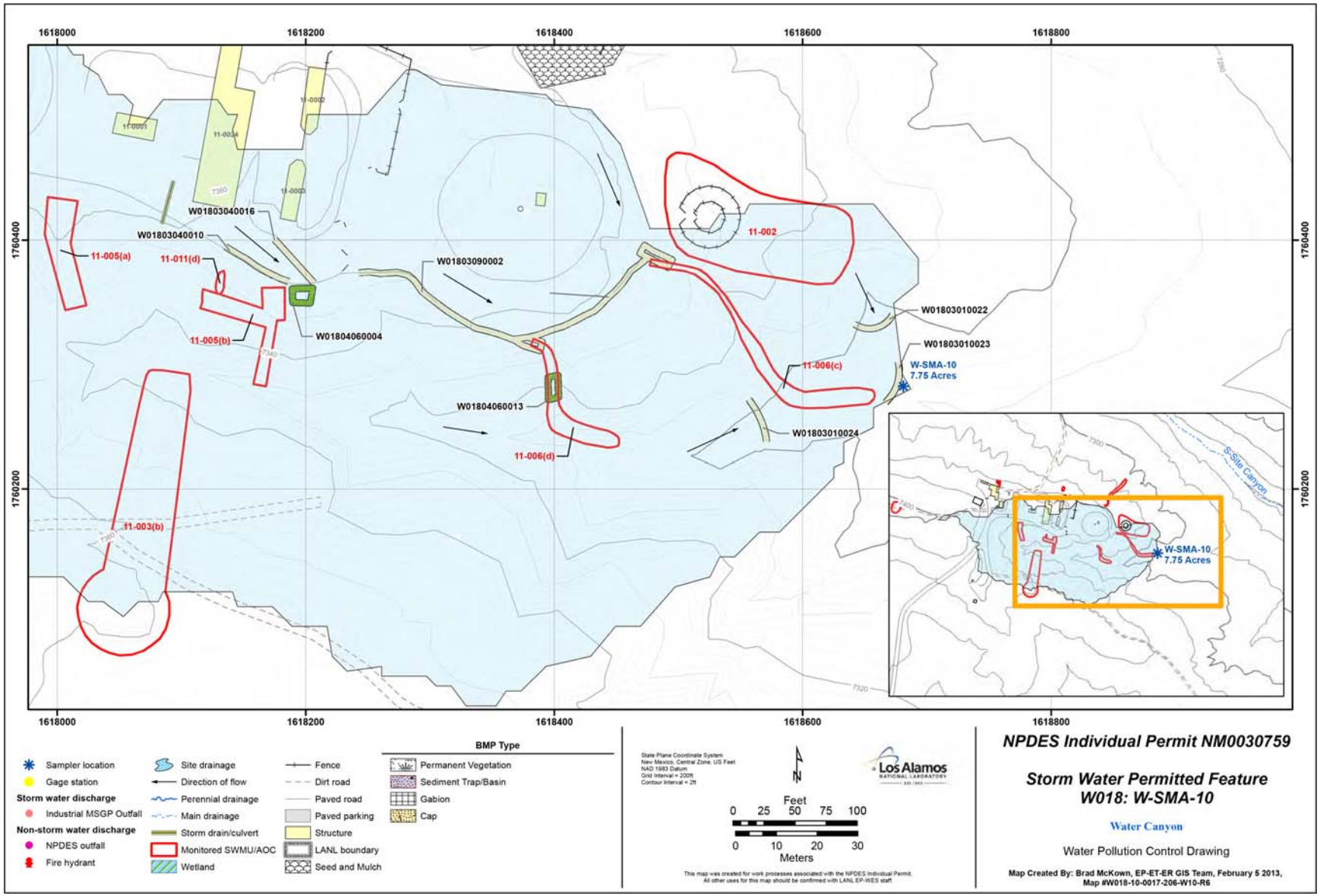
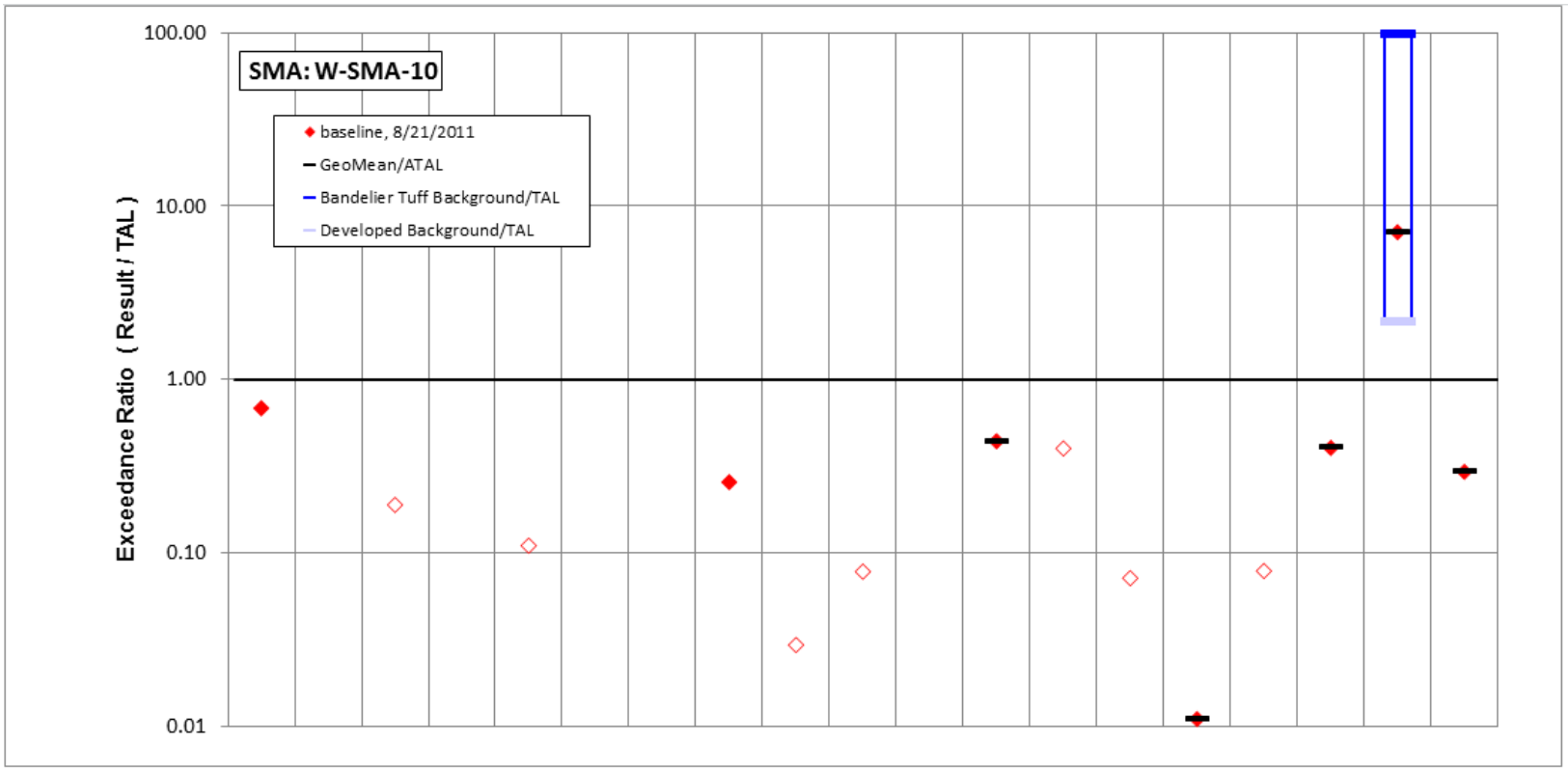


Figure 225-1 W-SMA-10 location map



	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*	*0.06*	*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*	*0.078*	*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 nuclear environmental site boundary at TA-49. Area 11 is an approximately 220-ft × 300-ft area. Activities conducted from 1959 to 1961 at Area 11 supported hydronuclear experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The former building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Wastes generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at the Laboratory. Interim waste storage boxes were stored south of former building 49-15. Some liquid wastes reportedly discharged to a leach field (SWMU 49-003). Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10 in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The structures in Area 11 were decontaminated and removed in 1970 and 1971. Contamination was detected in sinks, ducts, and hoods in former building 49 15. Contaminated debris was removed and disposed of at TA-54 and uncontaminated debris (approximately 2160 ft^3) was taken to the open-burning/landfill area at Area 6 (SWMU 49-004). Potential contaminants associated with industrial materials historically managed at this Site are metals, VOCs, SVOCs, and radionuclides.

W-SMA-11.7, Permanent Vegetation, W01902010001 (photo ID 8519-09r)

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	
W01902010001	Established Vegetation - Grasses and Shrubs			X		CB
W01903010040	Berms - Earthen	X			X	B
W01903010041	Berms - Earthen		X		X	EC
W01903010042	Berms - Earthen		X		X	EC
W01903010043	Berms - Earthen		X		X	EC
W01903010044	Berms - Earthen		X		X	EC
W01903010045	Berms - Earthen		X		X	EC
W01903010046	Berms - Earthen		X		X	EC
W01903010047	Berms - Earthen		X		X	EC
W01903010048	Berms - Earthen		X		X	EC
W01903010049	Berms - Earthen		X		X	EC
W01903010050	Berms - Earthen		X		X	EC
W01904010051	Channel/Swale - Earthen	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).

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): Potential contaminants associated with industrial materials historically managed at this Site are metals, VOCs, SVOCs, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Gross alpha—Plutonium-239 was detected above FV in soil samples collected during the Consent Order investigation, with a maximum detected activity 19 times FV.

In summary, aluminum is not known to be associated with industrial materials historically used at the Site and was not detected above BV. Plutonium and uranium, which have alpha-emitting isotopes, are known to be associated with industrial material historically managed at this Site, and one plutonium isotope was detected substantially above FV. Plutonium and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL and adjusted gross alpha above ATAL in storm water.

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 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, and gross-alpha MTAL and ATAL exceedances.

Aluminum is associated with trace minerals in the Bandelier Tuff as well. 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; 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.

226.4 Inspections and Maintenance

RG262.4 recorded four storm events at W-SMA-11.7 during the 2012 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 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21633	04-05-2012
Annual Erosion Evaluation	COMP-23476	04-05-2012
Storm Rain Event	BMP-24922	07-17-2012
Storm Rain Event	BMP-25902	08-08-2012
Construction	COMP-27778	09-13-2012
Storm Rain Event	BMP-27562	09-17-2012
Construction	COMP-27779	09-20-2012
Enhanced Control Measure Verification	BMP-27977	09-25-2012

There were no maintenance activities conducted at W-SMA-11.7 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 49-008(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 10-23-2012

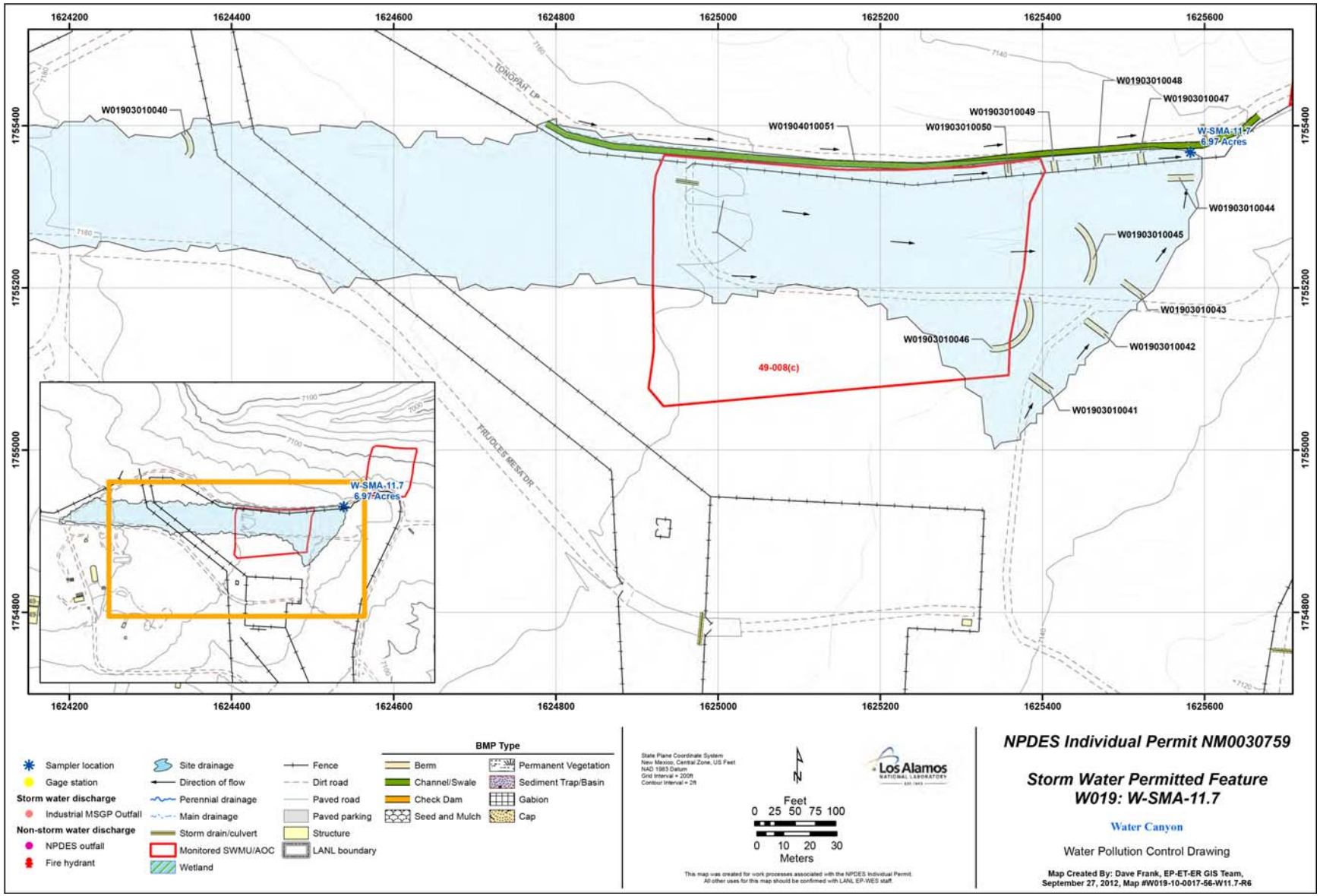
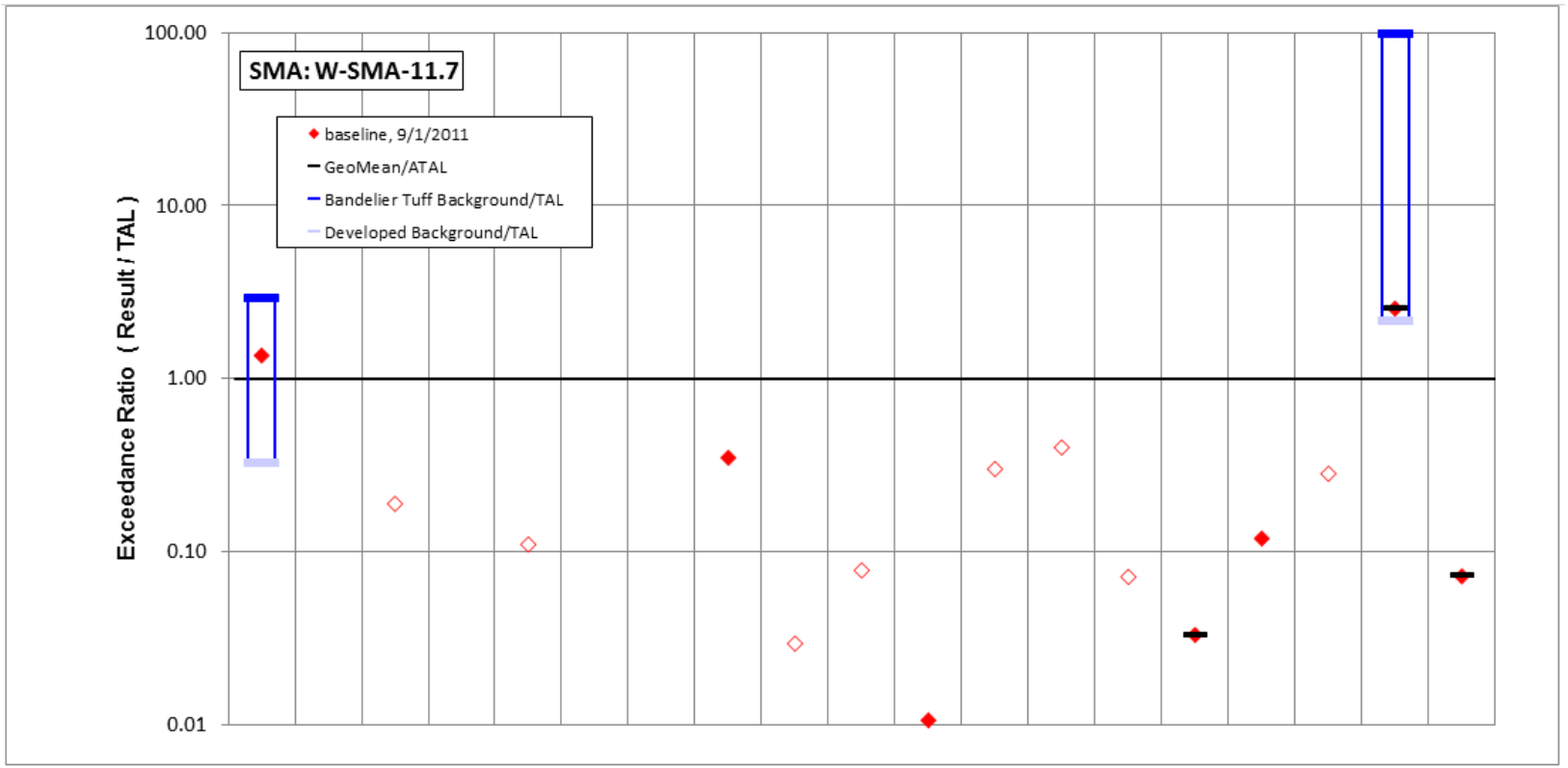


Figure 226-1 W-SMA-11.7 location map



	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
9/1/2011 result	**1020**	*1*	*1.7*	*15*	*0.11*	*2*	2.5	1.5	*0.5*	*0.06*	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*	*0.078*	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 consisting of soil contamination located to the north of SWMUs 49-001(b) and 49-001(c), resulting from the transport of surface and near-surface radionuclide contamination associated with the shaft 2-M incident at Area 2. 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. SWMU 49-001(g), along with SWMUs 49-001(b), 49-001(c), 49-001(d), is referred to as MDA AB.

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	
W02002010003	Established Vegetation - Grasses and Shrubs			X		CB
W02003010015	Berms - Earthen		X		X	B
W02003010016	Berms - Earthen		X		X	B
W02003010017	Berms - Earthen		X		X	B
W02004060002	Channel/Swale - Rip Rap	X		X		CB
W02006010001	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

227.3 Storm Water Monitoring

For calendar year 2012, 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 four storm events at W-SMA-12.05 during the 2012 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 2012

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23477	05-09-2012
Storm Rain Event	BMP-24925	07-17-2012
Storm Rain Event	BMP-25905	08-08-2012
Storm Rain Event	BMP-27565	09-17-2012

There were no maintenance activities conducted at W-SMA-12.05 in 2012.

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 227-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 49-001(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

W-SMA-12.05, Rip Rap, W02004060002 (photo ID 8516-1r)

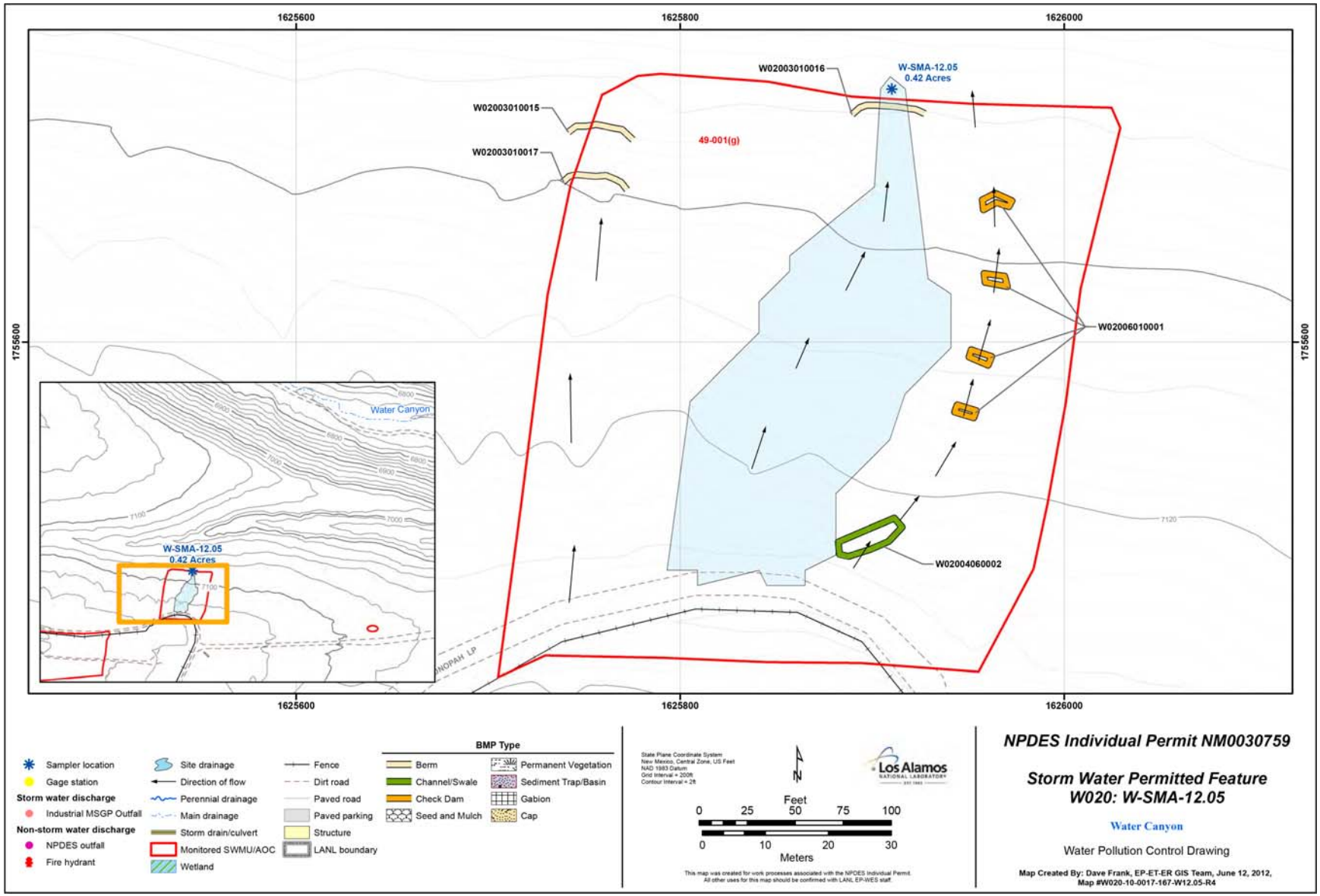


Figure 227-1 W-SMA-12.05 location map

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. Hexavalent chromium has never been added to the water at this cooling tower. Potential contaminants associated with industrial materials historically managed at this Site are naturally-occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water, which was discharged under NPDES permit.

AOC 15-004(h) is an 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 unknown, but materials are believed to include DU, beryllium, lead, and HE, which are all potential contaminants for this Site. 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.

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	
W02102010001	Established Vegetation - Grasses and Shrubs			X		CB
W02103010016	Berms - Earthen		X		X	EC
W02103010017	Berms - Earthen		X		X	EC
W02103010018	Berms - Earthen		X		X	EC
W02103010019	Berms - Earthen		X		X	EC
W02103010020	Berms - Earthen	X			X	EC
W02103060003	Berms - Straw Wattles	X			X	CB
W02103060004	Berms - Straw Wattles	X			X	CB
W02103060005	Berms - Straw Wattles	X			X	CB
W02103060006	Berms - Straw Wattles	X			X	CB
W02103060007	Berms - Straw Wattles	X			X	CB
W02104060014	Channel/Swale - Rip Rap	X		X		CB
W02106010008	Check Dam - Rock	X			X	CB
W02106010009	Check Dam - Rock	X			X	CB
W02106010010	Check Dam - Rock	X			X	CB
W02106010011	Check Dam - Rock	X			X	CB
W02106010012	Check Dam - Rock		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 and 42.6 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentration of 49.3 (MTAL is 42 µg/L).

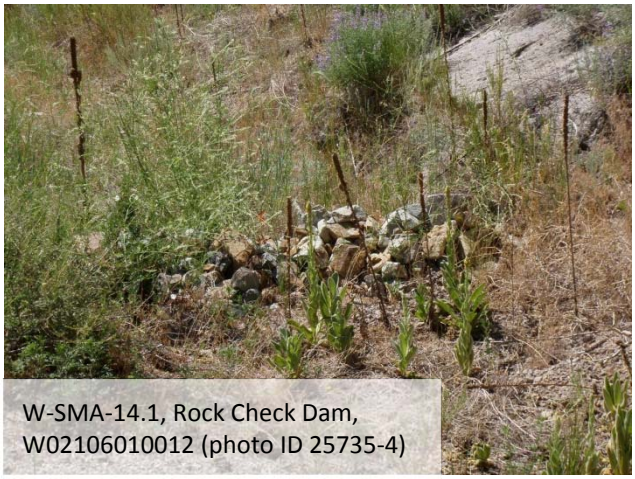
These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-014(l): Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water, which was discharged under NPDES permit.

Consent Order sampling has not been conducted at this Site. No investigations were conducted at SWMU 15-014(l) before the Consent Order went into effect in 2005. Copper and zinc are not associated with industrial materials historically managed at the Site, but no sampling has been performed to determine whether these constituents are present above BVs. Based on site history, the Site is an unlikely source of copper and zinc above MTAL in storm water.

AOC 15-004(h): The exact nature of the materials used during tests is unknown, but materials are believed to include DU, beryllium, lead, and HE, which are all potential contaminants for this Site.

Consent Order sampling has not been conducted at this Site. No investigations were conducted at AOC 15-004(h) before the Consent Order went into effect in 2005. Copper and zinc were likely associated with industrial materials historically managed at the Site, but no sampling has been performed to determine whether these constituents are present above BVs. Based on site history, the Site may be a source of copper and zinc above MTAL in storm water.



W-SMA-14.1, Rock Check Dam, W02106010012 (photo ID 25735-4)

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.

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.

- Copper—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. One result from 2011 is greater than both of these values, and the other 2011 result is between them.
- Zinc—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 results from 2011 are less than both of these values.

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

The monitoring station was relocated on November 8, 2012, and is situated approximately 100 ft south of original sampler location, below SWMUs 15-004(h) and 15-014(l) and below the newly installed enhanced controls. This sampler location is positioned to test the performance of the newly installed enhanced controls and will provide a more representative sample of storm water discharge from

SWMUs 15-004(h) and 15-014(l). Sampler coordinates and SMA drainage area are updated in Attachment 4.

228.4 Inspections and Maintenance

RG262.4 recorded four storm events at W-SMA-14.1 during the 2012 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 228-2 Control Measure Inspections during 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21634	03-28-2012
Annual Erosion Evaluation	COMP-23478	03-28-2012
Storm Rain Event	BMP-24923	07-17-2012
Construction	COMP-25580	07-19-2012
Enhanced control measure Verification	BMP-25735	07-23-2012
Storm Rain Event	BMP-25903	07-27-2012
Storm Rain Event	BMP-27563	09-21-2012

There were no maintenance activities conducted at W-SMA-14.1 in 2012.

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 228-3 Compliance Status during 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 15-014(l)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012
AOC 15-004(h)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

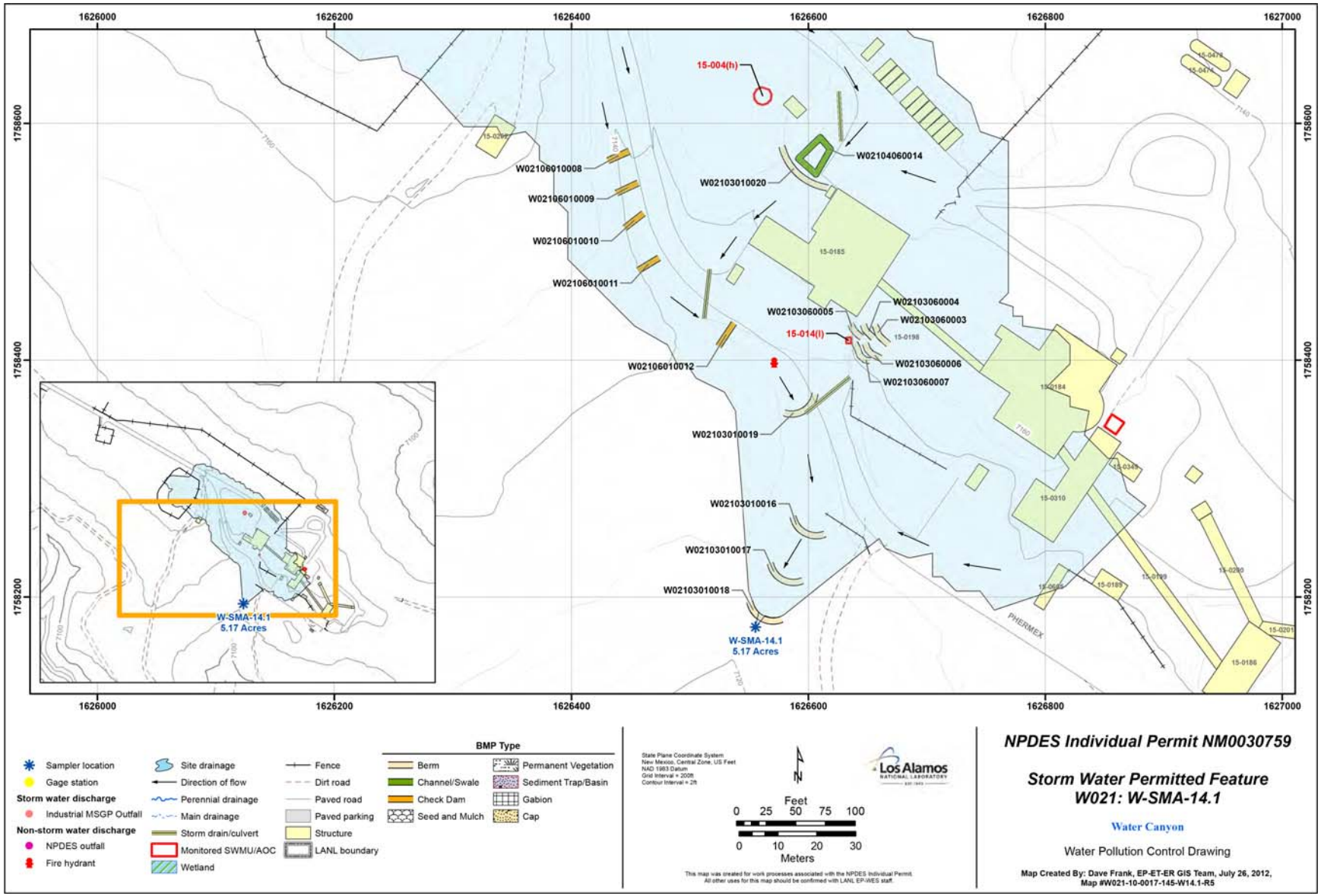
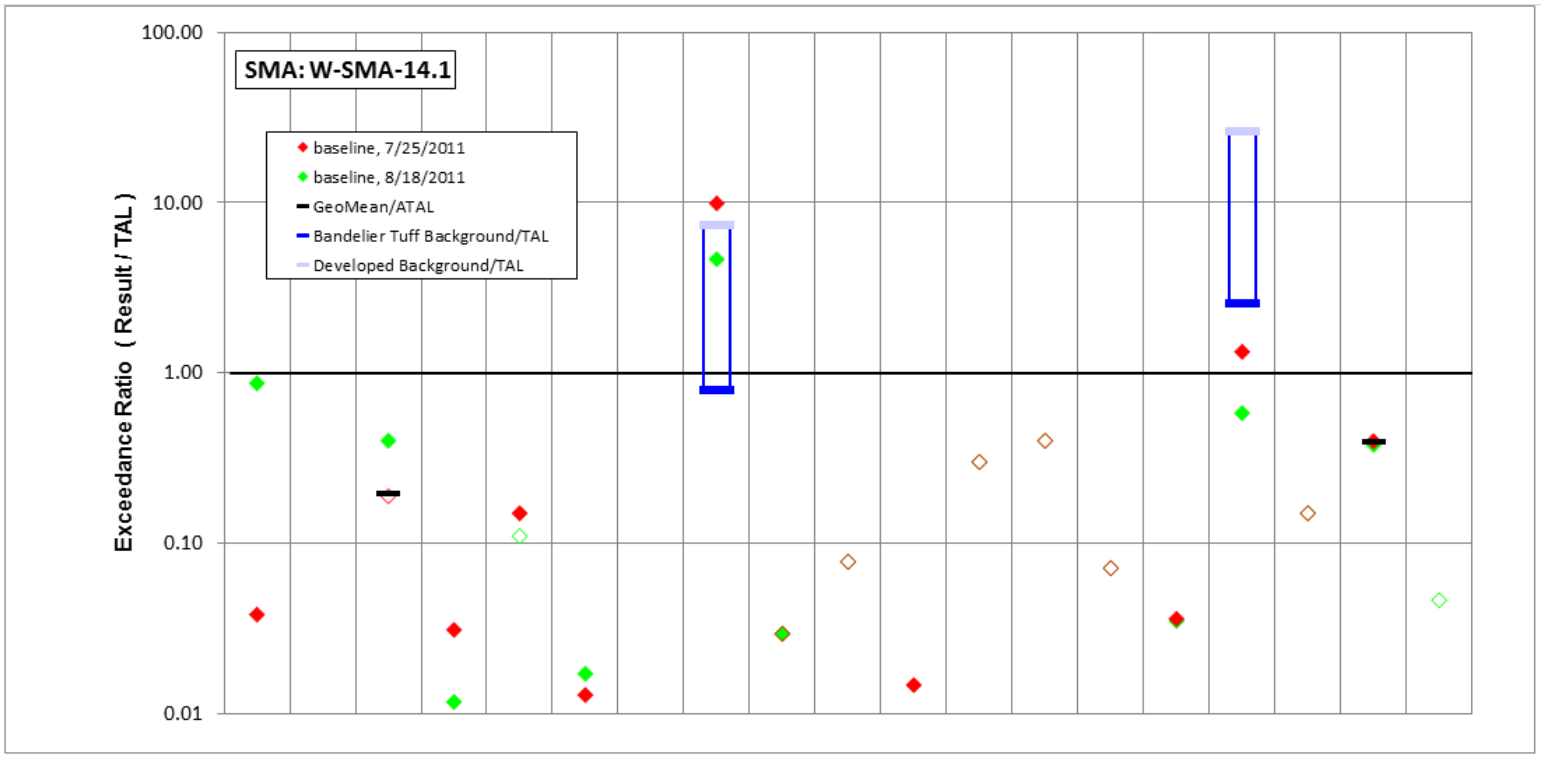


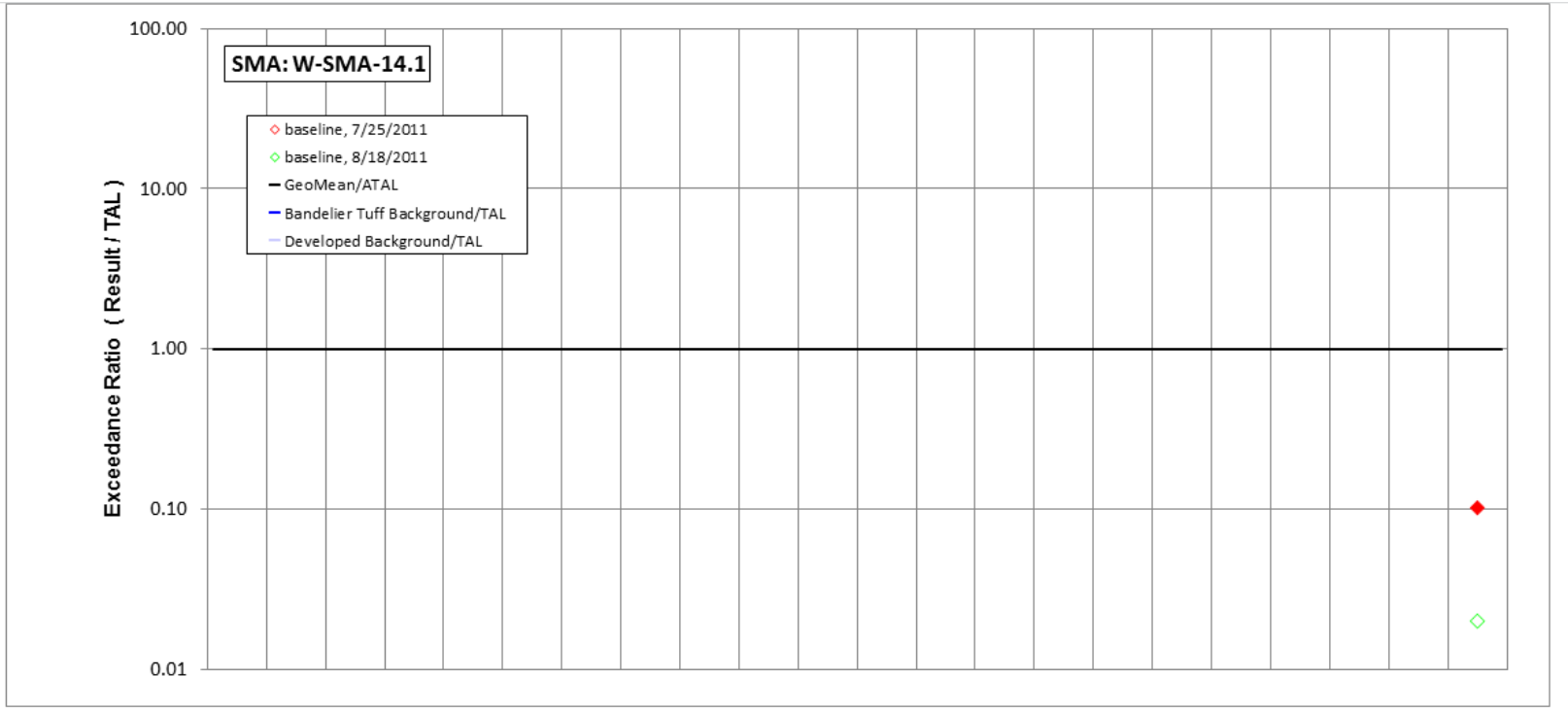
Figure 228-1 W-SMA-14.1 location map



	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
8/18/2011 result	652	1.1	3.6	58.5	*0.11*	3.6	*1*	**20**	0.5	*0.06*	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	*0.078*	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*	*0.06*	2.5	*1.5*	*0.2*	*0.45*	3.6	**55.9**	*0.002*	5.96	*0.25*
result / TAL	0.038	*0.002*	*0.19*	0.031	0.15	0.013	0.0018	**9.9**	*0.029*	*0.078*	0.015	*0.3*	*0.4*	*0.071*	0.036	**1.3**	*0.15*	0.4	*0.008*

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
8/18/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.4*	-	-	-	*0.4*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.02*
7/25/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.4*	-	-	-	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. Potential contaminants associated with industrial materials historically managed at this Site are metals and SVOCs.

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	
W02202010002	Established Vegetation - Grasses and Shrubs			X		CB
W02203010004	Berms - Earthen	X			X	EC
W02203010005	Berms - Earthen		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): Potential contaminants associated with industrial materials historically managed at this Site are metals and SVOCs.

- Gross alpha—Maximum detected activities of americium-241 and plutonium-239 were 14 times FV and 2.2 times FV, respectively, in soil samples collected during the 2010 Consent Order investigation.

In summary, alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site, although incidental contamination by sources from other sites is possible. Americium-241 and plutonium-239, which are alpha-emitting radionuclides, were detected substantially above FVs. Americium and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

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 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 the gross-alpha ATAL exceedance. 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; the result from 2011 is below this value.

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

229.4 Inspections and Maintenance

RG262.4 recorded four storm events at W-SMA-15.1 during the 2012 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 2012

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-22069	03-28-2012
Annual Erosion Evaluation	COMP-23479	03-28-2012
Storm Rain Event	BMP-24924	07-17-2012
Storm Rain Event	BMP-25904	08-08-2012
Storm Rain Event	BMP-27564	09-17-2012
Construction	COMP-28008	09-25-2012
Enhanced Control Measure Verification	BMP-27975	09-27-2012

There were no maintenance activities conducted at W-SMA-15.1 in 2012.

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 2012

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 49-005(a)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 10-23-2012

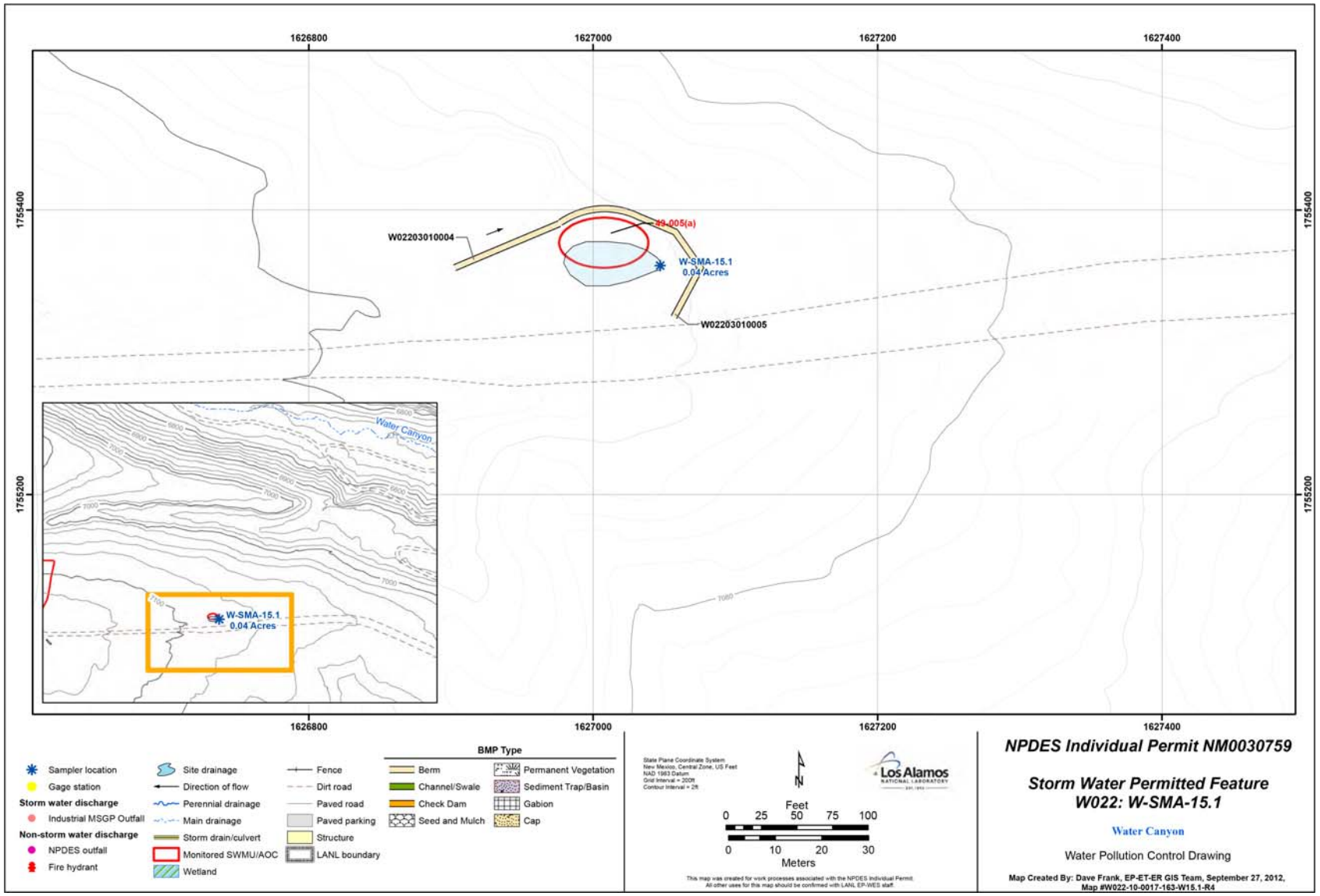
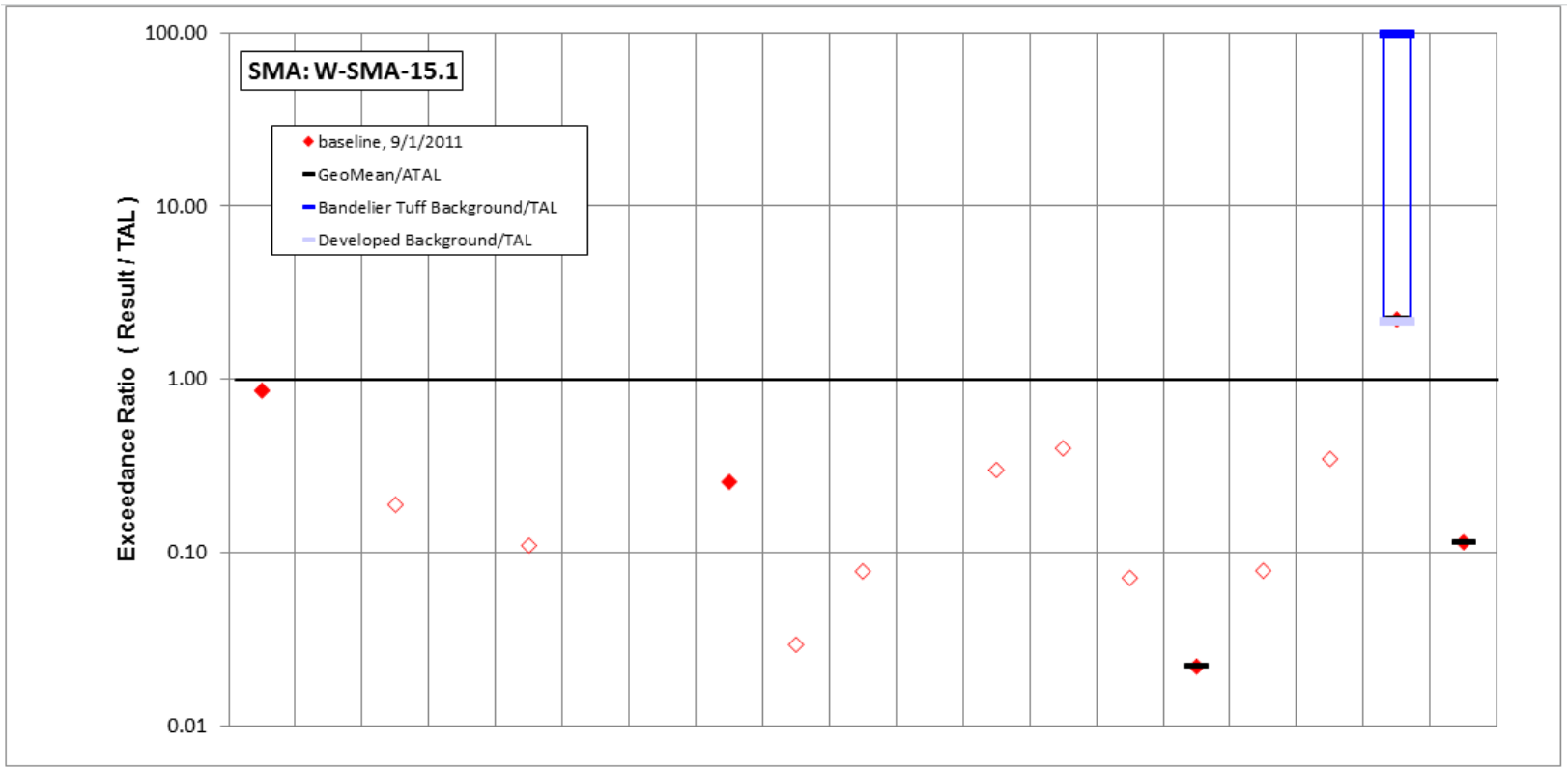


Figure 229-1 W-SMA-15.1 location map



	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*	*0.06*	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*	*0.078*	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
V4.227	05-09-2012	CDV-SMA-6.01	Retire Control - Lifecycle Expired Control ID: V012-01-06-0007	T	CCN - 23229
V4.228	05-14-2012	CDV-SMA-6.01	Map Revision (R3)	T	CCN - 23229
V4.229	05-16-2012	W-SMA-9.9	Map Revision (R5)	T	CCN - 23532
V4.230	06-05-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0007	T	CCN - 23989
V4.231	06-05-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0008	T	CCN - 23989
V4.232	06-05-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0009	T	CCN - 23989
V4.233	06-05-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0010	T	CCN - 23989
V4.234	06-05-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0011	T	CCN - 23989
V4.235	06-14-2012	CDV-SMA-2.42	Retire Control - Lifecycle Expired Control ID: V008A-03-06-0014	T	CCN - 23989
V4.236	06-12-2012	CDV-SMA-2.42	Map Revision (R8)	T	CCN - 23989
V4.237	06-05-2012	CDV-SMA-2.5	Retire Control - Lifecycle Expired Control ID: V009-01-01-0003	T	CCN - 23990
V4.238	06-05-2012	CDV-SMA-2.5	Retire Control - Lifecycle Expired Control ID: V009-01-01-0004	T	CCN - 23990
V4.239	06-05-2012	CDV-SMA-2.5	Retire Control - Lifecycle Expired Control ID: V009-01-01-0023	T	CCN - 23990
V4.240	06-05-2012	CDV-SMA-2.5	Retire Control - Lifecycle Expired Control ID: V009-01-01-0034	T	CCN - 23990
V4.241	06-12-2012	CDV-SMA-2.5	Map Revision (R6)	T	CCN - 23990
V4.242	05-09-2012	W-SMA-12.05	Retire Control - Lifecycle Expired Control ID: W020-03-06-0011	T	CCN - 23991
V4.243	05-09-2012	W-SMA-12.05	Retire Control - Lifecycle Expired Control ID: W020-03-06-0012	T	CCN - 23991
V4.244	05-09-2012	W-SMA-12.05	Retire Control - Lifecycle Expired Control ID: W020-03-06-0013	T	CCN - 23991
V4.245	06-12-2012	W-SMA-12.05	Map Revision (R4)	T	CCN - 23991
V4.246	06-06-2012	W-SMA-7	Retire Control - Lifecycle Expired Control ID: W008-01-01-0005	T	CCN - 24003
V4.247	06-12-2012	W-SMA-7	Map Revision (R5)	T	CCN - 24003
V4.248	06-06-2012	PT-SMA-1.7	Retire Control - Lifecycle Expired Control ID: I003-03-06-0014	T	CCN - 24000

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
V4.249	06-06-2012	PT-SMA-1.7	Retire Control - Damaged and/or Replaced Control ID: I003-03-06-002	T	CCN - 24000
V4.250	06-06-2012	PT-SMA-1.7	New Control - Routine/Replacement Control ID: I003-03-06-0016	T	CCN - 24000
V4.251	06-06-2012	PT-SMA-1.7	Map Revision (R7)	T	CCN - 24000
V4.252	07-17-2012	CDV-SMA-6.01	Retire Control - Lifecycle Expired Control ID: V012-01-01-0010	T	CCN - 25513
V4.253	07-25-2012	CDV-SMA-6.01	Retire Control - Damaged and/or Replaced Control ID: V012-03-06-0008	T	CCN - 25513
V4.254	07-25-2012	CDV-SMA-6.01	Retire Control - Damaged and/or Replaced Control ID: V012-03-06-0009	T	CCN - 25513
V4.255	07-25-2012	CDV-SMA-6.01	New Control - Routine/Replacement Control ID: V012-03-06-0011	T	CCN - 25513
V4.256	07-25-2012	CDV-SMA-6.01	New Control - Routine/Replacement Control ID: V012-03-06-0012	T	CCN - 25513
V4.257	08-05-2012	CDV-SMA-6.01	Map Revision (R4)	T	CCN - 25513
V4.258	07-17-2012	CDV-SMA-4	Retire Control - Lifecycle Expired Control ID: V011-01-01-0004	T	CCN - 25515
V4.259	07-25-2012	CDV-SMA-4	New Control - Routine/Replacement Control ID: V011-01-01-0005	T	CCN - 25515
V4.260	08-06-2012	CDV-SMA-4	Map Revision (R3)	T	CCN - 25515
V4.261	08-06-2012	CDV-SMA-2	Map Revision (R4)	T	CCN - 25863
V4.262	05-22-2012	CDV-SMA-3	Map Revision (R5)	T	CCN - 23534
V4.263	07-17-2012	CDV-SMA-3	Map Revision (R6)	T	CCN - 23534
V4.264	05-15-2012	CDV-SMA-6.02	SMA Boundary Modification	T	CCN - 23536
V4.265	11-22-2011	CDV-SMA-6.02	Retire Control - Damaged and/or Replaced Control ID: V012A-03-01-0002	T	CCN - 23536
V4.266	11-22-2011	CDV-SMA-6.02	Retire Control - Damaged and/or Replaced Control ID: V012A-03-01-0003	T	CCN - 23536
V4.267	05-15-2012	CDV-SMA-6.02	New Control - Corrective Action Control ID: V012A-03-01-0006	T	CCN - 23536
V4.268	06-12-2012	CDV-SMA-6.02	Map Revision (R4)	T	CCN - 23536
V4.269	05-30-2012	PT-SMA-1	Retire Control - Damaged and/or Replaced Control ID: I002-03-12-0014	T	CCN - 23746
V4.270	05-30-2012	PT-SMA-1	Retire Control - Damaged and/or Replaced Control ID: I002-03-12-0015	T	CCN - 23746
V4.271	05-30-2012	PT-SMA-1	Retire Control - Damaged and/or Replaced Control ID: I002-03-12-0016	T	CCN - 23746

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
V4.272	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0023	T	CCN - 23746
V4.273	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0024	T	CCN - 23746
V4.274	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0025	T	CCN - 23746
V4.275	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0026	T	CCN - 23746
V4.276	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0027	T	CCN - 23746
V4.277	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0028	T	CCN - 23746
V4.278	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0029	T	CCN - 23746
V4.279	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-01-0030	T	CCN - 23746
V4.280	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-06-01-0031	T	CCN - 23746
V4.281	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-06-01-0032	T	CCN - 23746
V4.282	05-30-2012	PT-SMA-1	New Control - Corrective Action Control ID: I002-03-06-0033	T	CCN - 23746
V4.283	07-16-2012	PT-SMA-1	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 23746
V4.284	07-16-2012	PT-SMA-1	SMA Boundary Modification	T	CCN - 23746
V4.285	06-04-2012	PT-SMA-1	Map Revision (R5)	T	CCN - 23746
V4.286	07-24-2012	PT-SMA-1	Map Revision (R6)	T	CCN - 23746
V4.287	05-30-2012	PT-SMA-2.01	New Control - Corrective Action Control ID: I004A-03-01-0004	T	CCN - 23748
V4.288	05-30-2012	PT-SMA-2.01	SMA Boundary Modification	T	CCN - 23748
V4.289	07-16-2012	PT-SMA-2.01	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 23748
V4.290	07-18-2012	PT-SMA-2.01	Retire Control - Damaged and/or Replaced Control ID: I004A-04-05-0002	T	CCN - 23748
V4.291	07-18-2012	PT-SMA-2.01	Retire Control - Damaged and/or Replaced Control ID: I004A-03-01-0003	T	CCN - 23748
V4.292	06-04-2012	PT-SMA-2.01	Map Revision (R3)	T	CCN - 23748
V4.293	07-18-2012	PT-SMA-2.01	Map Revision (R4)	T	CCN - 23748
V4.294	06-05-2012	CDV-SMA-1.45	Retire Control - Damaged and/or Replaced Control ID: V004-03-06-0002	T	CCN - 23988
V4.295	06-05-2012	CDV-SMA-1.45	Retire Control - Damaged and/or Replaced Control ID: V004-03-06-0003	T	CCN - 23988

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
V4.296	06-05-2012	CDV-SMA-1.45	New Control - Corrective Action Control ID: V004-03-01-0004	T	CCN - 23988
V4.297	06-11-2012	CDV-SMA-1.45	Map Revision (R3)	T	CCN - 23988
V4.298	07-17-2012	W-SMA-5	Retire Control - Lifecycle Expired Control ID: W006-07-01-0004	T	CCN - 25527
V4.299	07-17-2012	W-SMA-5	Retire Control - Lifecycle Expired Control ID: W006-07-01-0010	T	CCN - 25527
V4.300	08-01-2012	W-SMA-5	Retire Control - Damaged and/or Replaced Control ID: W006-06-01-0020	T	CCN - 25527
V4.301	08-01-2012	W-SMA-5	New Control - Routine/Replacement Control ID: W006-06-01-0028	T	CCN - 25527
V4.302	08-15-2012	W-SMA-5	Map Revision (R7)	T	CCN - 25527
V4.303	07-31-2012	W-SMA-10	Retire Control - Lifecycle Expired Control ID: W018-01-01-0015	T	CCN - 26075
V4.304	07-31-2012	W-SMA-10	Retire Control - Lifecycle Expired Control ID: W018-01-01-0017	T	CCN - 26075
V4.305	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-03-06-0014	T	CCN - 26075
V4.306	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-03-06-0018	T	CCN - 26075
V4.307	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-03-06-0019	T	CCN - 26075
V4.308	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-03-06-0020	T	CCN - 26075
V4.309	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-03-06-0021	T	CCN - 26075
V4.310	07-31-2012	W-SMA-10	Retire Control - Damaged and/or Replaced Control ID: W018-04-06-0006	T	CCN - 26075
V4.311	07-31-2012	W-SMA-10	New Control - Corrective Action Control ID: W018-03-01-0022	T	CCN - 26075
V4.312	07-31-2012	W-SMA-10	New Control - Corrective Action Control ID: W018-03-01-0023	T	CCN - 26075
V4.313	07-31-2012	W-SMA-10	New Control - Corrective Action Control ID: W018-03-01-0024	T	CCN - 26075
V4.314	08-01-2012	W-SMA-10	Map Revision (R5)	T	CCN - 26075
V4.315	07-23-2012	W-SMA-14.1	Retire Control - Lifecycle Expired Control ID: W021-03-06-0002	T	CCN - 25765
V4.316	07-23-2012	W-SMA-14.1	Retire Control - Lifecycle Expired Control ID: W021-01-01-0015	T	CCN - 25765
V4.317	07-23-2012	W-SMA-14.1	Retire Control - Damaged and/or Replaced Control ID: W021-06-01-0013	T	CCN - 25765
V4.318	07-23-2012	W-SMA-14.1	New Control - Corrective Action Control ID: W021-03-01-0016	T	CCN - 25765
V4.319	07-23-2012	W-SMA-14.1	New Control - Corrective Action Control ID: W021-03-01-0017	T	CCN - 25765

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
V4.320	07-23-2012	W-SMA-14.1	New Control - Corrective Action Control ID: W021-03-01-0018	T	CCN - 25765
V4.321	07-23-2012	W-SMA-14.1	New Control - Corrective Action Control ID: W021-03-01-0019	T	CCN - 25765
V4.322	07-23-2012	W-SMA-14.1	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 25765
V4.323	07-23-2012	W-SMA-14.1	SMA Boundary Modification	T	CCN - 25765
V4.324	08-01-2012	W-SMA-14.1	Map Revision (R5)	T	CCN - 25765
V4.325	05-16-2012	F-SMA-2	Retire Control - Damaged and/or Replaced Control ID: F001-06-01-0005	T	CCN - 23541
V4.326	05-16-2012	F-SMA-2	Retire Control - Damaged and/or Replaced Control ID: F001-06-01-0006	T	CCN - 23541
V4.327	05-16-2012	F-SMA-2	Retire Control - Damaged and/or Replaced Control ID: F001-06-01-0007	T	CCN - 23541
V4.328	05-16-2012	F-SMA-2	Retire Control - Damaged and/or Replaced Control ID: F001-06-01-0009	T	CCN - 23541
V4.329	05-16-2012	F-SMA-2	Retire Control - Damaged and/or Replaced Control ID: F001-04-04-0003	T	CCN - 23541
V4.330	05-16-2012	F-SMA-2	New Control - Corrective Action Control ID: F001-01-04-0016	T	CCN - 23541
V4.331	05-21-2012	F-SMA-2	Map Revision (R6)	T	CCN - 23541
V4.332	08-21-2012	W-SMA-1.5	Retire Control - Damaged and/or Replaced Control ID: W002-06-01-0012	T	CCN - 26850
V4.333	08-21-2012	W-SMA-1.5	New Control - Corrective Action Control ID: W002-05-02-0013	T	CCN - 26850
V4.334	08-21-2012	W-SMA-1.5	New Control - Corrective Action Control ID: W002-05-02-0014	T	CCN - 26850
V4.335	08-21-2012	W-SMA-1.5	New Control - Corrective Action Control ID: W002-03-01-0015	T	CCN - 26850
V4.336	08-21-2012	W-SMA-1.5	New Control - Corrective Action Control ID: W002-06-01-0016	T	CCN - 26850
V4.337	08-22-2012	W-SMA-1.5	Map Revision (R5)	T	CCN - 26850
V4.338	08-09-2012	PT-SMA-4.2	New Control - Augment Existing Control ID: I007-03-12-0007	T	CCN - 26852
V4.339	08-29-2012	PT-SMA-4.2	Map Revision (R4)	T	CCN - 26852
V4.340	06-05-2012	CDV-SMA-1.4	Retire Control - Lifecycle Expired Control ID: V003-03-06-0018	T	CCN - 23987
V4.341	06-11-2012	CDV-SMA-1.4	Map Revision (R7)	T	CCN - 23987
V4.342	06-05-2012	CDV-SMA-2.3	Retire Control - Lifecycle Expired Control ID: V007-03-06-0013	T	CCN - 23992
V4.343	06-11-2012	CDV-SMA-2.3	Map Revision (R9)	T	CCN - 23992

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
V4.344	08-23-2012	W-SMA-2.05	Retire Control - Damaged and/or Replaced Control ID: W003-03-06-0003	T	CCN - 26979
V4.345	08-23-2012	W-SMA-2.05	Retire Control - Damaged and/or Replaced Control ID: W003-03-12-0006	T	CCN - 26979
V4.346	08-23-2012	W-SMA-2.05	New Control - Corrective Action Control ID: W003-03-01-0007	T	CCN - 26979
V4.347	08-23-2012	W-SMA-2.05	New Control - Corrective Action Control ID: W003-03-01-0008	T	CCN - 26979
V4.348	08-23-2012	W-SMA-2.05	New Control - Corrective Action Control ID: W003-06-01-0009	T	CCN - 26979
V4.349	08-28-2012	W-SMA-2.05	Map Revision (R3)	T	CCN - 26979
V4.350	08-02-2012	CDV-SMA-1.2	Retire Control - Damaged and/or Replaced Control ID: V001-03-06-0005	T	CCN - 26292
V4.351	08-02-2012	CDV-SMA-1.2	New Control - Routine/Replacement Control ID: V001-03-06-0010	T	CCN - 26292
V4.352	08-02-2012	CDV-SMA-1.2	Retire Control - Damaged and/or Replaced Control ID: V001-03-06-0006	T	CCN - 26292
V4.353	08-02-2012	CDV-SMA-1.2	New Control - Routine/Replacement Control ID: V001-03-06-0011	T	CCN - 26292
V4.354	08-31-2012	CDV-SMA-1.2	Map Revision (R6)	T	CCN - 26292
V4.355	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0029	T	CCN - 26514
V4.356	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0030	T	CCN - 26514
V4.357	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0031	T	CCN - 26514
V4.358	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0032	T	CCN - 26514
V4.359	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0033	T	CCN - 26514
V4.360	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0034	T	CCN - 26514
V4.361	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0035	T	CCN - 26514
V4.362	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0036	T	CCN - 26514
V4.363	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0037	T	CCN - 26514
V4.364	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0038	T	CCN - 26514
V4.365	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0049	T	CCN - 26514
V4.366	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0050	T	CCN - 26514
V4.367	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0051	T	CCN - 26514

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
V4.368	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0052	T	CCN - 26514
V4.369	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0053	T	CCN - 26514
V4.370	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0054	T	CCN - 26514
V4.371	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0045	T	CCN - 26514
V4.372	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0056	T	CCN - 26514
V4.373	07-12-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-04-06-0055	T	CCN - 26514
V4.374	08-30-2012	CDV-SMA-1.4	Map Revision (R8)	T	CCN - 26514
V4.375	09-06-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-03-06-0021	T	CCN - 27465
V4.376	09-06-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0041	T	CCN - 27465
V4.377	09-06-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0042	T	CCN - 27465
V4.378	09-06-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0046	T	CCN - 27465
V4.379	09-06-2012	CDV-SMA-1.4	Retire Control - Damaged and/or Replaced Control ID: V003-06-01-0047	T	CCN - 27465
V4.380	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0058	T	CCN - 27465
V4.381	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0059	T	CCN - 27465
V4.382	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0060	T	CCN - 27465
V4.383	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0061	T	CCN - 27465
V4.384	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0062	T	CCN - 27465
V4.385	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0063	T	CCN - 27465
V4.386	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0064	T	CCN - 27465
V4.387	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-06-01-0065	T	CCN - 27465
V4.388	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-03-01-0066	T	CCN - 27465
V4.389	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-03-01-0067	T	CCN - 27465
V4.390	09-06-2012	CDV-SMA-1.4	New Control - Routine/Replacement Control ID: V003-05-02-0068	T	CCN - 27465
V4.391	09-11-2012	CDV-SMA-1.4	Map Revision (R9)	T	CCN - 27465

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
V4.392	09-18-2012	F-SMA-2	New Control - Augment Existing Control ID: F001-03-01-0017	T	CCN - 27803
V4.393	09-19-2012	F-SMA-2	Map Revision (R7)	T	CCN - 27803
V4.394	09-18-2012	PT-SMA-3	New Control - Augment Existing Control ID: I005-04-06-0007	T	CCN - 27802
V4.395	09-19-2012	PT-SMA-3	New Control - Augment Existing Control ID: I005-03-02-0008	T	CCN - 27802
V4.396	09-25-2012	PT-SMA-3	Map Revision (R5)	T	CCN - 27802
V4.397	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-01-01-0039	T	CCN - 28011
V4.398	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0009	T	CCN - 28011
V4.399	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0010	T	CCN - 28011
V4.400	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0011	T	CCN - 28011
V4.401	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0012	T	CCN - 28011
V4.402	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0015	T	CCN - 28011
V4.403	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0016	T	CCN - 28011
V4.404	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0017	T	CCN - 28011
V4.405	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0018	T	CCN - 28011
V4.406	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0019	T	CCN - 28011
V4.407	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0020	T	CCN - 28011
V4.408	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0021	T	CCN - 28011
V4.409	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0022	T	CCN - 28011
V4.410	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0025	T	CCN - 28011
V4.411	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0026	T	CCN - 28011
V4.412	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0030	T	CCN - 28011
V4.413	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0031	T	CCN - 28011
V4.414	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0033	T	CCN - 28011
V4.415	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0034	T	CCN - 28011

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
V4.416	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0036	T	CCN - 28011
V4.417	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0037	T	CCN - 28011
V4.418	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0038	T	CCN - 28011
V4.419	9-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0041	T	CCN - 28011
V4.420	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0042	T	CCN - 28011
V4.421	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0043	T	CCN - 28011
V4.422	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0044	T	CCN - 28011
V4.423	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0045	T	CCN - 28011
V4.424	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0046	T	CCN - 28011
V4.425	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0047	T	CCN - 28011
V4.426	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0048	T	CCN - 28011
V4.427	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0049	T	CCN - 28011
V4.428	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-03-01-0050	T	CCN - 28011
V4.429	09-25-2012	W-SMA-11.7	New Control - Corrective Action Control ID: W019-04-01-0051	T	CCN - 28011
V4.430	09-28-2012	W-SMA-11.7	Map Revision (R6)	T	CCN - 28011
V4.431	09-27-2012	W-SMA-15.1	Retire Control - Damaged and/or Replaced Control ID: W022-06-01-0003	T	CCN - 28053
V4.432	09-27-2012	W-SMA-15.1	New Control - Corrective Action Control ID: W022-03-01-0004	T	CCN - 28053
V4.433	09-27-2012	W-SMA-15.1	New Control - Corrective Action Control ID: W022-03-01-0005	T	CCN - 28053
V4.434	09-28-2012	W-SMA-15.1	Map Revision (R4)	T	CCN - 28053
V4.435	10-18-2012	W-SMA-9.5	Change to SDPPP - Updated Site description for AOC 11-012(c)	T	
V4.436	10-18-2012	PT-SMA-2	Change to SDPPP - Updated Site description for AOC 15-008(f)	T	
V4.437	10-18-2012	CDV-SMA-2.3	Change to SDPPP - Updated Site description for SWMU 16-003(n)	T	
V4.438	10-18-2012	CDV-SMA-2.42	Change to SDPPP - Updated Site description for SWMU 16-010(b)	T	
V4.439	10-18-2012	CDV-SMA-2.5	Change to SDPPP - Updated Site description for SWMU 16-010(c)	T	

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
V4.440	10-18-2012	CDV-SMA-2.51	Change to SDPPP - Updated Site description for SWMU 16-010(i)	T	
V4.441	10-18-2012	CDV-SMA-1.3	Change to SDPPP - Updated Site description for SWMU 16-017(a)-99	T	
V4.442	10-18-2012	CDV-SMA-1.2	Change to SDPPP - Updated Site description for SWMU 16-017(b)-99	T	
V4.443	10-18-2012	CDV-SMA-2.41	Change to SDPPP - Updated Site description for SWMU 16-018	T	
V4.444	10-18-2012	CDV-SMA-1.7	Change to SDPPP - Updated Site description for SWMU 16-019.	T	
V4.445	10-18-2012	CDV-SMA-1.4	Change to SDPPP - Updated Site description for SWMU 16-020	T	
V4.446	10-18-2012	CDV-SMA-1.45	Change to SDPPP - Updated Site description for SWMU 16-026(i).	T	
V4.447	10-18-2012	W-SMA-8.7	Change to SDPPP - Updated Site description for 16-026(j2).	T	
V4.448	10-18-2012	CDV-SMA-1.4	Change to SDPPP - Updated Site description for SWMU 16-026(l)	T	
V4.449	10-18-2012	CDV-SMA-2.5	Change to SDPPP - Updated Site description for SWMU 16-028(a)	T	
V4.450	10-18-2012	CDV-SMA-1.4	Change to SDPPP - Updated Site description for SWMU 16-028(c)	T	
V4.451	10-29-2012	PT-SMA-0.5	Retire Control - Damaged and/or Replaced Control ID: I001-03-01-0003	T	CCN - 29301
V4.452	10-29-2012	PT-SMA-0.5	Retire Control - Damaged and/or Replaced Control ID: I001-06-01-0004	T	CCN - 29301
V4.453	10-29-2012	PT-SMA-0.5	New Control - Corrective Action Control ID: I001-03-01-0006	T	CCN - 29301
V4.454	10-29-2012	PT-SMA-0.5	New Control - Corrective Action Control ID: I001-03-01-0007	T	CCN - 29301
V4.455	10-29-2012	PT-SMA-0.5	New Control - Corrective Action Control ID: I001-03-01-0008	T	CCN - 29301
V4.456	10-31-2012	PT-SMA-0.5	Map Revision (R3)	T	CCN - 29301
V4.457	11-06-2012	W-SMA-8.71	Retire Control - Damaged and/or Replaced Control ID: W012A-03-02-0003	T	CCN - 29465
V4.458	11-06-2012	W-SMA-8.71	Retire Control - Damaged and/or Replaced Control ID: W012A-03-06-0002	T	CCN - 29465
V4.459	11-06-2012	W-SMA-8.71	New Control - Corrective Action Control ID: W012A-03-01-0004	T	CCN - 29465
V4.460	11-06-2012	W-SMA-8.71	New Control - Corrective Action Control ID: W012A-03-01-0005	T	CCN - 29465
V4.461	11-08-2012	W-SMA-8.71	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 29465
V4.462	11-08-2012	W-SMA-8.71	SMA Boundary Modification	T	CCN - 29465

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
V4.463	11-08-2012	W-SMA-8.71	Map Revision (R4)	T	CCN - 29465
V4.464	11-26-2012		Add Reference Document Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, Water/Cañon de Valle Watershed, Receiving Waters: Cañon de Valle, Potrillo Canyon, Water Canyon, Fence Canyon, Volume 4	D	ERID-215108
V4.465	11-26-2012	Appendix D: References	Add Reference Document Site Discharge Pollution Prevention Plan for Los Alamos National Laboratory, NPDES Permit No. NM0030759, March 2, 2011, vol. IV Water Canyon & Canon de Valle Watershed	D	LA-UR-11-01554
V4.466	11-27-2012	W-SMA-12.05	Change to SDPPP - New Site description for 49-001(g)	T	
V4.467	11-27-2012	W-SMA-15.1	Change to SDPPP - New Site description for 49-005(a)	T	
V4.468	11-27-2012	W-SMA-11.7	Change to SDPPP - New Site description for 49-008(c)	T	
V4.469	12-07-2012	1.0 Background	Change to SDPPP - Updated hyperlink to public website.	T	
V4.471	12-07-2012	1.0 Background	Change to SDPPP - Removed sentence referencing hyperlink to procedures on public website	T	
V4.472	12-07-2012	1.0 Background	Change to SDPPP - Replaced second and third sentences in second paragraph with: “These procedures reside on the public website and apply to the work activities described in this section.”	T	
V4.473	12-07-2012	Attachment 4: Physical Characteristics	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	
V4.474	12-07-2012	1.0 Background	Change to SDPPP - Replaced second bullet with: “SOP-5220, EX-ID/PR-ID Project Reviews for the FFCA Project and Individual Permit, describes the process for proactively identifying and managing proposed construction projects that may influence SMAs.”	T	
V4.475	12-07-2012	1.0 Background	Change to SDPPP - Replaced 2nd and 3rd sentences in 2nd paragraph with: “These procedures reside on the public website and apply to the work activities described in this section.”	T	

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
V4.477	12-07-2012		Change to SDPPP - Updated second sentence with 2012 post-storm inspection data.	T	
V4.478	12-07-2012	CDV-SMA-1.7	Change to SDPPP - For SMAs that have sampled, updated second sentence with 2012 post storm inspection data.	T	
V4.479	12-07-2012	CDV-SMA-1.7	Change to SDPPP - Changed (2)s to (1) for all suites in table and removed paragraph under table for SMAs remaining in baseline sampling.	T	
V4.480	12-07-2012	CDV-SMA-1.7	Change to SDPPP - For SMAs remaining in baseline sampling, replaced second and third sentences with "Initial confirmation sampling will continue as provided above until one confirmation sample is collected from this SMA."	T	
V4.481	12-10-2012	Attachment 1: Amendments	Change to SDPPP - Suppressed the R1 amendments and only have FY12 amendments in the table.	T	
V4.482	12-10-2012	1.0 Background	Add new procedure	T	
V4.484	12-10-2012	Appendix A: Acronyms	Change to SDPPP - Added: Certified Inspector of Sediment and Erosion Control (CISEC) and Certified Professional in Erosion and Sediment Control (CPESC)	T	
V4.485	12-18-2012	W-SMA-12.05	Change to SDPPP - Updated site description for 49-001(g)	T	
V4.486	12-18-2012	W-SMA-15.1	Change to SDPPP - Updated unit description for 49-005(a)	T	
V4.487	12-18-2012	W-SMA-11.7	Change to SDPPP - Updated unit description for 49-008(c)	T	
V4.488	12-18-2012	CDV-SMA-6.01	Change to SDPPP - Updated unit description for 14-001(g)	T	
V4.489	12-18-2012	CDV-SMA-6.02	Change to SDPPP - Updated unit description for 14-002(d)	T	
V4.490	12-18-2012	CDV-SMA-6.02	Change to SDPPP - Updated unit description for 14-002(e)	T	
V4.491	12-18-2012	CDV-SMA-6.01	Change to SDPPP - Updated unit description for 14-006	T	
V4.492	12-18-2012	CDV-SMA-3	Change to SDPPP - Updated unit description for 14-009	T	
V4.493	12-18-2012	CDV-SMA-4	Change to SDPPP - Updated unit description for 14-010	T	
V4.494	12-18-2012	CDV-SMA-9.05	Change to SDPPP - Updated unit description for 15-007(b)	T	

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
V4.495	12-18-2012	CDV-SMA-7	Change to SDPPP - Updated unit description for 15-008(d)	T	
V4.496	12-18-2012	CDV-SMA-8.5	Change to SDPPP - Updated unit description for 15-014(a)	T	
V4.497	12-18-2012	CDV-SMA-2.3	Change to SDPPP - Updated unit description for 16-003(n)	T	
V4.498	12-18-2012	CDV-SMA-2.3	Change to SDPPP - Updated unit description for 16-003(o)	T	
V4.499	12-18-2012	CDV-SMA-2.42	Change to SDPPP - Updated unit description for 16-010(b)	T	
V4.500	12-18-2012	CDV-SMA-2.5	Change to SDPPP - Updated unit description for 16-010(c)	T	
V4.501	12-18-2012	CDV-SMA-2.5	Change to SDPPP - Updated unit description for 16-010(d)	T	
V4.502	12-18-2012	CDV-SMA-2.51	Change to SDPPP - Updated unit description for 16-010(i)	T	
V4.503	12-18-2012	CDV-SMA-1.3	Change to SDPPP - Updated unit description for 16-017(a)-99	T	
V4.504	12-18-2012	CDV-SMA-1.2	Change to SDPPP - Updated unit description for 16-017(b)-99	T	
V4.505	12-18-2012	CDV-SMA-2.41	Change to SDPPP - Updated unit description for 16-018	T	
V4.506	12-18-2012	CDV-SMA-1.7	Change to SDPPP - Updated unit description for 16-019	T	
V4.507	12-18-2012	W-SMA-1.5	Change to SDPPP - Updated unit description for 16-020	T	
V4.508	12-18-2012	CDV-SMA-2	Change to SDPPP - Updated unit description for 16-021(c)	T	
V4.509	12-18-2012	CDV-SMA-1.45	Change to SDPPP - Updated unit description for 16-026(i)	T	
V4.510	12-18-2012	W-SMA-8.7	Change to SDPPP - Updated unit description for 16-026(j2)	T	
V4.511	12-18-2012	CDV-SMA-1.4	Change to SDPPP - Updated unit description for 16-026(l)	T	
V4.512	12-18-2012	CDV-SMA-1.3	Change to SDPPP - Updated unit description for 16-026(m)	T	
V4.513	12-18-2012	CDV-SMA-2.5	Change to SDPPP - Updated the unit description for 16-028(a)	T	
V4.514	12-18-2012	CDV-SMA-1.4	Change to SDPPP - Updated unit description for 16-028(c)	T	
V4.515	12-19-2012	CDV-SMA-1.2	Change to SDPPP - Updated unit description for 16-029(k)	T	
V4.516	12-19-2012	CDV-SMA-1.4	Change to SDPPP - Updated unit description for 16-030(c)	T	
V4.517	12-19-2012	PT-SMA-0.5	Change to SDPPP - Updated unit description for 15-004(f)	T	
V4.518	12-19-2012	PT-SMA-1.7	Change to SDPPP - Updated unit description for 15-006(a)	T	

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
V4.519	12-19-2012	PT-SMA-1	Change to SDPPP - Updated unit description for 15-008(a)	T	
V4.520	12-19-2012	PT-SMA-2	Change to SDPPP - Updated unit description for 15-008(f)	T	
V4.521	12-19-2012	PT-SMA-0.5	Change to SDPPP - Updated unit description for 15-009(e)	T	
V4.522	12-19-2012	PT-SMA-2	Change to SDPPP - Updated unit description for 36-003(b)	T	
V4.523	12-19-2012	PT-SMA-3	Change to SDPPP - Updated unit description for 36-004(a)	T	
V4.524	12-19-2012	F-SMA-2	Change to SDPPP - Updated unit description for 36-004(c)	T	
V4.525	12-19-2012	PT-SMA-4.2	Change to SDPPP - Updated unit description for 36-004(d)	T	
V4.526	12-19-2012	PT-SMA-2	Change to SDPPP - Updated unit description for 36-004(e)	T	
V4.527	12-19-2012	PT-SMA-3	Change to SDPPP - Updated unit description for 36-006	T	
V4.528	12-19-2012	PT-SMA-0.5	Change to SDPPP - Updated unit description for C-15-004	T	
V4.529	12-19-2012	PT-SMA-2.01	Change to SDPPP - Updated unit description for C-36-001	T	
V4.530	12-19-2012	PT-SMA-2.01	Change to SDPPP - Updated unit description for C-36-006(e)	T	
V4.531	12-19-2012	W-SMA-14.1	Change to SDPPP - Updated unit description for 15-004(h)	T	
V4.532	12-19-2012	W-SMA-14.1	Change to SDPPP - Updated unit description for 15-014(l)	T	
V4.533	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-002	T	
V4.534	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-003(b)	T	
V4.535	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-005(a)	T	
V4.536	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-005(b)	T	
V4.537	12-19-2012	W-SMA-9.8	Change to SDPPP - Updated unit description for 11-005(c)	T	
V4.538	12-19-2012	W-SMA-9.9	Change to SDPPP - Updated unit description for 11-006(b)	T	
V4.539	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-006(c)	T	
V4.540	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-006(d)	T	
V4.541	12-19-2012	W-SMA-9.7	Change to SDPPP - Updated unit description for 11-011(a)	T	
V4.542	12-19-2012	W-SMA-9.7	Change to SDPPP - Updated unit description for 11-011(b)	T	

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
V4.543	12-19-2012	W-SMA-10	Change to SDPPP - Updated unit description for 11-011(d)	T	
V4.544	12-19-2012	W-SMA-9.5	Change to SDPPP - Updated unit description for 11-012(c)	T	
V4.545	12-19-2012	CDV-SMA-2.3	Change to SDPPP - Updated unit description for 13-001	T	
V4.546	12-19-2012	CDV-SMA-2.3	Change to SDPPP - Updated unit description for 13-002	T	
V4.547	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-001(e)	T	
V4.548	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-003(f)	T	
V4.549	12-19-2012	W-SMA-8.7	Change to SDPPP - Updated unit description for 16-004(a)	T	
V4.550	12-19-2012	W-SMA-8.71	Change to SDPPP - Updated unit description for 16-004(c)	T	
V4.551	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-026(b)	T	
V4.552	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-026(c)	T	
V4.553	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-026(d)	T	
V4.554	12-19-2012	W-SMA-5	Change to SDPPP - Updated unit description for 16-026(e)	T	
V4.555	12-19-2012	W-SMA-8.7	Change to SDPPP - Updated unit description for 16-029(h)	T	
V4.556	12-19-2012	CDV-SMA-2.3	Change to SDPPP - Updated unit description for 16-031(h)	T	
V4.557	12-19-2012	W-SMA-8.7	Change to SDPPP - Updated unit description for 16-035	T	
V4.558	02-06-2013	CDV-SMA-6.01	Site Boundary Modification	T	CCN - 30363
V4.559	02-06-2013	CDV-SMA-6.01	Map Revision (R5)	T	CCN - 30363
V4.560	02-06-2013	W-SMA-1.5	Site Boundary Modification	T	CCN - 30378
V4.561	02-06-2013	W-SMA-1.5	Map Revision (R6)	T	CCN - 30378
V4.562	02-06-2013	W-SMA-3.5	Site Boundary Modification	T	CCN - 30380
V4.563	02-06-2013	W-SMA-3.5	Map Revision (R3)	T	CCN - 30380
V4.564	02-06-2013	W-SMA-7.8	Site Boundary Modification	T	CCN - 30384
V4.565	02-06-2013	W-SMA-7.8	Map Revision (R4)	T	CCN - 30384
V4.566	02-06-2013	W-SMA-8	Site Boundary Modification	T	CCN - 30386

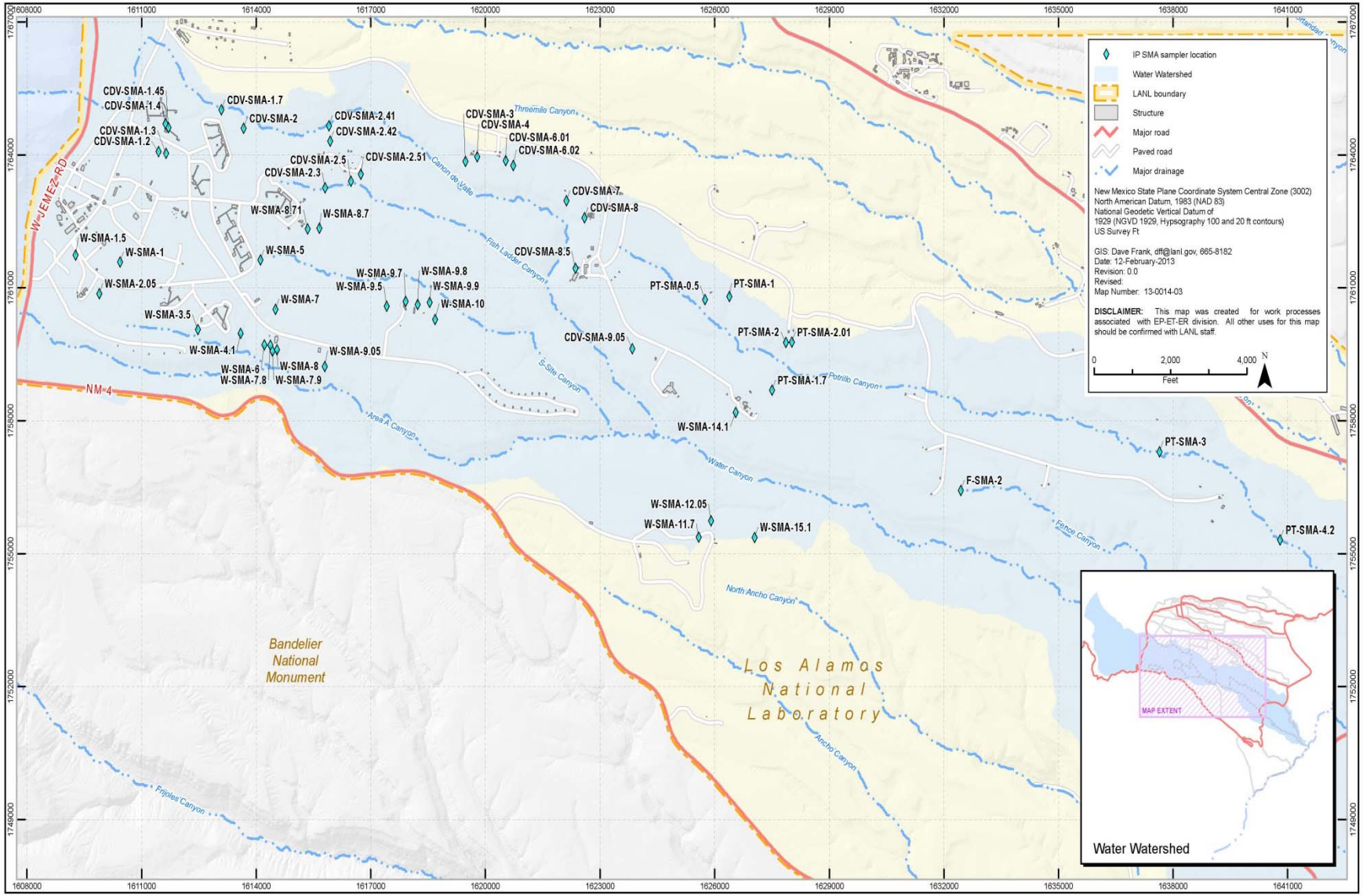
Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.567	02-06-2013	W-SMA-8	Map Revision (R5)	T	CCN - 30386
V4.568	02-06-2013	W-SMA-9.05	Site Boundary Modification	T	CCN - 30387
V4.569	02-06-2013	W-SMA-9.05	Map Revision (R4)	T	CCN - 30387
V4.570	02-07-2013	W-SMA-10	Site Boundary Modification	T	CCN - 30545
V4.571	02-07-2013	W-SMA-10	Map Revision (R6)	T	CCN - 30545
V4.572	02-07-2013	W-SMA-2.05	Site Boundary Modification	T	CCN - 30379
V4.573	02-07-2013	W-SMA-2.05	Map Revision (R4)	T	CCN - 30379
V4.574	02-07-2013	W-SMA-5	Site Boundary Modification	T	CCN - 30544
V4.575	02-07-2013	W-SMA-5	Map Revision (R8)	T	CCN - 30544
V4.576	02-07-2013	W-SMA-7.9	Site Boundary Modification	T	CCN - 30385
V4.577	02-07-2013	W-SMA-7.9	Map Revision (R3)	T	CCN - 30385
V4.578	02-19-2013	W-SMA-1	Site Boundary Modification	T	CCN - 30377
V4.579	02-19-2013	W-SMA-1	Site Boundary Modification	T	CCN - 30377
V4.580	02-19-2013	W-SMA-1	Map Revision (R6)	T	CCN - 30377
V4.581	02-22-2013	CDV-SMA-6.02	Site Boundary Modification	T	CCN - 30580
V4.582	02-22-2013	CDV-SMA-6.02	Site Boundary Modification	T	CCN - 30580
V4.583	02-22-2013	CDV-SMA-6.02	Map Revision (R5)	T	CCN - 30580
V4.584	04-16-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-03-06-0028	T	CCN - 22702
V4.585	07-23-2012	W-SMA-14.1	New Control - Corrective Action Control ID: W021-03-01-0020	T	CCN - 25765
V4.586	09-25-2012	W-SMA-11.7	Retire Control - Damaged and/or Replaced Control ID: W019-04-06-0002	T	CCN - 28011
V4.587	02-06-2013	CDV-SMA-6.01	Site Boundary Modification	T	CCN - 30363
V4.588	02-06-2013	W-SMA-1.5	Site Boundary Modification	T	CCN - 30378
V4.589	02-06-2013	W-SMA-8	Site Boundary Modification	T	CCN - 30386
V4.590	02-07-2013	W-SMA-5	Site Boundary Modification	T	CCN - 30544

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
V4.591	06-06-2012	W-SMA-5	Retire Control – Life Cycle Expired Control ID: W006-01-01-0002	T	CCN - 24004
V4.592	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID:: W006-06-01-0022	T	CCN - 24004
V4.593	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID: W006-06-01-0023	T	CCN - 24004
V4.594	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID: W006-06-01-0024	T	CCN - 24004
V4.595	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID: W006-06-01-0025	T	CCN - 24004
V4.596	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID: W006-06-01-0026	T	CCN - 24004
V4.597	06-06-2012	W-SMA-5	New Control - Augment Existing Control ID: W006-06-01-0027	T	CCN - 24004
V4.598	06-13-2012	W-SMA-5	Map Revision (R6)	T	CCN - 24004
V4.599	02-21-2013	CDV-SMA-3	Site Boundary Modification	T	CCN - 30582
V4.600	03-14-2013	CDV-SMA-3	Map Revision (R7)	T	CCN - 30582
V4.601	02-21-2013	CDV-SMA-4	Site Boundary Modification	T	CCN - 30581
V4.602	03-14-2013	CDV-SMA-4	Map Revision (R4)	T	CCN - 30581
V4.603	04-04-2013	W-SMA-7	Site Boundary Modification	T	CCN - 30383
V4.604	04-04-2013	W-SMA-7	Map Revision (R6)	T	CCN - 30383

Attachment 2
Vicinity Map



Attachment 3
Precipitation Network

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG253	May 13, 2012	0.64	0.29	180
	June 28, 2012	0.4	0.32	60
	July 02, 2012	0.2	0.11	60
	July 03, 2012	0.1	0.09	60
	July 04, 2012	0.41	0.24	60
	July 07, 2012	0.06	0.05	0
	July 10, 2012	0.05	0.03	0
	July 11, 2012	1.89	1.74	60
	July 13, 2012	0.05	0.04	0
	July 21, 2012	0.12	0.09	0
	July 24, 2012	0.55	0.43	120
	July 25, 2012	0.26	0.26	0
	August 02, 2012	0.29	0.19	60
	August 03, 2012	0.07	0.05	60
	August 05, 2012	0.14	0.03	60
	August 16, 2012	0.44	0.38	60
	August 20, 2012	0.11	0.07	60
	August 22, 2012	0.09	0.03	60
	August 24, 2012	0.01	0.01	0
	September 10, 2012	0.59	0.19	120
	September 28, 2012	0.27	0.21	60
	October 12, 2012	1.01	0.33	240
RG257	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.35	0.11	120
	June 28, 2012	0.06	0.04	60
	July 02, 2012	0.18	0.06	60
	July 03, 2012	0.11	0.09	60
	July 04, 2012	0.42	0.28	60
	July 07, 2012	0.01	0.01	0
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.46	0.45	60
	July 13, 2012	0.02	0.02	0
	July 21, 2012	0.1	0.09	0
	July 24, 2012	0.21	0.15	60
	July 25, 2012	0.15	0.15	0

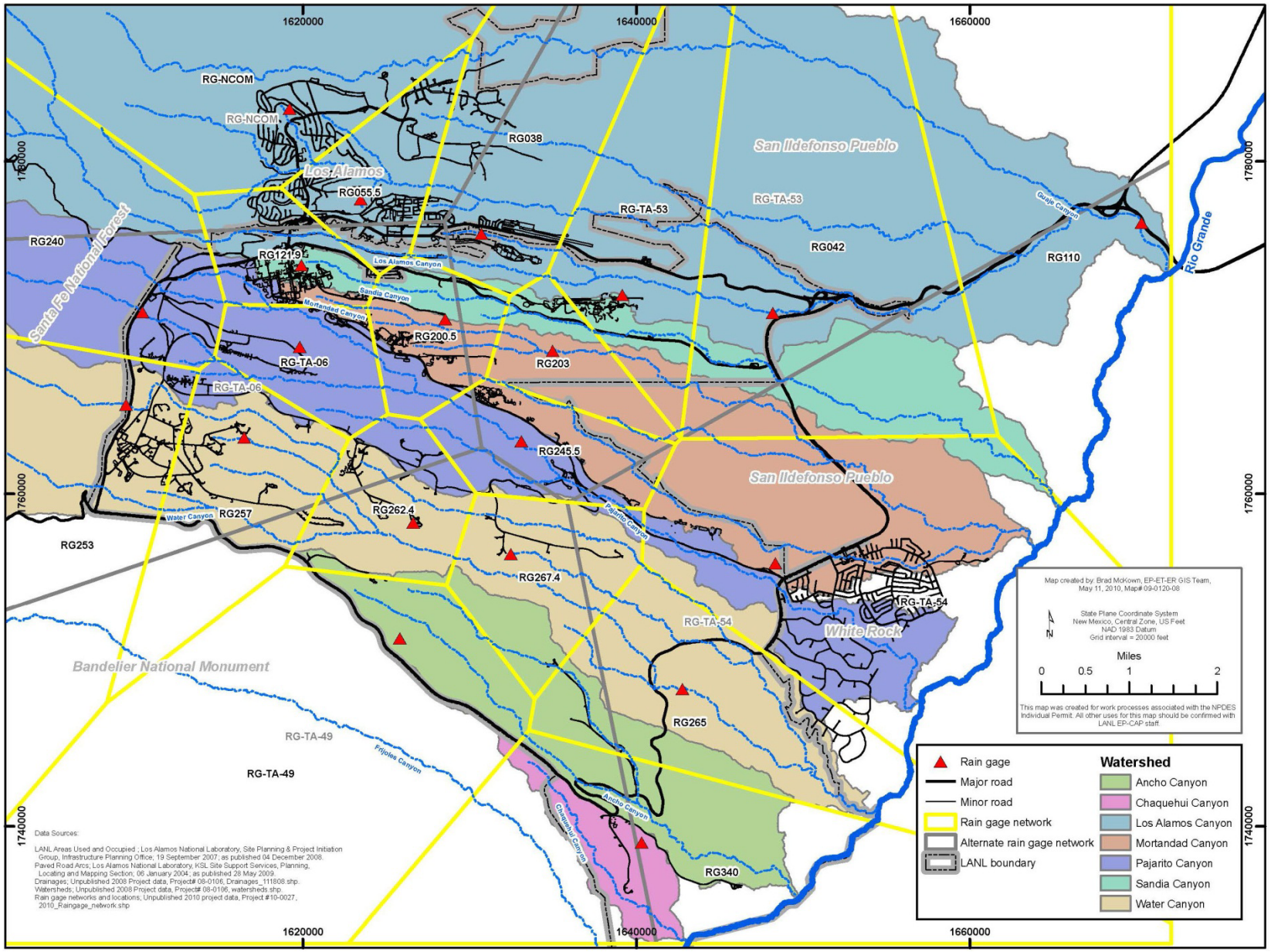
Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG257	August 02, 2012	0.2	0.09	60
	August 05, 2012	0.05	0.03	0
	August 16, 2012	0.33	0.24	60
	August 20, 2012	0.1	0.07	0
	August 22, 2012	0.07	0.03	60
	August 24, 2012	0.16	0.14	60
	September 10, 2012	0.62	0.21	120
	September 28, 2012	0.42	0.34	60
	October 12, 2012	0.81	0.2	180
RG262.4	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.27	0.11	120
	July 02, 2012	0.05	0.02	0
	July 03, 2012	0.12	0.1	60
	July 04, 2012	0.39	0.3	60
	July 07, 2012	0.37	0.3	60
	July 11, 2012	0.03	0.03	0
	July 13, 2012	0.01	0.01	0
	July 24, 2012	0.04	0.03	0
	July 25, 2012	0.41	0.27	60
	August 02, 2012	0.22	0.15	60
	August 03, 2012	0.01	0.01	0
	August 05, 2012	0.14	0.09	60
	August 16, 2012	0.11	0.02	60
	August 22, 2012	0.22	0.1	60
	August 24, 2012	0.29	0.23	60
	August 26, 2012	0.12	0.12	0
	September 10, 2012	0.54	0.25	120
	September 28, 2012	0.16	0.05	60
	October 12, 2012	0.38	0.19	120
RG267.4	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.22	0.09	120
	July 02, 2012	0.04	0.02	0
	July 03, 2012	0.11	0.05	60
	July 04, 2012	0.35	0.21	60
	July 07, 2012	0.39	0.3	60
	July 13, 2012	0.01	0.01	0

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG267.4	July 21, 2012	0.01	0.01	0
	July 24, 2012	0.01	0.01	0
	July 25, 2012	0.17	0.11	60
	August 02, 2012	0.26	0.15	60
	August 05, 2012	0.07	0.06	0
	August 16, 2012	0.24	0.15	60
	August 20, 2012	0.07	0.05	0
	August 22, 2012	0.33	0.24	60
	August 24, 2012	0.3	0.22	60
	August 26, 2012	0.42	0.39	60
	September 10, 2012	0.58	0.29	120
	September 28, 2012	0.06	0.03	60
	October 12, 2012	0.32	0.16	60

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	1611616 (35.850083)	1764707 (-106.347183)	1,103,638.73	16-020 16-026(l) 16-028(c) 16-030(c)	22,202.52 1.52 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[1]	1619475 (35.847767)	1763859 (-106.320667)	14,716.22	14-009	2,592.95
Cañon de Valle	V011	CDV-SMA-4[1]	1619783 (35.84805)	1763959 (-106.319633)	1,802.01	14-010	0.00
Cañon de Valle	V012	CDV-SMA-6.01[1]	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]	1620725 (35.8475)	1763759 (-106.31645)	2,167.93	14-002(c) 14-002(d) 14-002(e)	0.00 0.00 0.00
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[2]	1626387 (35.83938)	1760802 (-106.297336)	174,043.98	15-004(f) 15-008(a)	20,138.89 553.88
Potrillo	I003	PT-SMA-1.7	1627504 (35.83355)	1758678 (-106.293567)	70,545.34	15-006(a)	0.00
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[2]	1628016 (35.836535)	1759766 (-106.291838 292)	6,642.90	C-36-001 C-36-006(e)	0.00 1,619.03
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 (35.841483)	1761579 (-106.351167)	1,579,254.32	16-017(j)-99 16-026(c2) 16-026(v)	698.75 1.56 7.03
Water	W002	W-SMA-1.5[1]	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[1]	1609892 (35.839517)	1760865 (-106.353)	38,238.00	16-028(e)	7.03
Water	W004	W-SMA-3.5[1]	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[1]	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	1614205 (35.836333)	1759702 (-106.338433)	3,352.44	11-001(c)	1,187.35
Water	W008	W-SMA-7[1]	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[1]	1614363 (35.836317)	1759695 (-106.3379)	68,927.10	16-031(a)	7.03
Water	W010	W-SMA-7.9[1]	1614423 (35.83595)	1759563 (-106.3377)	293.51	16-006(c)	52.98
Water	W011	W-SMA-8[1]	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[2]	1615344 (35.843552)	1762328 (-106.334599)	1,012.98	16-004(c)	335.04
Water	W013	W-SMA-9.05[1]	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[1]	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[2]	1626555 (35.83216)	1758174 (-106.296764)	225,161.00	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] Site boundary revised.

[2] 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	MEx	X	X	X	X	X						X	
CDV-SMA-1.3	181	SS100422	MEx	X	X	X	X	X						X	
CDV-SMA-1.4	182	SS2542	CAI												
CDV-SMA-1.45	183	SS090406	CAM5	X											
CDV-SMA-1.7	184	SS2547	MEx	X	X	X	X	X						X	
CDV-SMA-2	185	SS255	MEx	X	X	X	X	X							X
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	MEx	X	X	X	X	X					X		
CDV-SMA-2.5	189	SS090420	MEx												X
CDV-SMA-2.51	190	SS090409	MEx	X	X	X	X	X						X	X
CDV-SMA-3	191	SS25605	CAM5	X										X	
CDV-SMA-4	192	SS25610	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	SS090411	CAM5	X						X	X			X	
CDV-SMA-7	195	SS252625	MEx	X	X	X	X	X							
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	SS094813	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	SS25203	CAI												
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	SS2522	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	MEx	X	X	X	X	X							X
W-SMA-8.7	218	SS103933	MEx	X	X	X	X	X						X	
W-SMA-8.71	219	SS123938	CAM5	X	X	X	X	X							
W-SMA-9.05	220	SS093914	MEx	X	X	X	X	X						X	
W-SMA-9.5	221	SS093915	MEx	X	X	X	X	X							
W-SMA-9.7	222	SS093916	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-9.8	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.