

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

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Pajarito Watershed

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

Volume 3



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129.0 2M-SMA-1: SWMU 03-010(a)

129.1 Site Descriptions

One historical industrial activity area is associated with E001, 2M-SMA-1: Site 03-010(a).

SWMU 03-010(a) is the former outfall area from a former vacuum repair shop at TA-03. The outfall area is located on a steep slope on the rim of Twomile Canyon about 30 ft west of a general warehouse (building 03-30). The outfall received discharges of waste oil containing mercury between 1950 and 1957. Former workers estimated that more than 100 lb of mercury was disposed of at this Site. SWMU 03-010(a) was investigated and remediated between 1992 and 2010. The 1994 Phase II RFI confirmed that the contaminants of concern (mercury, petroleum hydrocarbons, and volatile organic chemicals) in surface soil were no longer present above applicable SSLs.

RFI and remediation activities were completed for SWMU 03-010(a) before the Consent Order went into effect in 2005. Groundwater monitoring was conducted in accordance with the Consent Order and is complete. SWMU 03-010(a) was investigated concurrently with AOC 03-001(e), the former vacuum repair shop in building 03-0030. Residual contamination associated with AOC 03-001(e) may be located beneath building 03-0030. Therefore, further characterization and investigation of AOC 03-001(e) is delayed until the demolition of building 03-0030. As a result, a COC has not been requested for SWMU 03-010(a).

The project map (Figure 129-1) 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>.

129.2 Control Measures

Rock check dams, gabions, and wattles are in place to control run-on to the SMA from the paved areas adjacent to the SMA. Most sources of run-on are the NM 501 culvert and parking lot run-off routed to the channel next to building 03-0030. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 129-1).

Enhanced controls were installed and certified 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 129-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00102040026	Established Vegetation		X	X		B
E00103010014	Earthen Berm	X			X	EC
E00103110015	Eco-Block	X			X	EC
E00104060010	Rip Rap	X		X		CB
E00104060011	Rip Rap	X		X		CB
E00105020013	Sediment Basin	X			X	EC
E00106010007	Rock Check Dam	X			X	CB
E00106010008	Rock Check Dam	X			X	CB
E00106010009	Rock Check Dam	X			X	CB
E00106010016	Rock Check Dam	X			X	EC
E00106010017	Rock Check Dam	X			X	EC
E00106010018	Rock Check Dam	X			X	EC
E00106010019	Rock Check Dam	X			X	EC
E00106010020	Rock Check Dam	X			X	EC
E00106010021	Rock Check Dam	X			X	EC
E00106010022	Rock Check Dam	X			X	EC
E00106010023	Rock Check Dam	X			X	EC
E00106010024	Rock Check Dam	X			X	EC
E00106010025	Rock Check Dam	X			X	EC
E00107010003	Gabions		X		X	CB
E00107010004	Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

129.3 Storm Water Monitoring

SWMU 03-010(a) is monitored within 2M-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and August 20, 2011 (Figure 129-2). Analytical results from these baseline monitoring samples yielded two TAL exceedances:

- Aluminum concentration of 1200 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 18.3 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures, two corrective action storm water samples were collected on July 25, 2012, and September 12, 2012 (Figure 129-2). Analytical results from these corrective action monitoring samples yielded one TAL exceedance:

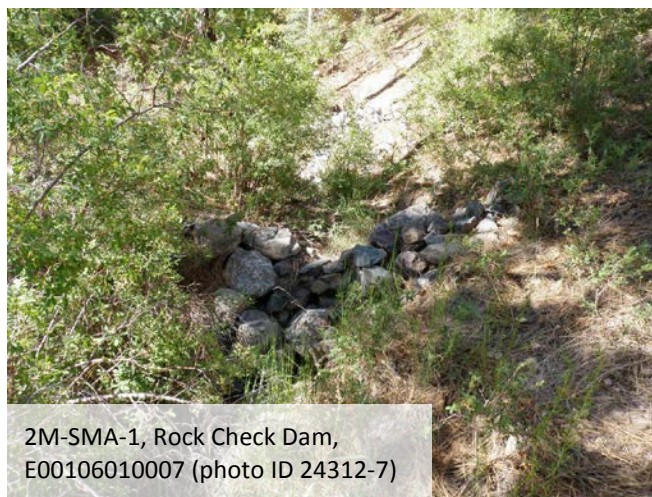
- Aluminum concentration of 1430 µg/L (MTAL is 750 µg/L).

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 03-010(a):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was not detected above soil, sediment, or tuff BVs in shallow (i.e., less than 3 ft bgs) RFI samples.

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 129-2. 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 129-2.



2M-SMA-1, Rock Check Dam,
E00106010007 (photo ID 24312-7)

Monitoring location 2M-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals, including aluminum, are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum results from both 2011 and 2012 are between these values.

All the analytical results for these samples are reported in the 2011 and 2012 Annual Report.

129.4 Inspections and Maintenance

RG121.9 recorded three storm events at 2M-SMA-1 during the 2013 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 129-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30677	4-23-2013
Storm Rain Event	BMP-33606	7-25-2013
Storm Rain Event	BMP-35557	9-24-2013
Annual Erosion Evaluation	COMP-36616	11-8-2013

No maintenance activities were conducted at 2M-SMA-1 in 2013.

129.5 Compliance Status

The Site associated with 2M-SMA-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 129-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-010(a)	Enhanced Control Corrective Action Monitoring	Corrective Action Initiated after 2 nd TAL exceedance	2 nd initiation on 10-19-12



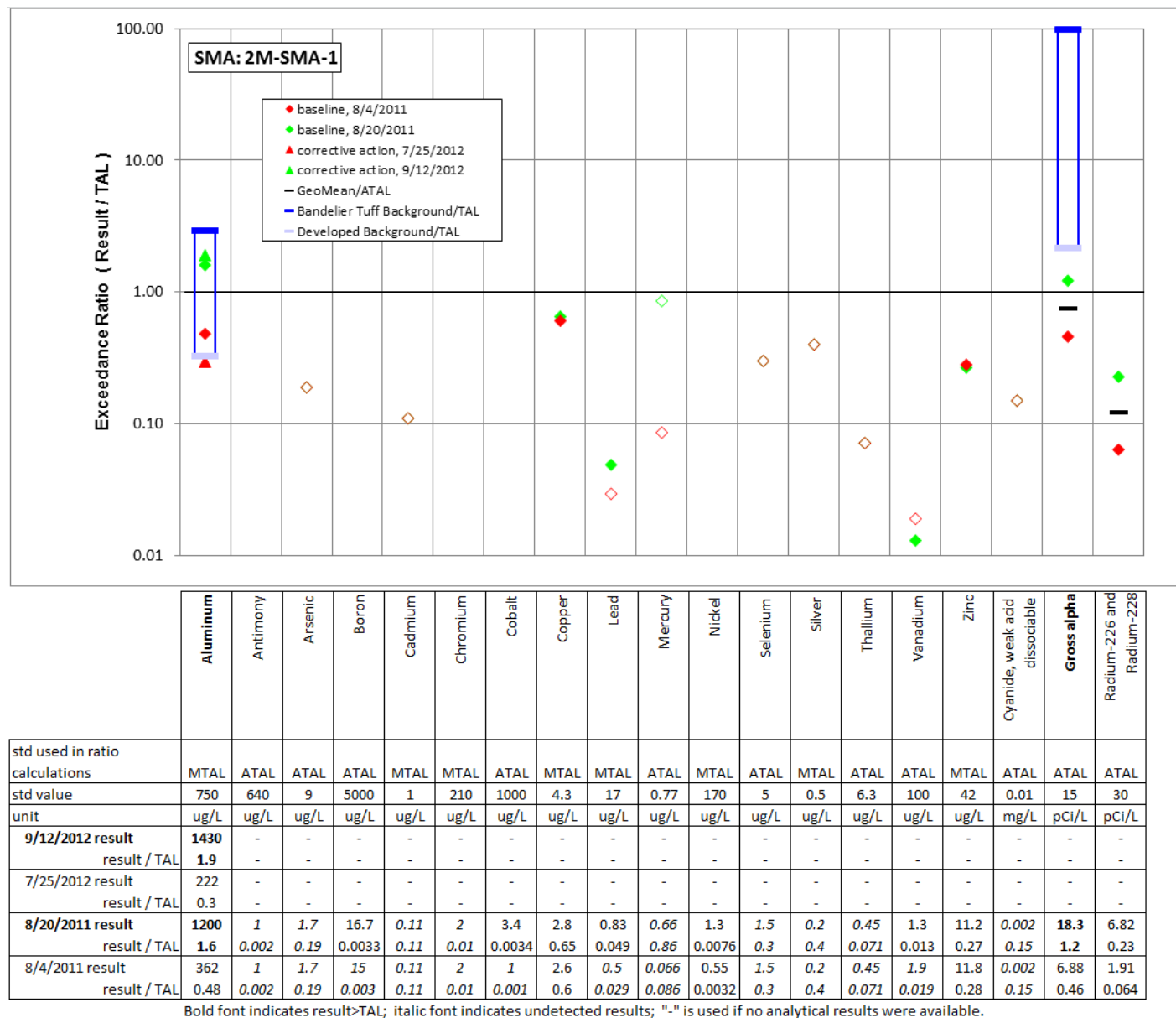


Figure 129-2 Inorganic analytical results summary plot for 2M-SMA-1

130.0 2M-SMA-1.42: SWMU 06-001(a)

130.1 Site Descriptions

One historical industrial activity area is associated with E002, 2M-SMA-1.42: Site 06-001(a).

SWMU 06-001 (a) is an inactive septic tank (structure 06-40) with a volume of approximately 840 gal. (the precise volume is not known) and the associated outfall area. The septic tank system served buildings 06-1 and 06-3 (currently a storage building). The septic tank is located approximately 400 ft north of Twomile Mesa Road and about 100 ft north of building 06-3. Building 06-1 included a laboratory and a carpenter shop. The laboratory was used in 1944 to develop analytical procedures for nonradioactive cobalt-tracer shots. Although no further information exists on the use of the laboratory, the carpenter shop may have later expanded into the laboratory space. In the late 1950s, silver soldering may have been done in the shop. The building was not used after the carpenter shop closed in the early 1980s. Building 06-3 contained a restroom, a darkroom, and a laboratory with a lead-lined sink. Building 06-3 was first used as a control bunker for explosives shots; it was remodeled in 1944 with explosion-proof fixtures. From 1945 to 1948, the building housed offices, and from 1948 to the early 1950s, the building had a firing control panel and a bridewire-testing laboratory. In 1972, the building was remodeled into a printed-circuit shop, and it was later used as a silk-screen facility until the mid-1980s. Since the mid-1980s, building 06-3 has been used for storage.

The septic system outfall drained to Tributary A of Twomile Canyon. The system ceased being used in December 1986, and its drainline was plugged in 1988. During a reconnaissance visit in 1992, the tank was located and found to be empty. Buildings 06-1 and 06-3 were demolished and removed in 2004. The septic system was left in place.

Consent Order investigations have not been performed at SWMU 06-001(a), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994.

The project map (Figure 130-1) 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>.

130.2 Control Measures

A culvert diverts storm water from Twomile Mesa Road west and away from the Permitted Feature. The rock check dam is minimizing run-on potential to the area below the outfall at this Permitted Feature.



Run-on to the outfall area is minimal, and potential run-on impact from the sheet flow is managed with wattles. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 130-1).

Enhanced controls were installed and certified 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 130-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00201010013	Seed and Wood Mulch			X		EC
E00202040015	Established Vegetation		X	X		B
E00203010011	Earthen Berm		X		X	EC
E00203010012	Earthen Berm	X			X	EC
E00203010014	Earthen Berm	X			X	EC
E00203120003	Rock Berm	X			X	CB
E00206010006	Rock Check Dam	X			X	CB
E00206010007	Rock Check Dam	X			X	CB
E00206010008	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

130.3 Storm Water Monitoring

SWMU 06-001(a) is monitored within 2M-SMA-1.42. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 15, 2012 (Figure 130-2). Analytical results from these samples yielded two TAL exceedances:

- Aluminum concentration of 794 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 51.8 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 06-001(a):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above BVs in shallow soil and sediment samples collected during the 1994 RFI.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical site activities.

TAL exceedances were also evaluated against the appropriate storm water 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 130-2. 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 130-2.

Monitoring location 2M-SMA-1.42 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 sediment derived from Bandelier Tuff were compared with aluminum and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Aluminum is associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for background storm water containing sediment from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Gross-alpha—The gross alpha UTL for background storm water containing sediment 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.

130.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.42 during the 2013 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 130-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30678	4-23-2013
Storm Rain Event	BMP-33405	7-23-2013
Storm Rain Event	BMP-35489	9-20-2013
Annual Erosion Evaluation	COMP-36617	11-6-2013

No maintenance activities were conducted at 2M-SMA-1.42 in 2013.

130.5 Compliance Status

The Site associated with 2M-SMA-1.42 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 130-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 06-001(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 06-27-2012

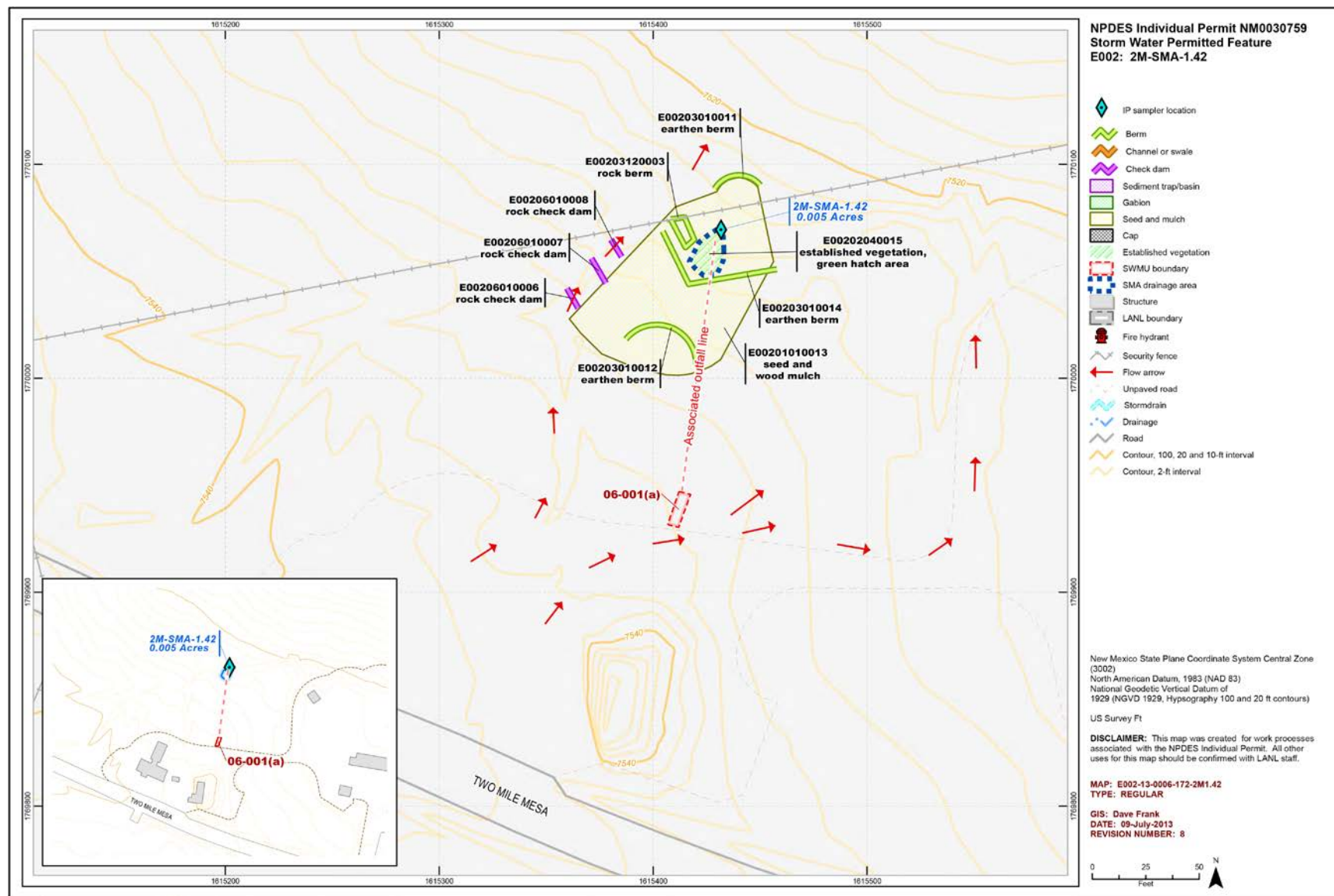


Figure 130-1 2M-SMA-1.42 location map

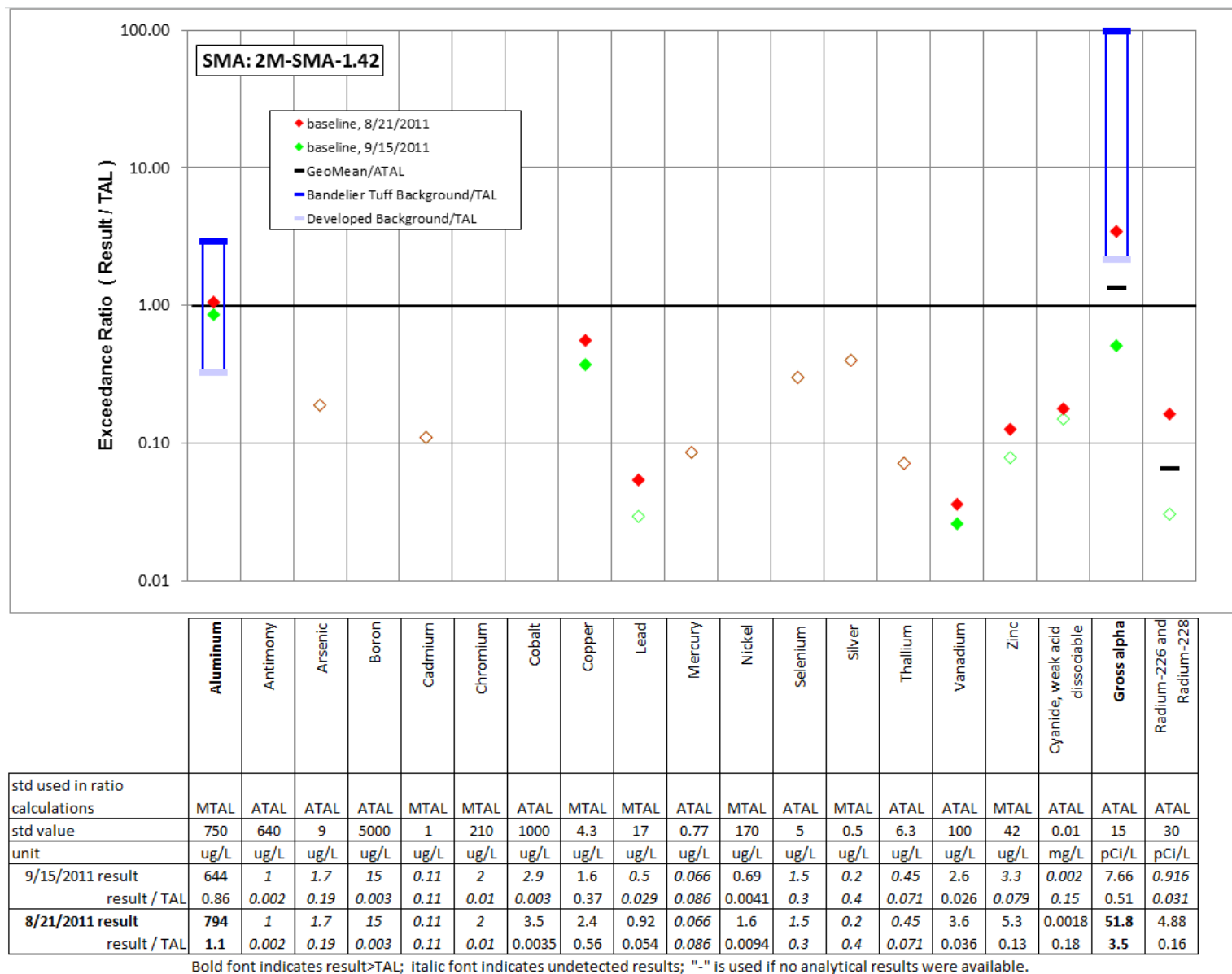


Figure 130-2 Inorganic analytical results summary plot for 2M-SMA-1.42

131.0 2M-SMA-1.43: SWMUs 22-014(a) and 22-015(a)

131.1 Site Descriptions

Two historical industrial activity areas are associated with E003, 2M-SMA-1.43: Sites 22-014(a), and 22-015(a).

SWMU 22-014(a) consists of an active HE sump, an associated inactive drainline, and an inactive seepage pit. The sump is located immediately south of building 22-0093. The sump is constructed of concrete containing an inset aluminum tank and measures approximately 4 ft deep × 9 ft long × 3 ft wide. The sump system began operations in 1985 and receives rinse water from a washing facility for parts and clothing from explosives compacting operations in rooms C112 and C114 in building 22-0093. Before 1995, the sump discharged approximately 100 gal. of wastewater each week through a drainline to a seepage pit located 150 ft south of the sump in the upper part of Tributary B of Twomile Canyon. The seepage pit is 4 ft in diameter and 40 ft deep. In 1995, the drainline from the sump was capped, rendering the sump drainlines and seepage pit inactive. Operations in building 22-0093 continue to discharge wastewater to the sump, where the effluent is retained and suspended solids settle out as sludge. The sump contents are periodically removed for disposal at approved facilities at TA-16. The sump is equipped with a level monitor and an alarm that are monitored remotely in a manager's office.

Consent Order investigations have not been performed at SWMU 22-014(a); no decision-level data are available for this Site.

SWMU 22-015(a), situated on Twomile Mesa in the central-east area of TA-22, consists of two inactive seepage pits (Pits A and B), located east of building 22-91 in an open, grass-covered area. Each pit had an outside diameter of 4 ft and is filled with crushed gravel with a central 4-in. polypropylene perforated pipe vented to the surface. Pit A was 26 ft deep, and Pit B was 20 ft deep. The pits served rooms B102, B107, B121, B123, 8145, and B160 of building 22-91, which housed printed circuit-board etching operations. From 1985 to 1987, waste from the etching operations in building 22-91 was discharged through a 6-in.-diameter PVC drainpipe to the seepage pits. Before discharge, waste material was pretreated to remove contaminants. However, small quantities of dissolved contaminants and fine particulates may have been carried as effluent into the pits. The seepage pits were intended to allow liquids to percolate into the surrounding soils and tuff, while retaining potential contaminants in the seepage pit sediments and immediate (surrounding) soil matrix. The system failed because the effluent production rate exceeded the infiltration rate of liquid into the tuff, resulting in seepage pit overflow. In 1987, the pits were disconnected from their drainlines and left in place. After the pits were disconnected, effluent was allowed to daylight for only a few months before the drainlines were tied into the TA-16 WWTP.

Consent Order investigations have not been performed at Site 22-015(a), and no decision-level data are available for this Site.

The project map (Figure 131-1) 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>.

131.2 Control Measures

Most of the potential run-on to this Permitted Feature is controlled by the drop inlets and the culvert that discharges to the north of the SMA. This potential run-on source is completely diverted around the

SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 131-1).

Table 131-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00302040005	Established Vegetation		X	X		B
E00304060004	Rip Rap		X	X		B
E00306010003	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

131.3 Storm Water Monitoring

SWMUs 22-014(a) and 22-015(a) are monitored within 2M-SMA-1.43. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figure 131-2). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 1500 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 52 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 22-014(a):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site were not analyzed for inorganic chemicals because these constituents are not associated with historical Site activities.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical site activities.

SWMU 22-015(a):

- Aluminum may potentially be associated with industrial materials historically managed at the Site. Aluminum was not, however, detected above the BV in any of the three shallow 1994 RFI soil samples collected at the Site. Shallow samples were not collected during the 1997 RFI.
- Alpha-emitting radionuclides are not associated with historical site activities. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides since these constituents are not associated with historical site activities.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 131-2. 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 131-2.

The SMA receives runoff from an asphalt road, grassy areas, and undeveloped areas potentially impacted by surface releases from SWMU 22-015(a).

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is between these two values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

131.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.43 during the 2013 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 131-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30679	4-23-2013
Storm Rain Event	BMP-33406	7-23-2013
Storm Rain Event	BMP-35490	9-20-2013
Annual Erosion Evaluation	COMP-36618	11-6-2013
TAL Exceedance	COMP-35279	11-6-2013

No maintenance activities were conducted at 2M-SMA-1.43 in 2013.

131.5 Compliance Status

The Sites associated with 2M-SMA-1.43 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 131-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 22-014(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-21-13
SWMU 22-015(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-21-13



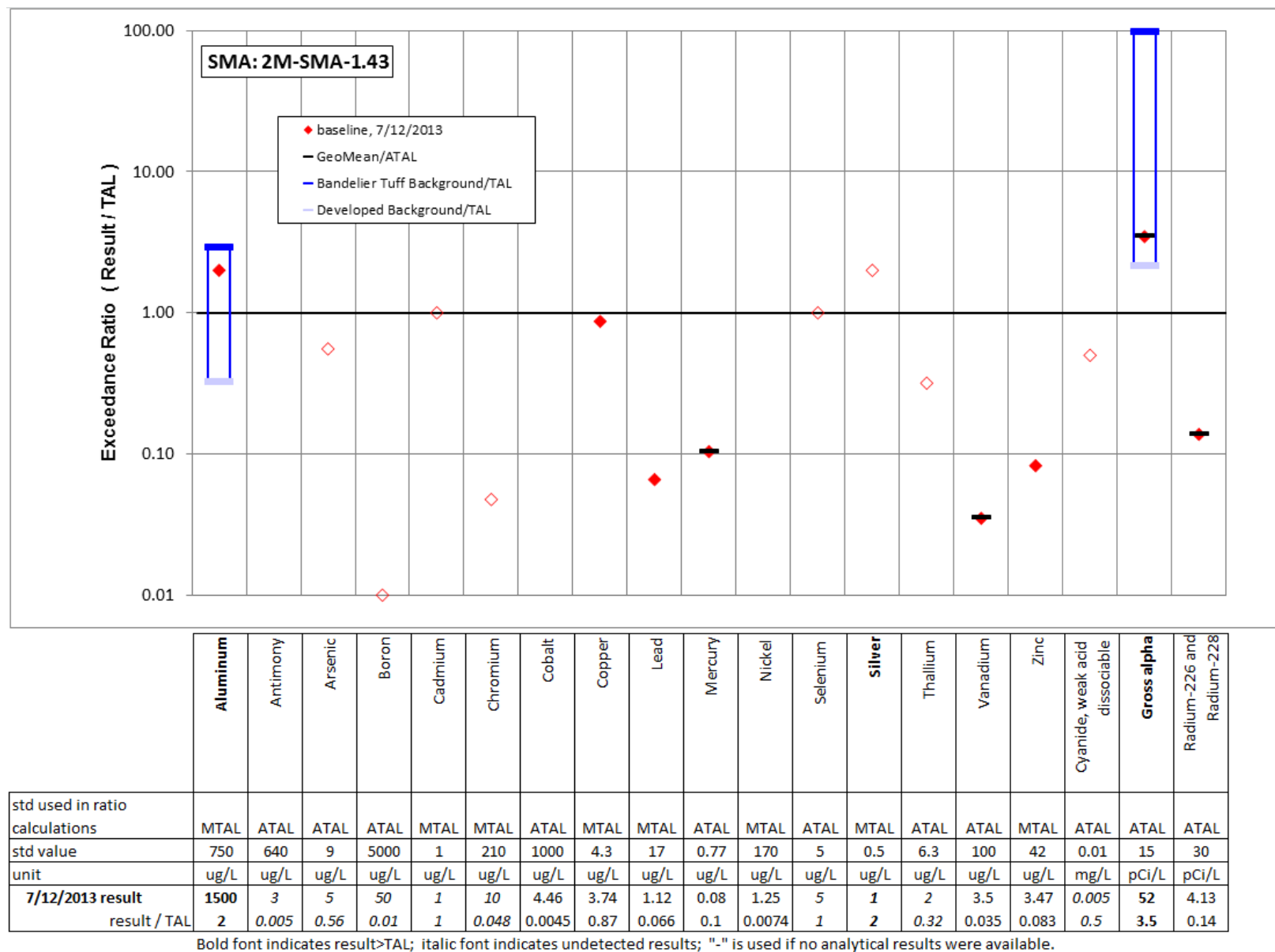


Figure 131-2 Inorganic analytical results summary plot for 2M-SMA-1.43

132.0 2M-SMA-1.44: SWMU 06-001(b)

132.1 Site Descriptions

One historical industrial activity area is associated with E004, 2M-SMA-1.44: Site 06-001(b).

SWMU 06-001(b) consists of a 960-gal.-capacity septic tank (structure 06-43) and associated drainlines, distribution box, filter trench, and outfall located approximately 200 ft north of former building 06-6. The septic system served former building 06-6 and operated from 1945 to the 1980s. Former building 06-6 originally housed laboratory operations related to detonator assembly, an electronics work room, a chemistry laboratory, two darkrooms, restrooms, and a sink. The sink drain received rinsate containing copper, brass, and steel parts dipped in nitric acid to remove silver solder flux and oxidized metals. Solvents were also used to degrease metal. Tin and lead soldering using paste and aqueous zinc/aluminum chloride fluxes was performed on electrical circuits. Manometric apparatuses containing liquid mercury were serviced in the building. Ionizing radiation, in the form of electrically generated x-rays, was used through the 1950s to about 1965. By 1961, the darkrooms, assembly room, and a storage area had been converted to offices. In the 1970s, former building 06-6 was used as a cable shop, where acetone, alcohol, and dilute acids may have been used. In the early 1980s, former building 06-6 was used for printed circuit production. Effluent from the septic tank discharged north to a distribution box and then to a filter trench consisting of two parallel trenches with perforated pipe surrounded by sand and covered with gravel. Overflow from the filter trench went north to an outfall that drained into Tributary A of Twomile Canyon. In 1989, the drainline was cut and capped. Building 06-6 was demolished and removed in 2004; however, the septic tank, drainlines, distribution box, and filter trenches were left in place.

The 1993 RFI work plan for OU 1111 and the 1997 RFI report state that plumbing in buildings 06-5 and 06-8 also drained to SWMU 06-001(b). However, engineering drawings for these two buildings show no drains or points of discharge. In addition, an engineering drawing of the sanitary sewer system at TA-06 shows no waste lines coming from either building. Thus, engineering records indicate the information in the 1993 RFI work plan and 1997 report concerning discharges from these buildings to SWMU 06-001(b) is incorrect.

Consent Order investigations have not been performed at SWMU 06-001(b) and no decision-level data are available for this Site. Screening-level data are available from an RFI conducted in 1994.

The project map (Figure 132-1) 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>.

132.2 Control Measures

Run-on from bare areas above the SMA is evident; however, there is no evidence of run-on to the outfall and outfall discharge area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 132-1).

Enhanced controls were installed and certified 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 132-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00401010007	Seed and Wood Mulch			X		EC
E00402040008	Established Vegetation		X	X		B
E00403010006	Earthen Berm	X			X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

132.3 Storm Water Monitoring

SWMU 06-001(b) is monitored within 2M-SMA-1.44. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 132-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 31.5 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 21.1 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at 2M-SMA-1.44, a corrective action storm water sample was collected on September 12, 2013 (Figure 132-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Copper concentrations of 39.5 µg/L (MTAL is 4.3 µg/L),

Corrective action has resulted in a decrease in gross-alpha activity detected in storm water samples collected at 2M-SMA-1.44.

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 06-001(b):

- Copper is known to be associated with industrial materials historically managed at the Site. Solutions containing copper were discharged to the septic system. Copper was detected above BVs in 5 of 15 shallow samples collected during the 1994 RFI at a maximum concentration 2 times the soil BV.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 132-2. 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 132-2.

Monitoring location 2M-SMA-1.44 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 sediment derived from Bandelier Tuff were compared with 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 is associated with trace minerals in the Bandelier Tuff as well.

- Copper—The copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43; the results from both 2011 and 2013 are greater than this value.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment 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 and 2013 Annual Reports.

132.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.44 during the 2013 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 132-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30680	4-23-2013
Storm Rain Event	BMP-33407	7-23-2013
Storm Rain Event	BMP-35491	9-23-2013
Annual Erosion Evaluation	COMP-36619	11-6-2013
TAL Exceedance	COMP-37061	11-6-2013

No maintenance activities were conducted at 2M-SMA-1.44 in 2013.

132.5 Compliance Status

The Site associated with 2M-SMA-1.44 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 132-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 06-001(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 06-27-2012

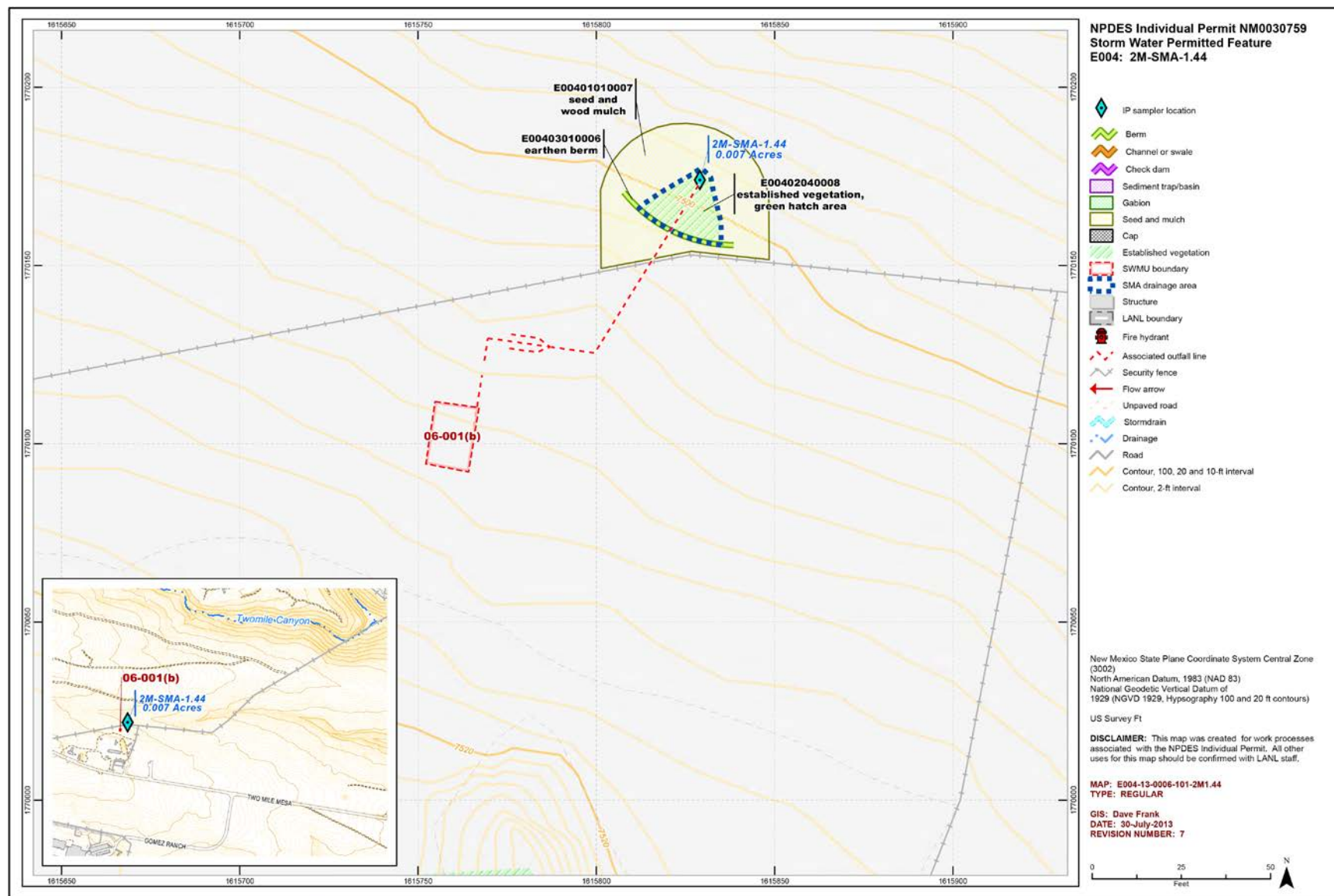


Figure 132-1 2M-SMA-1.44 location map

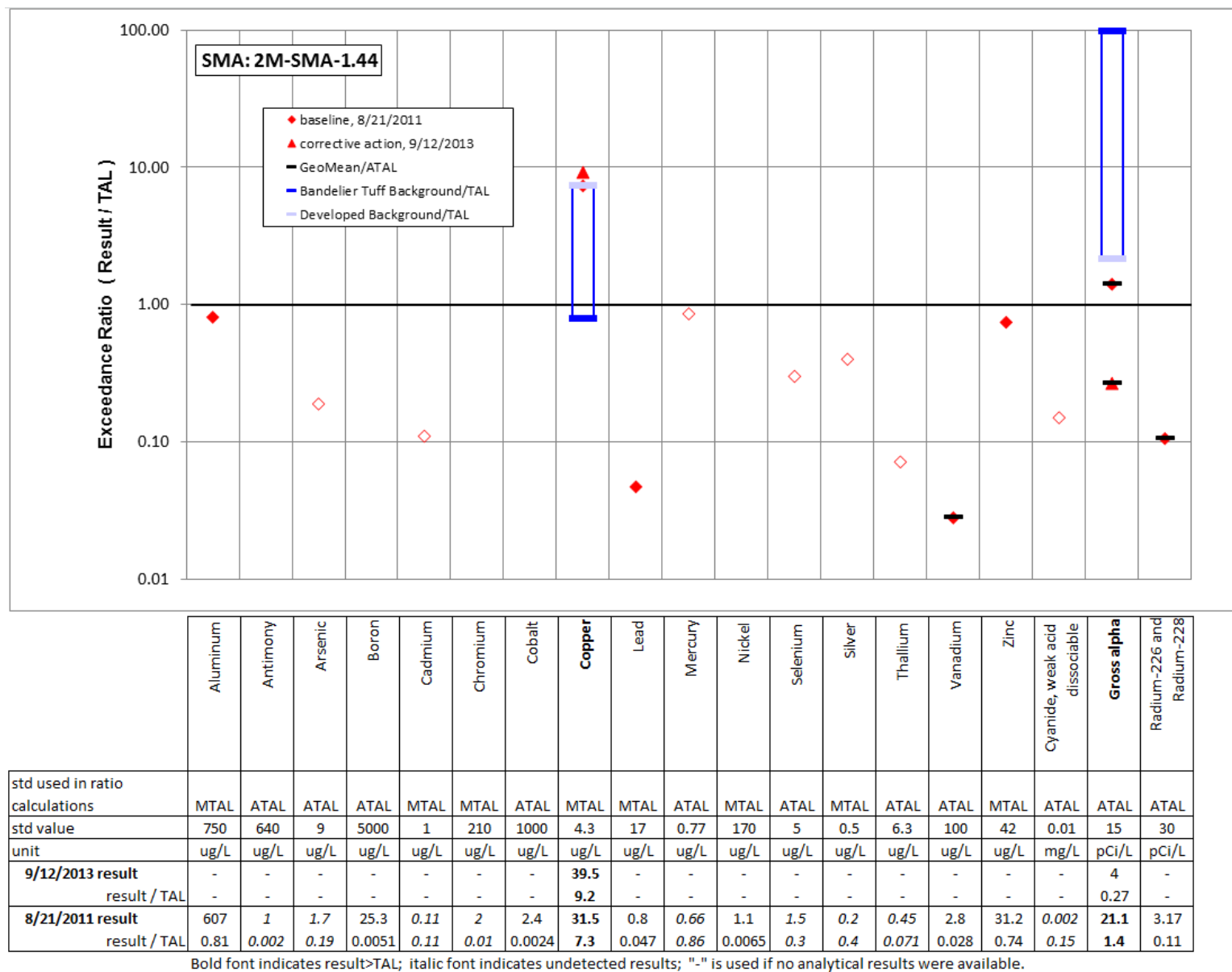


Figure 132-2 Inorganic analytical results summary plot for 2M-SMA-1.44

133.0 2M-SMA-1.45: SWMU 06-006

133.1 Site Descriptions

One historical industrial activity area is associated with E005, 2M-SMA-1.45: Site 06-006.

SWMU 06-006 includes a 300- × 20-ft concrete pad and an asphalt parking lot between former buildings 06-5 and 06-6. Containers and electrical equipment were stored at this Site during the 1980s. The containers and equipment are no longer present, but stains were observed on the asphalt and nearby soil during the 1988 field survey. SWMU 06-006 drains into Tributary A of Twomile Canyon.

Consent Order investigations have not been performed at SWMU 06-006, and no decision-level data are available for this Site. Screening-level data are available from an RFI conducted in 1994.

The project map (Figure 133-1) 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>.

133.2 Control Measures

Most of the run-on from the paved areas south of the Permitted Feature is diverted away from the area by a system of culverts. There is some run-on from the parking area flowing across the eastern end of the SMA near the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 133-1).

Enhanced controls were installed and certified 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 133-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00502040018	Established Vegetation		X	X		B
E00503010014	Earthen Berm		X		X	B
E00503010015	Earthen Berm	X			X	B
E00503010016	Earthen Berm		X		X	EC
E00503010017	Earthen Berm		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

133.3 Storm Water Monitoring

SWMU 06-006 is monitored within 2M-SMA-1.45. Following the installation of baseline control measures, a baseline storm water sample was collected on September 7, 2011 (Figure 133-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 398 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 06-006:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical site activities.

Monitoring location 2M-SMA-1.45 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

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

133.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.45 during the 2013 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 133-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30681	4-23-2013
Storm Rain Event	BMP-33408	7-23-2013
Storm Rain Event	BMP-35492	9-20-2013
Annual Erosion Evaluation	COMP-36620	11-6-2013

No maintenance activities were conducted at 2M-SMA-1.45 in 2013.

133.5 Compliance Status

The Site associated with 2M-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 133-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 06-006	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-21-2012

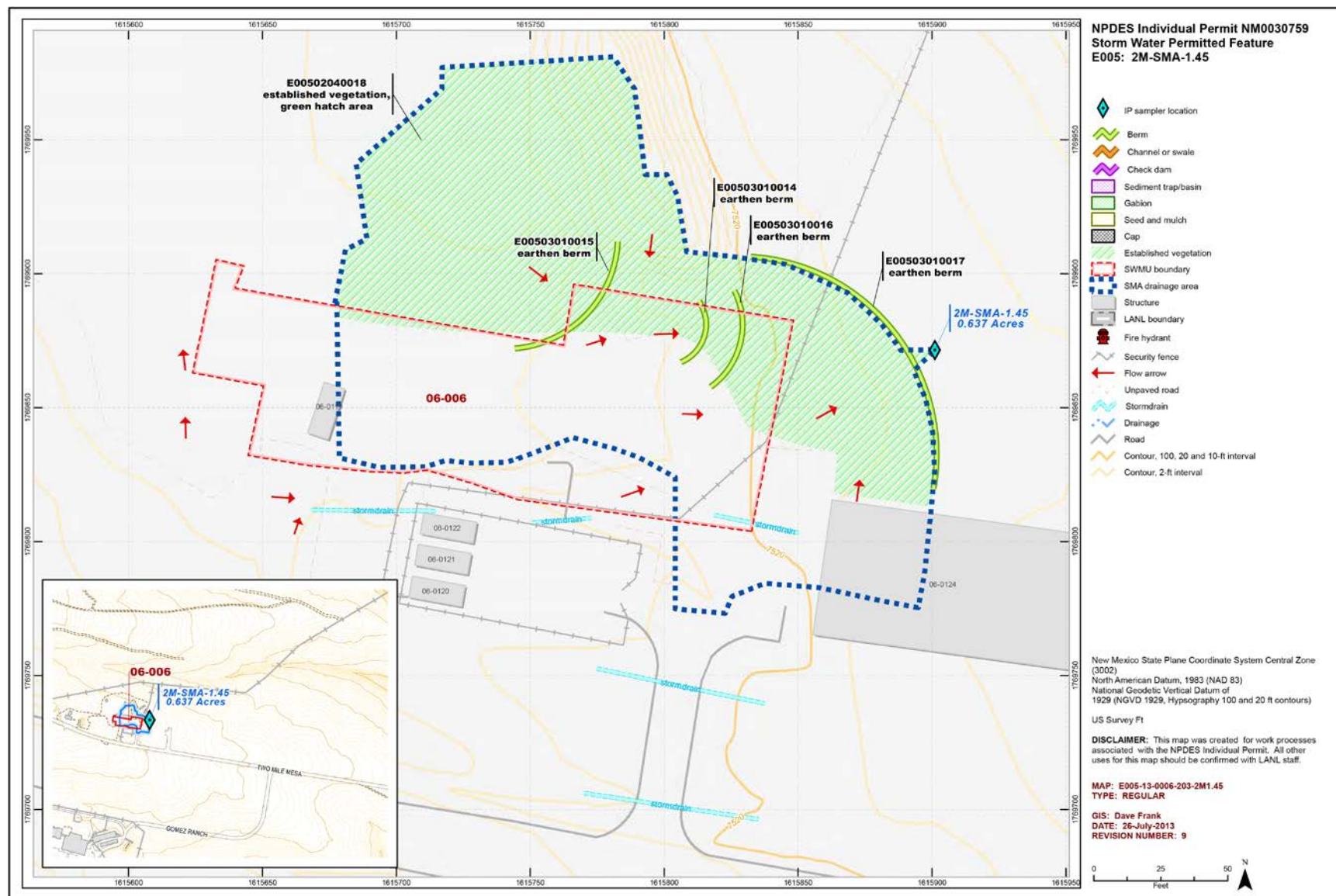


Figure 133-1 2M-SMA-1.45 location map

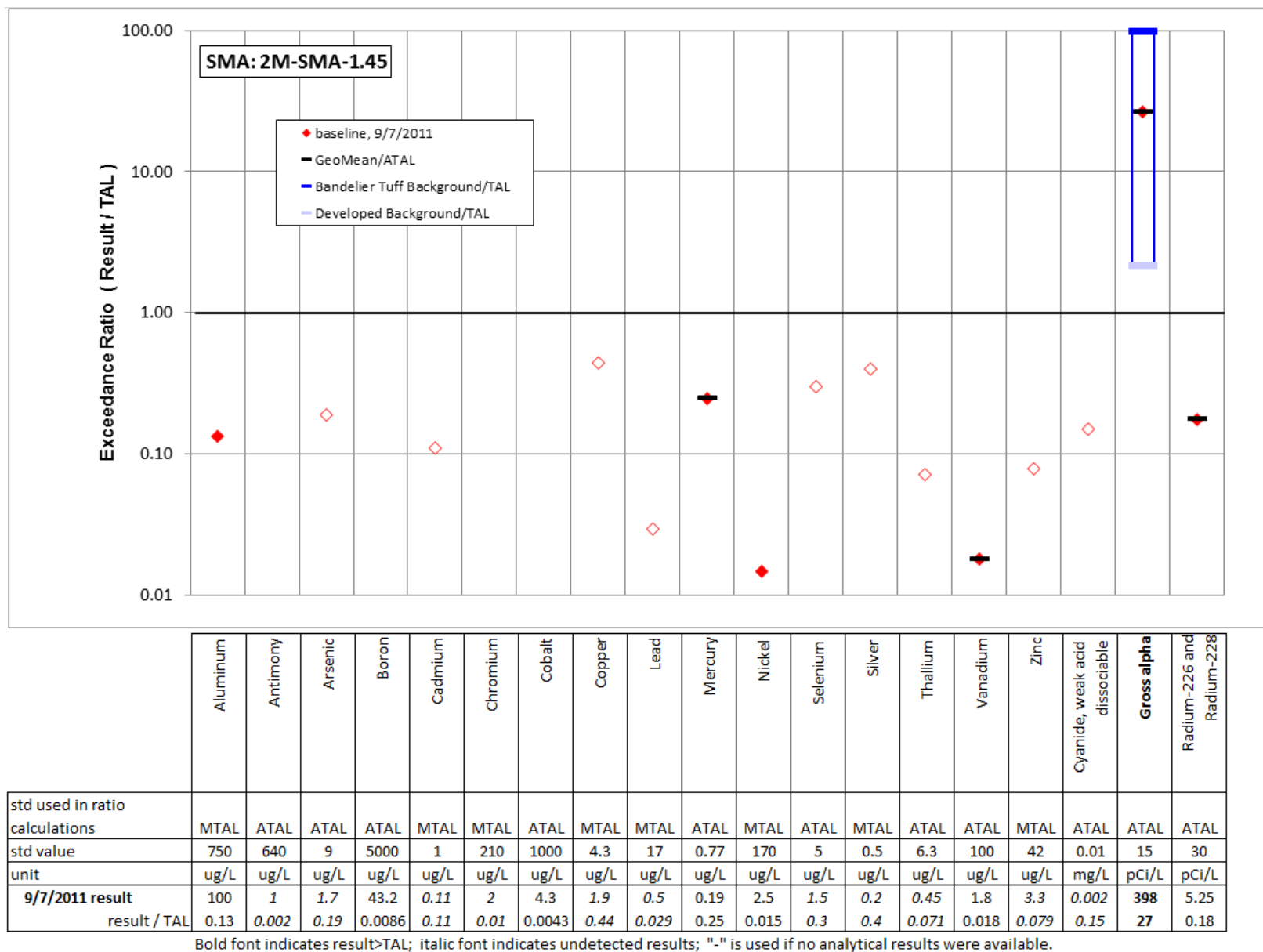


Figure 133-2 Inorganic analytical results summary plot for 2M-SMA-1.45

134.0 2M-SMA-1.5: SWMU 22-014(b)

134.1 Site Descriptions

One historical industrial activity area is associated with E006, 2M-SMA-1.5: Site 22-014(b).

SWMU 22-014(b) consists of an inactive explosives sump and outfall that serves rooms 101 through 113 in laser laboratory building 22-0034 at TA-22. The concrete sump is located on the northeast corner of building 22-0034 and is 4 × 2 × 3 ft deep with an inset aluminum tank. Building 22-0034 was completed in 1953 and previously housed a chemistry laboratory, an explosives laboratory, and a photographic laboratory. The sump effluent drained north to an outfall located in a marshy area in the upper part of Tributary B of Twomile Canyon until 1994 when the sump outlet was plugged. The sump has not been used since 1994.

Consent Order investigations have not been performed at SWMU 22-014(b); no decision-level data are available for this Site.

The project map (Figure 134-1) 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>.

134.2 Control Measures

A culvert on the eastern side of building 22-0034 diverts run-on from the paved areas, east and away from the monitored area. Runoff is controlled with a vegetative buffer strip. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 134-1).

Table 134-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00602040005	Established Vegetation		X	X		B
E00603060004	Straw Wattles	X			X	B
E00604040002	Culvert	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

134.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 2M-SMA-1.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

134.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.5 during the 2013 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 134-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30682	4-23-2013
Storm Rain Event	BMP-33409	7-15-2013
Storm Rain Event	BMP-35493	9-19-2013
Annual Erosion Evaluation	COMP-36621	11-6-2013

No maintenance activities were conducted at 2M-SMA-1.5 in 2013.

134.5 Compliance Status

The Site associated with 2M-SMA-1.5 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 134-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 22-014(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



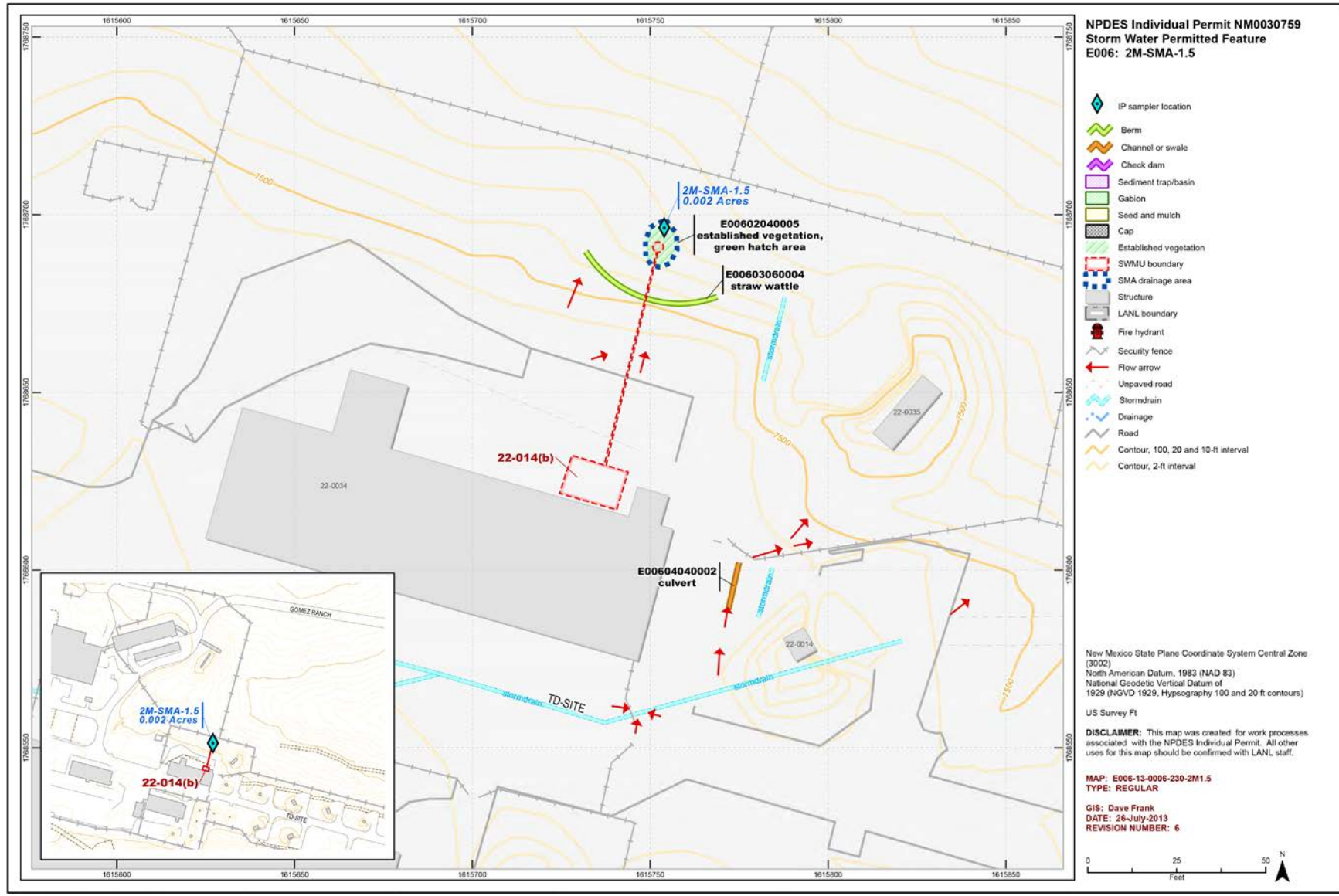


Figure 134-1 2M-SMA-1.5 location map

135.0 2M-SMA-1.65: SWMU 40-005

135.1 Site Descriptions

One historical industrial activity area is associated with E007, 2M-SMA-1.65: Site 40-005.

SWMU 40-005 is an inactive sump (structure 22-0075), located at the northwest corner of building 40-41 (formerly building 22-41), and the associated drainline and outfall. Building 40-41 was constructed in 1952 and was used to perform explosive grinding operations. Before it was incorporated into TA-40, building 40-41 and the sump were part of TA-22. Currently, the building is used to prepare for explosive tests conducted at TA-40. The sump, built in 1961, is 4 ft 6 in. × 6 ft 4 in. × 5 ft deep and constructed of concrete with an inset aluminum baffle tank. Wastewater from a single sink drain discharged to the sump. Originally, the sump discharged via a drainline to a former NPDES-permitted outfall (EPA 05A 154) that flowed into Tributary B of Twomile Canyon. In 1994, the sump outlet port was capped, and in December 1995 the outfall was removed from the NPDES permit. The sump has been removed from service and filled with concrete. Possible contaminants in the system were explosives and solvents.

Consent Order investigations have not been performed at SWMU 40-005, but RFIs were performed in 1994 and 1996. Data from the 1994 RFI are screening-level data, and data from the 1996 RFI are decision-level data.

The project map (Figure 135-1) 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>.

135.2 Control Measures

Run-on from the paved access road and old parking areas are diverted away from the SMA, to the north and west. There is minor run-on from the paved area to the Permitted Feature. An existing culvert would direct storm water across the SMA. Currently, this culvert is blocked. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 135-1).

Enhanced controls were installed and certified 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 135-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00702040011	Established Vegetation		X	X		B
E00703010004	Earthen Berm	X			X	CB
E00703010005	Earthen Berm		X		X	CB
E00703010010	Earthen Berm	X			X	EC
E00706010006	Rock Check Dam	X			X	EC
E00706010007	Rock Check Dam	X			X	EC
E00706010008	Rock Check Dam	X			X	EC
E00706010009	Rock Check Dam	X			X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

135.3 Storm Water Monitoring

SWMU 40-005 is monitored within 2M-SMA-1.65. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 135-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 220 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at 2M-SMA-1.65, a corrective action storm water sample was collected on September 2, 2013 (Figure 135-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Gross-alpha activity of 22.6 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in gross-alpha activity detected in storm water samples collected at 2M-SMA-1.65.

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 40-005:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected during the 1994 and 1996 RFIs were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides since these constituents are not associated with historical site activities.

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 135-2. 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 135-2.



Monitoring location 2M-SMA-1.65 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values, while the result from 2013 is below both values.

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

135.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.65 during the 2013 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 135-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30683	5-7-2013
Storm Rain Event	BMP-33410	7-15-2013
Storm Rain Event	BMP-35494	9-25-2013
Annual Erosion Evaluation	COMP-36622	11-7-2013
TAL Exceedance	COMP-37085	11-7-2013

No maintenance activities were conducted at 2M-SMA-1.65 in 2013.

135.5 Compliance Status

The Site associated with 2M-SMA-1.65 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 135-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-005	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-20-2012

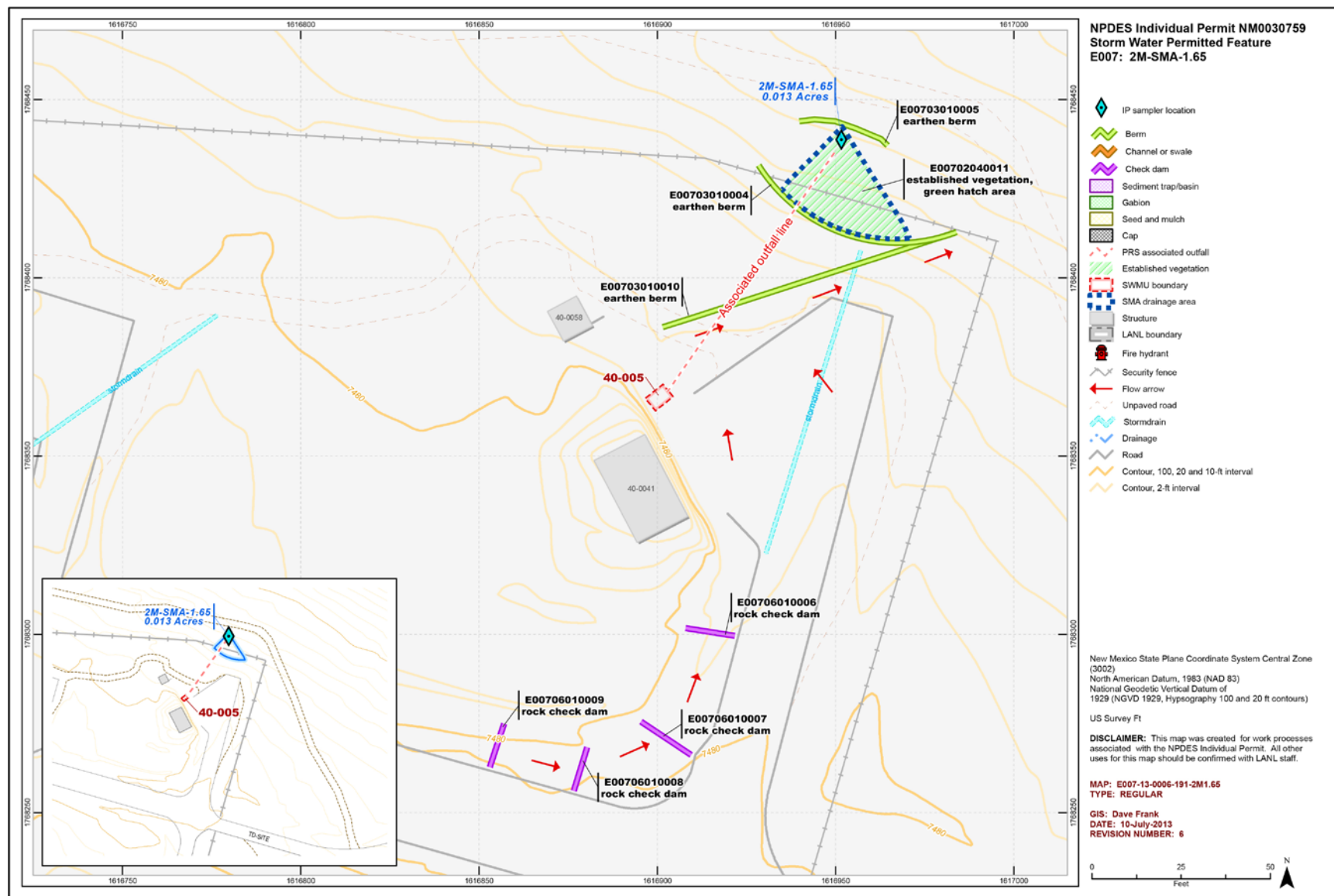


Figure 135-1 2M-SMA-1.65 location map

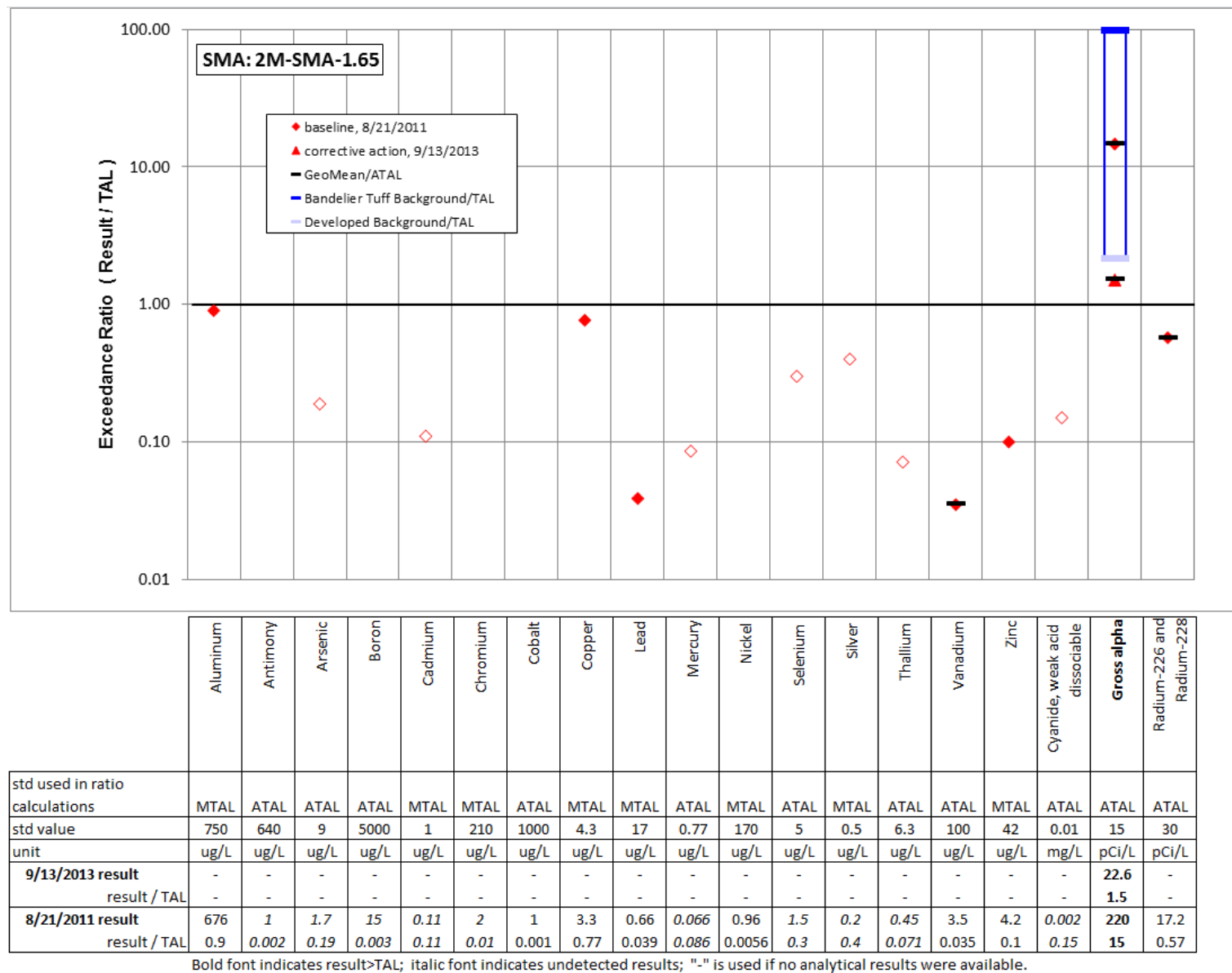


Figure 135-2 Inorganic analytical results summary plot for 2M-SMA-1.65

136.0 2M-SMA-1.67: SWMU 06-003(h)

136.1 Site Descriptions

One historical industrial activity area is associated with E008, 2M-SMA-1.67: Site 06-003(h).

SWMU 06-003(h) is a former firing site located north of Twomile Mesa Road at TA-06 where defective explosive lenses manufactured for use in the Fat Man implosion weapon were destroyed by detonation in 1945. Some of the lenses were described as consisting of the explosive Baratol, which contains barium and TNT. This Site was identified as distinct from MDA F and was added as a separate Site to the Laboratory's hazardous waste permit in 1994.

This SWMU was investigated during a 1994 RFI; however, no sampling has been conducted under the Consent Order, and no decision-level data are available.

The project map (Figure 136-1) 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>.

136.2 Control Measures

Run-on to the Permitted Feature from Twomile Mesa Road is minimal. Run-on from the road is diverted by a roadside channel. Run-on from the west of the SMA is diverted to the north and east by a natural channel away from the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 136-1).

Table 136-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00801010006	Seed and Wood Mulch			X		CB
E00802040016	Established Vegetation		X	X		B
E00803010014	Earthen Berm		X		X	B
E00803010015	Earthen Berm		X		X	B
E00803060009	Straw Wattles	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

136.3 Storm Water Monitoring

SWMU 06-003(h) is monitored within 2M-SMA-1.67. Following the installation of baseline control measures, a baseline storm water sample was collected on September 15, 2011 (Figures 136-2 and 136-3). Analytical results from this sample yielded no TAL exceedances. The HE sample collected on September 15, 2011, was extracted or analyzed beyond the appropriate holding time and thus may have a low bias and potentially under report the concentration of HE in this sample. Consequently, the results for this analysis cannot be used to confirm that no pollutants of concern are present at concentrations greater than the applicable TAL values. Therefore, 2M-SMA-1.67 will remain in the baseline monitoring

extended phase until a viable baseline confirmation monitoring sample can be collected and analyzed with fully usable results.

136.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.67 during the 2013 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 136-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30684	4-23-2013
Storm Rain Event	BMP-33411	7-15-2013
Storm Rain Event	BMP-35495	9-24-2013
Annual Erosion Evaluation	COMP-36623	11-5-2013

No maintenance activities were conducted at 2M-SMA-1.67 in 2013.

136.5 Compliance Status

The Site associated with 2M-SMA-1.67 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 136-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 06-003(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

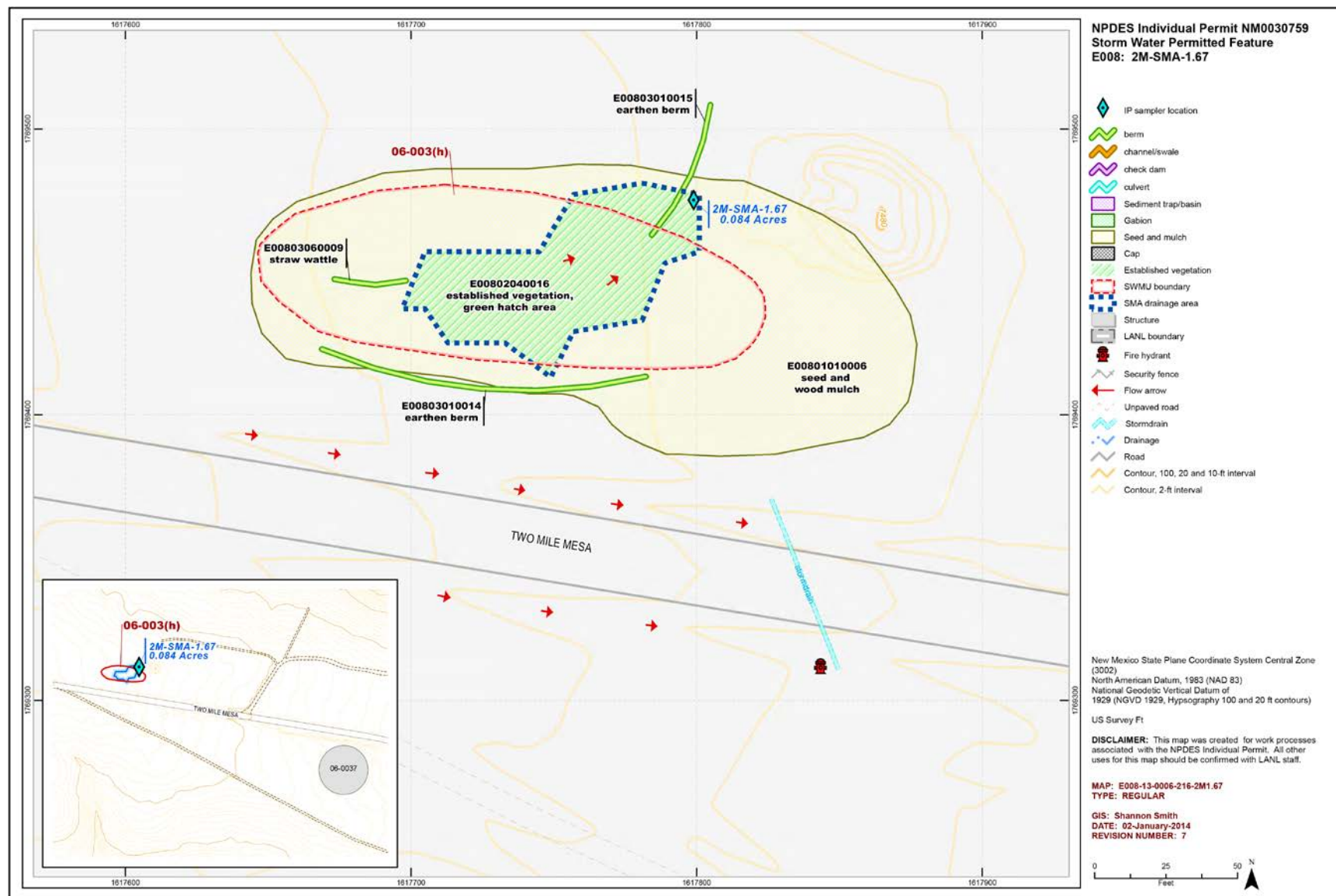


Figure 136-1 2M-SMA-1.67 location map

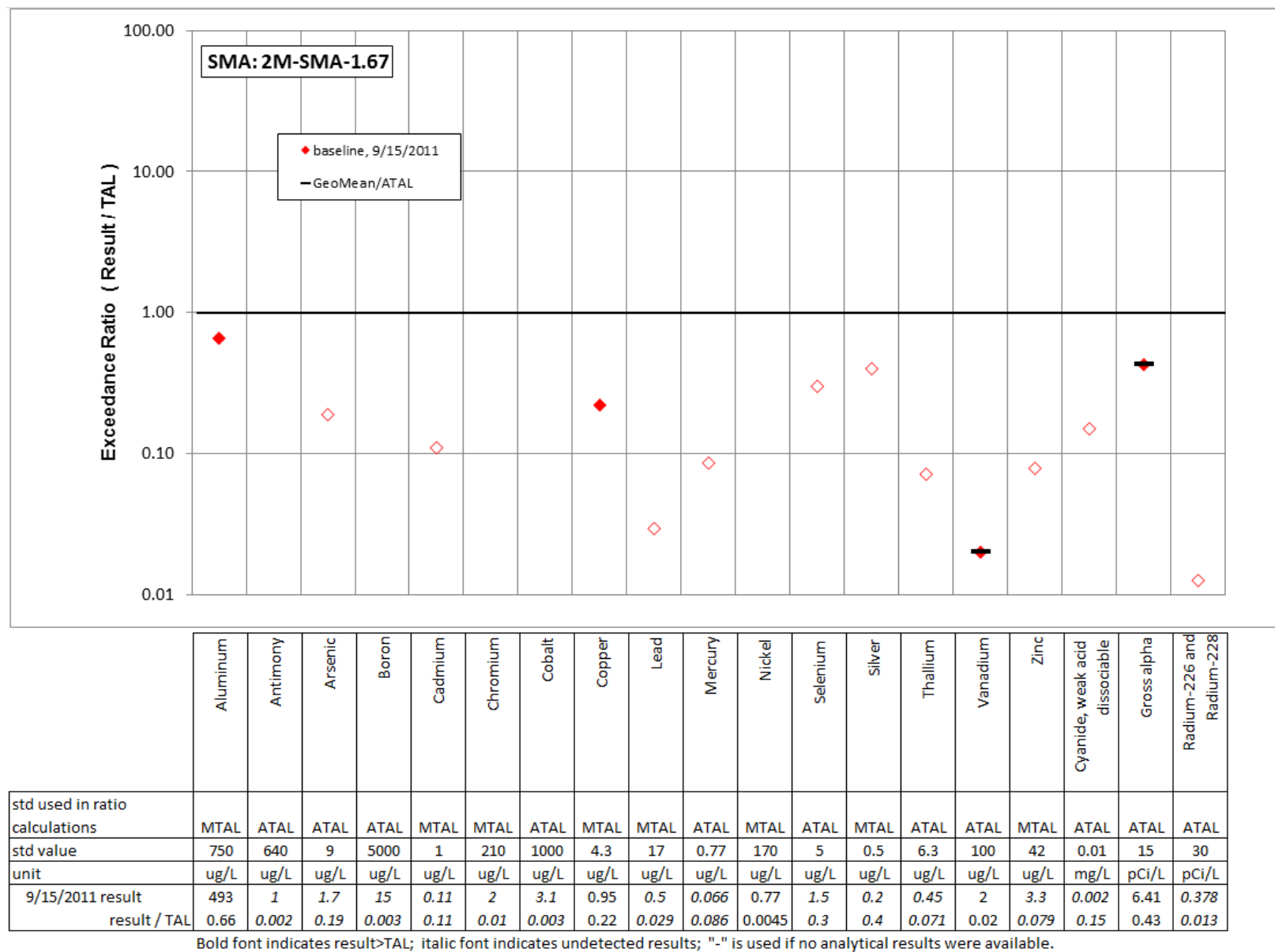


Figure 136-2 Inorganic analytical results summary plot for 2M-SMA-1.67

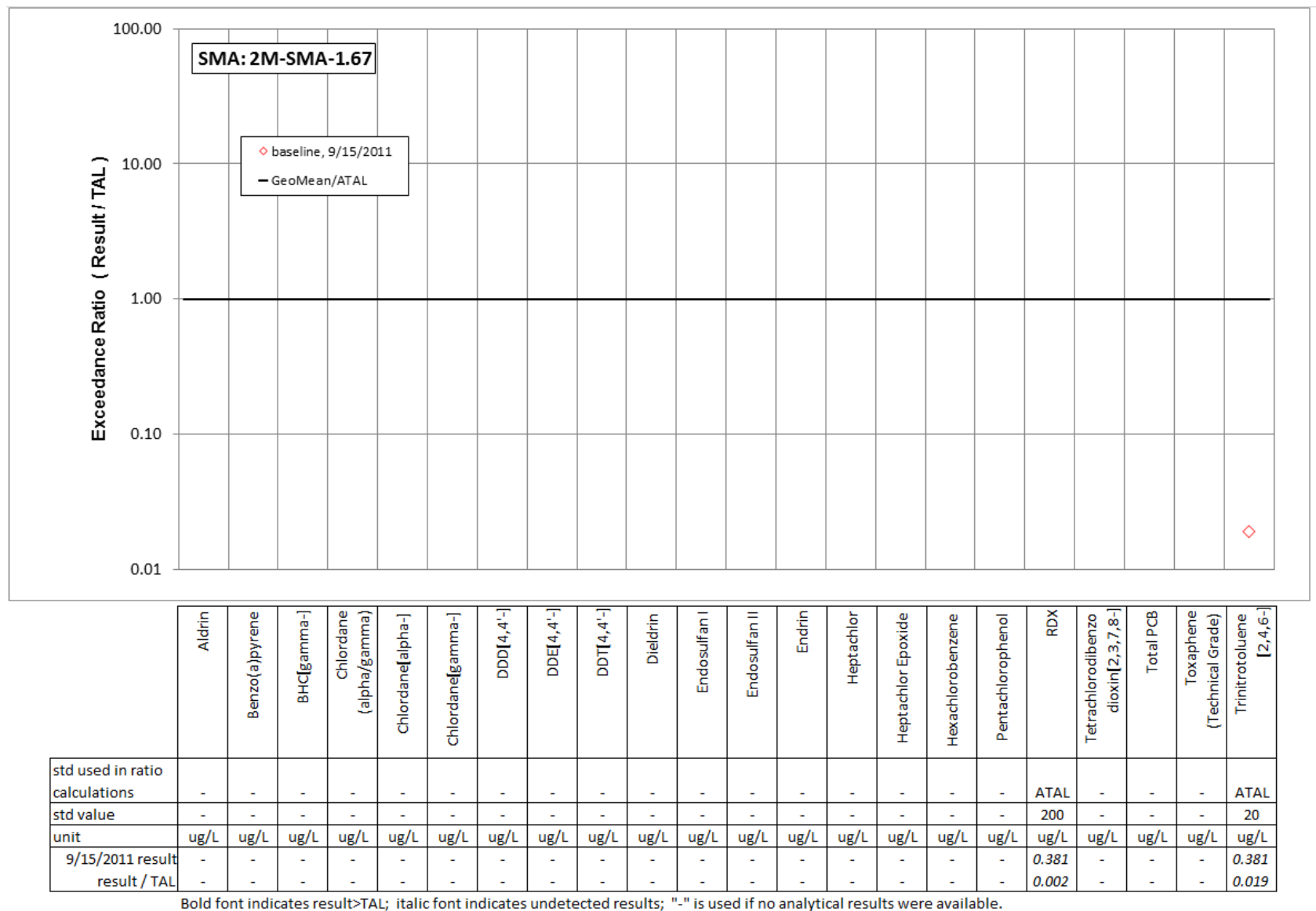


Figure 136-3 Organic analytical results summary plot for 2M-SMA-1.67

137.0 2M-SMA-1.7: SWMU 03-055(a)

137.1 Site Descriptions

One historical industrial activity area is associated with E009, 2M-SMA-1.7: Site 03-055(a).

SWMU 03-055(a) is an outfall located approximately 50 ft south of the Van de Graaff facility (building 03-16). Roof drains and one floor drain in a generator room (room 68) discharged to the outfall, which is located at the edge of the mesa into Twomile Canyon. The outfall currently receives only storm water from Van de Graaff building roof drains. The Van de Graaff facility was constructed in 1952. The facility has been inactive since the late 1990s; radiological D&D activities began in 2005.

Consent Order or other environmental investigations have not been performed at SWMU 03-055(a), and no investigation data are available for this Site.

The project map (Figure 137-1) 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>.

137.2 Control Measures

Most of the run-on to the Permitted Feature comes from the roof drains associated with building 03-0016 and the paved areas around the building. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 137-1).

Enhanced controls were installed and certified 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 137-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E00902040009	Established Vegetation		X	X		B
E00903010008	Earthen Berm	X			X	EC
E00903120005	Rock Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

137.3 Storm Water Monitoring

SWMU 03-055(a) is monitored within 2M-SMA-1.7. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 137-2). Analytical results from these samples yielded one TAL exceedance:

- Copper concentration of 11.4 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 03-055(a):

- Copper is not known to be associated with industrial materials historically managed at the Site.

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 137-2. 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 137-2.



Monitoring location 2M-SMA-1.7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these values.

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

137.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.7 during the 2013 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 137-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30685	4-23-2013
Storm Rain Event	BMP-33412	7-22-2013
Storm Rain Event	BMP-35496	9-19-2013
Annual Erosion Evaluation	COMP-36624	11-7-2013

No maintenance activities were conducted at 2M-SMA-1.7 in 2013.

137.5 Compliance Status

The Site associated with 2M-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 137-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-055(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-27-2012

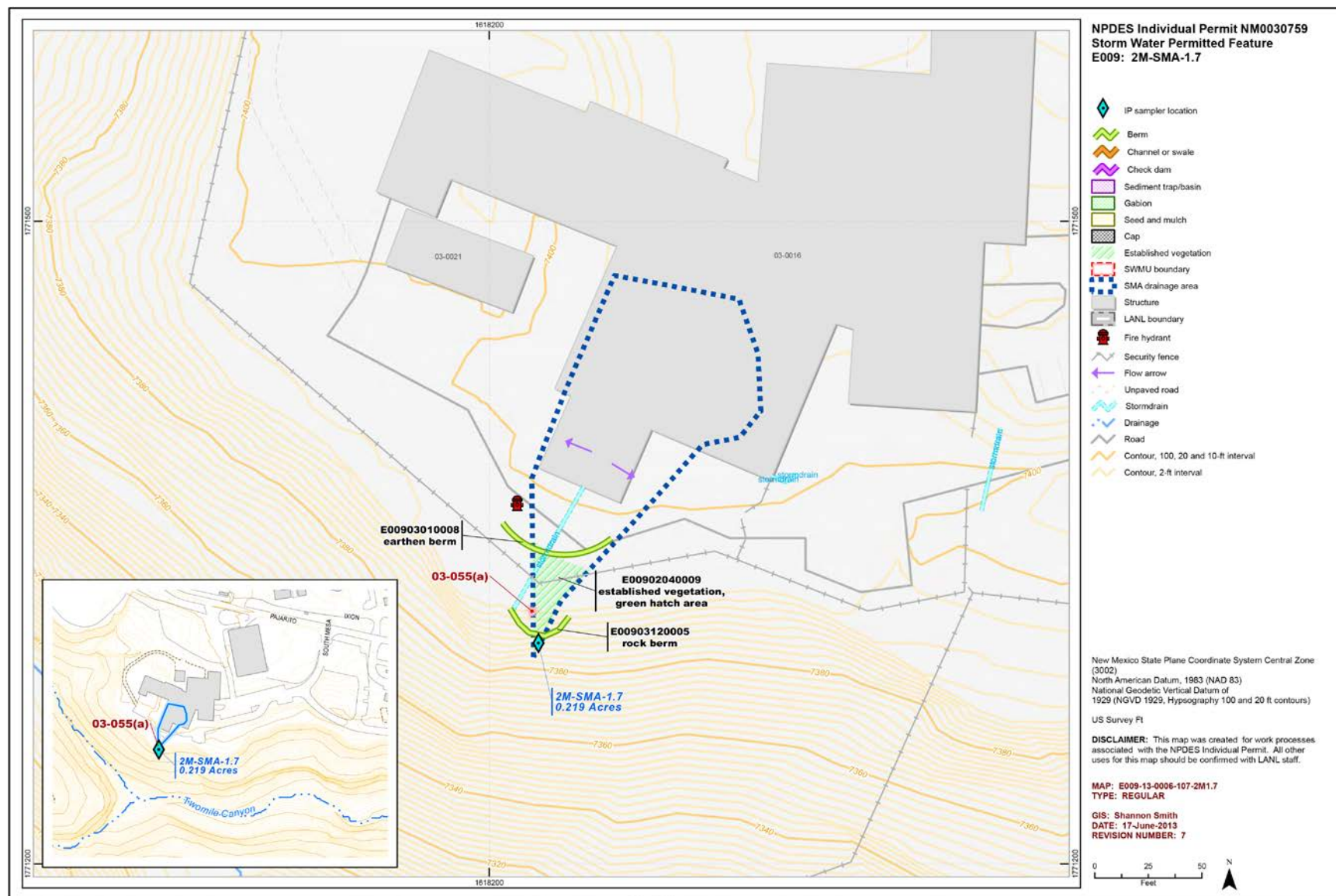


Figure 137-1 2M-SMA-1.7 location map

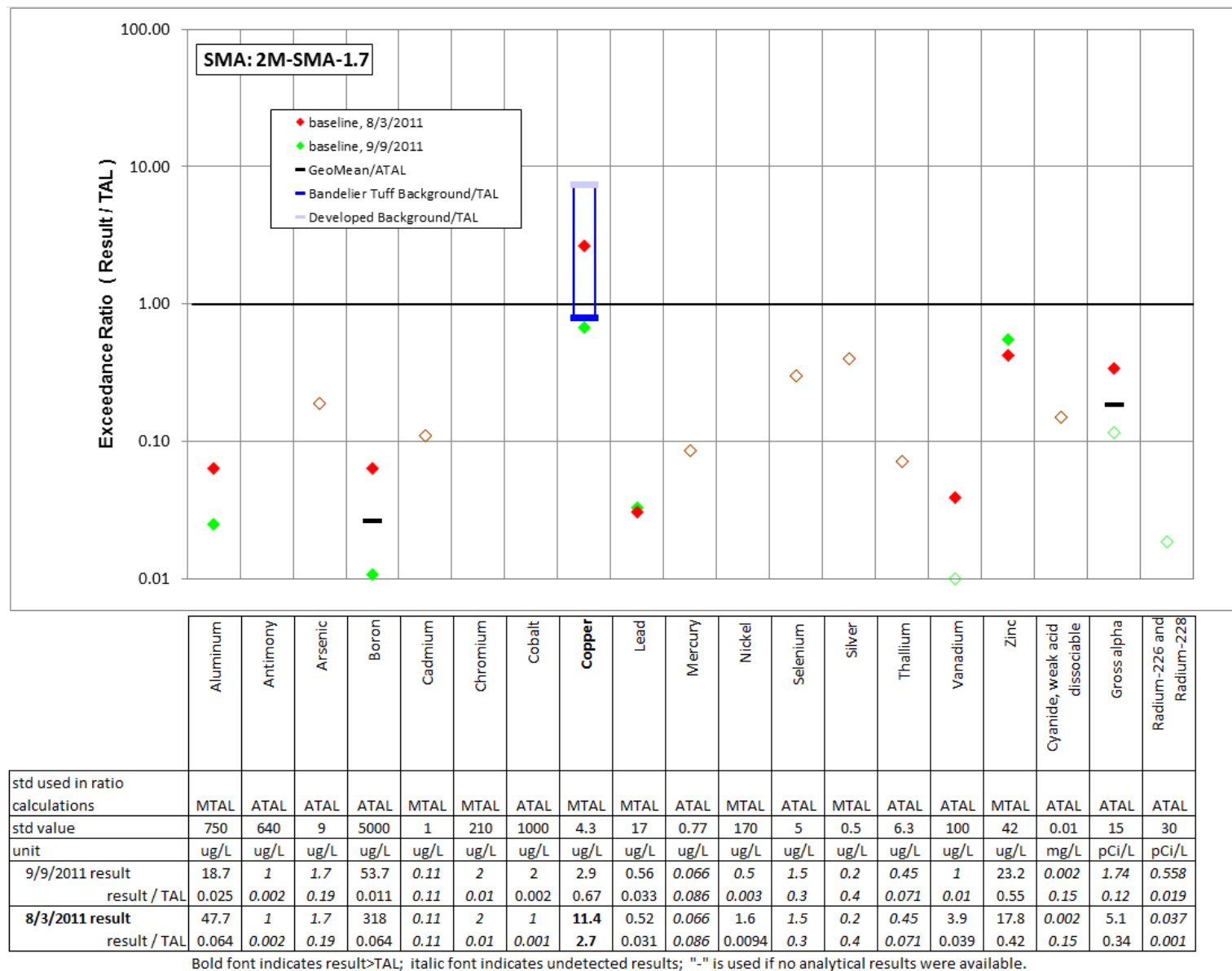


Figure 137-2 Inorganic analytical results summary plot for 2M-SMA-1.7

138.0 2M-SMA-1.8: SWMU 03-001(k)

138.1 Site Descriptions

One historical industrial activity area is associated with E010, 2M-SMA-1.8: Site 03-001(k).

SWMU 03-001(k) is the former location of a less-than-90-day hazardous waste accumulation area located on the south side of building 03-16, the inactive Van de Graaff Building. SWMU 03-001(k) consists of two level asphalt areas each measuring approximately 20 × 30 ft. The areas are located next to the doors on the south side of the building. Concrete pads located in front of each doorway are bounded by asphalt paving on three sides. SWMU 03-001(k) was used primarily as a storage yard for electrical equipment designated for salvage. Drums of vacuum oil, tritium-contaminated waste, and used solvents from experiments conducted in the building were also stored in this area. A 1986 field inspection of SWMU 03-001(k) noted oily unmarked drums where new vacuum oil for experiments was stored. Asphalt chip samples collected in 1989 indicated the presence of PCBs at a concentration of 7.8 mg/kg. A 1993 inspection found no stains on the asphalt and concrete pad.

Consent Order investigations have not been performed at SWMU 03-001(k), and no decision-level data are available for this Site. Soil and asphalt-chip sampling was performed in 2001 to support a previous request for NFA status for this Site. Data from the 2001 sampling are screening-level data.

The project map (Figure 138-1) 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>.

138.2 Control Measures

The run-on contribution from the paved surrounding areas and from the eastern portion of the building 03-0016 roof is significant. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 138-1).

Table 138-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01002040010	Established Vegetation		X	X		B
E01003040003	Asphalt Berm	X			X	CB
E01006010004	Rock Check Dam		X		X	CB
E01006010005	Rock Check Dam		X		X	CB
E01006010006	Rock Check Dam		X		X	CB
E01006010007	Rock Check Dam		X		X	CB
E01008030008	Concrete/Asphalt Cap	X		X		EC
E01008030009	Concrete/Asphalt Cap	X		X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

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

138.3 Storm Water Monitoring

SWMU 03-001(k) is monitored within 2M-SMA-1.8. Following the installation of baseline control measures, two baseline storm water samples were collected on August 4, 2011, and September 9, 2011 (Figure 138-2). Analytical results from these samples yielded two TAL exceedances:

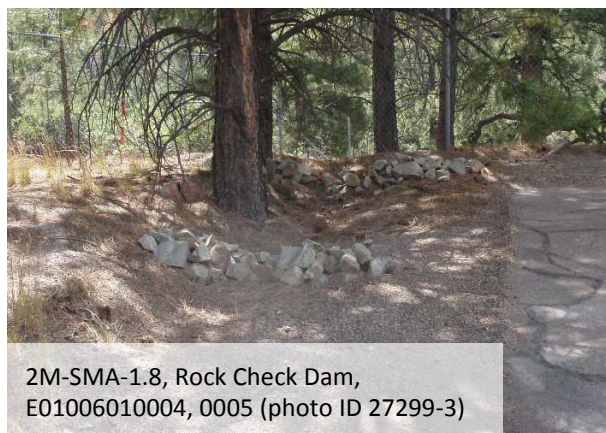
- Copper concentrations of 6.6 µg/L and 13.2 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentration of 71.8 µg/L (MTAL is 42 µg/L).

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 03-001(k):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above BV in 1 of 4 shallow soil samples collected at the Site in 2001 with a maximum concentration 2 times the soil BV.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above BV in 1 of 4 shallow soil samples collected at the Site in 2001 with a maximum concentration 1.2 times the soil BV.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 138-2. 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 138-2.



Monitoring location 2M-SMA-1.8 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing 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—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from 2011 is less than both of these values.

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

138.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-1.8 during the 2013 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 138-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30686	4-23-2013
Storm Rain Event	BMP-33413	7-22-2013
Storm Rain Event	BMP-35497	9-24-2013
Annual Erosion Evaluation	COMP-36625	11-7-2013

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

Table 138-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34540	Remove all vegetation within the sealed area of E01008030008.	8-13-2013	8 day(s)	Maintenance conducted in timely manner.
BMP-34541	Remove all vegetation within the sealed area of Asset ID E01008030009.	8-7-2013	2 day(s)	Maintenance conducted in timely manner.

138.5 Compliance Status

The Site associated with 2M-SMA-1.8 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 138-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-001(k)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011

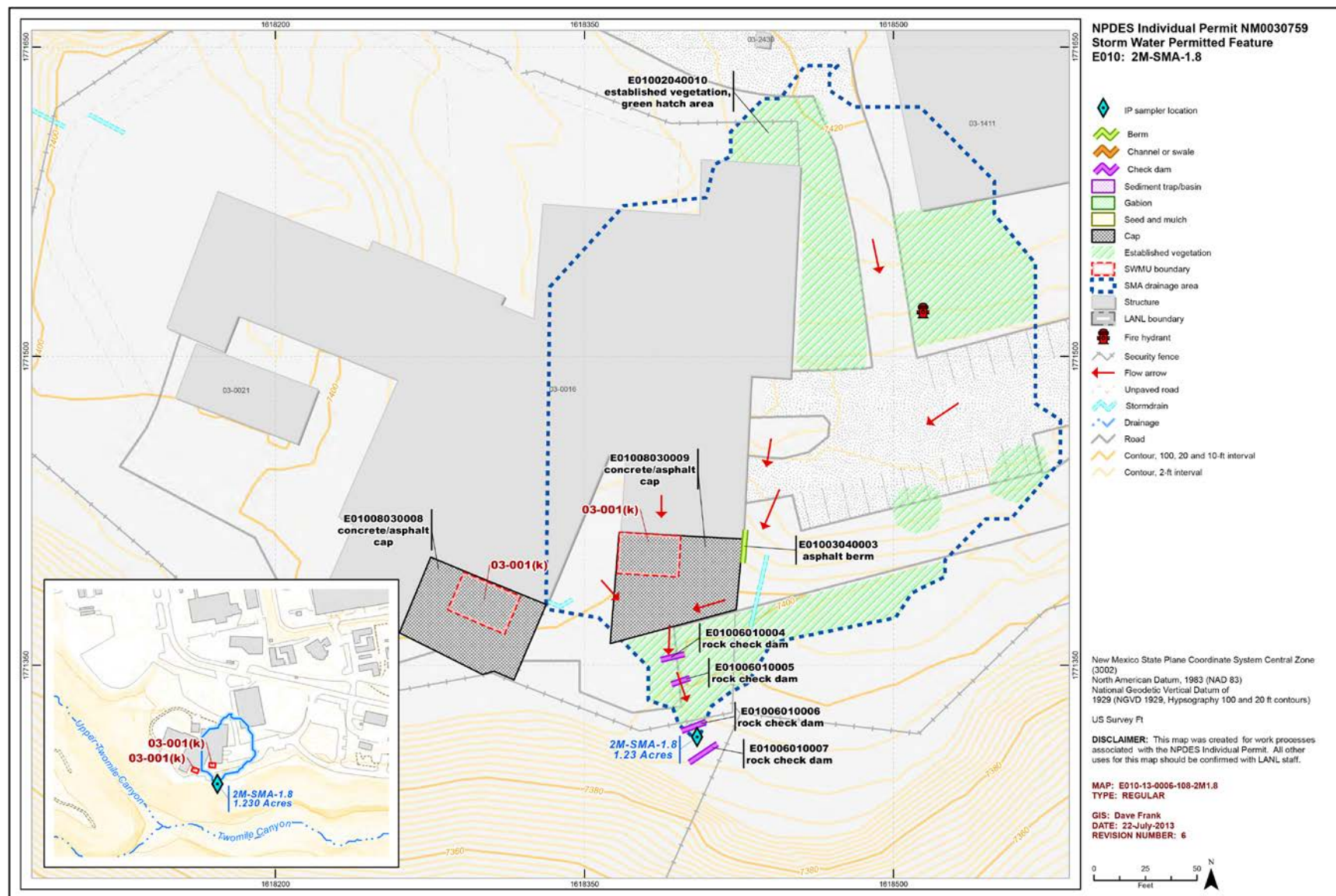


Figure 138-1 2M-SMA-1.8 location map

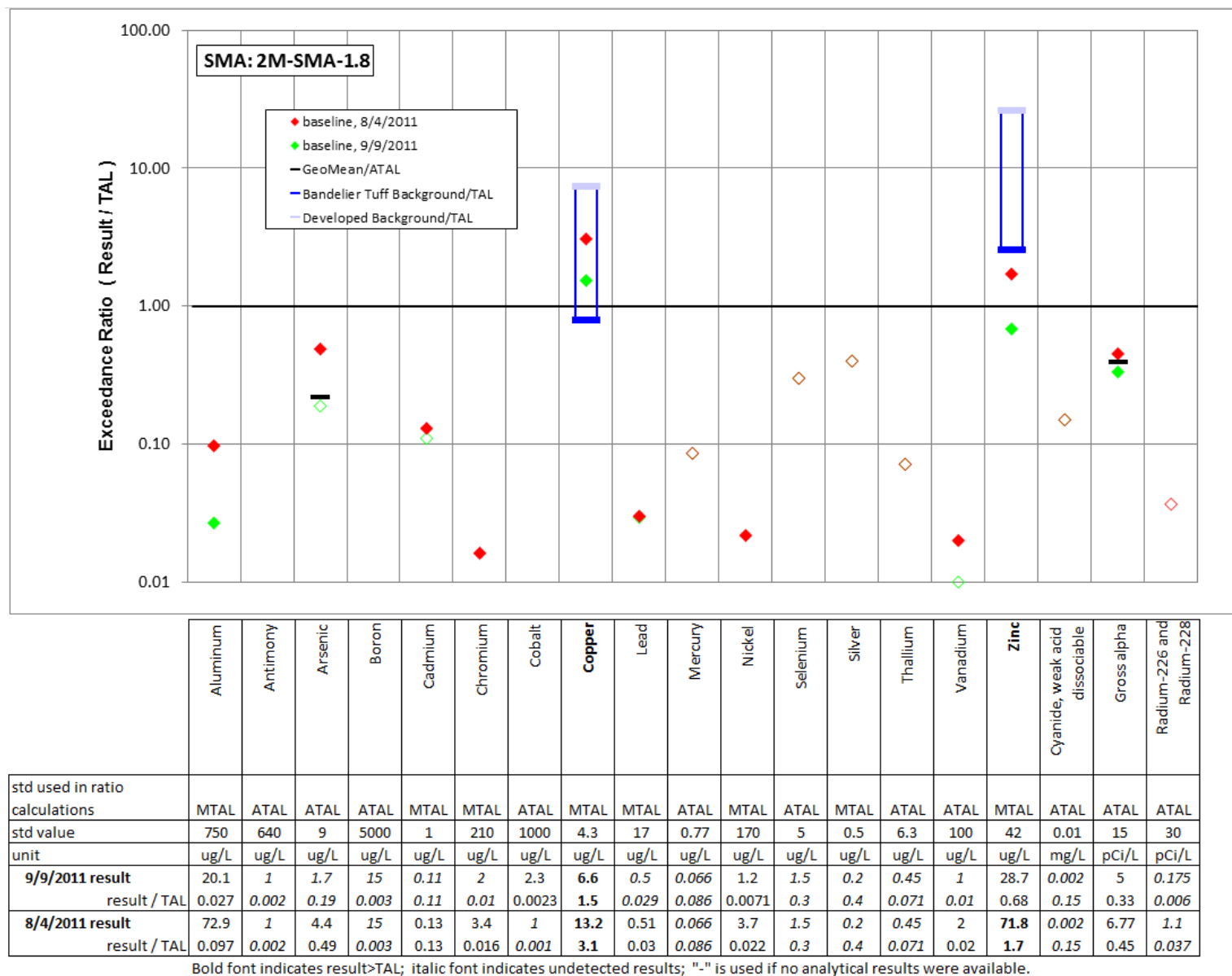


Figure 138-2 Inorganic analytical results summary plot for 2M-SMA-1.8

139.0 2M-SMA-1.9: SWMU 03-003(a)

139.1 Site Descriptions

One historical industrial activity area is associated with E011, 2M-SMA-1.9: Site 03-003(a).

SWMU 03-003(a) is a former outdoor storage area used for temporary storage of electrical equipment destined for salvage, some of which contained oil. The storage area was located on the north and west sides of building 03-0218. The northern portion of the storage area consisted of the asphalt paving next to the north side of building 03-0218. The western portion of the storage area consisted of a 44-ft-long × 27-ft-wide concrete pad surrounded by an 18- to 20-in.-high concrete curb. The concrete pad and curb are bounded on three sides by soil covered with gravel. A 30-ft-wide × 60-ft-long area of asphalt paving abuts the south end of the concrete curb. During the 1986 CEARP survey, six 55-gal. drums were observed stored next to capacitors on asphalt in the storage area on the north side of building 03-0218; staining was visible on the asphalt beneath the drums. Capacitors and transformers labeled as containing less than 50 ppm PCBs were stored in the west portion of the former storage area. During a 1989 inspection, leaking capacitors, drums of epoxy, one or two batteries, and vacuum pumps were observed in the western portion of the storage area. In the early 1990s, a small area of oil stained asphalt was excavated to a depth of 3 in. around the storm drain located in the western portion of SWMU 03-003(a). Use of the SWMU 03-003(a) storage area ceased in the early 1990s.

Consent Order sampling has not yet been conducted at SWMU 03-003(a); no decision-level data are available for this Site.

The project map (Figure 139-1) 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>.

139.2 Control Measures

The major source of run-on for this Permitted Feature is the roof drain from building 03-0040. This run-on is captured by a drop inlet that is the outfall for the SMA. Curbing acts to control flow not captured by the drop inlet. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 139-1).

Table 139-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01103090001	Curbing	X			X	CB
E01103100002	Gravel Bags	X			X	CB
E01103100003	Gravel Bags		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

139.3 Storm Water Monitoring

SWMU 03-003(a) is monitored within 2M-SMA-1.9. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figure 139-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 24.9 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentration of 314 µg/L (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 03-003(a):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was not detected above the soil BV in shallow 1994 RFI soil samples; the 1994 RFI data are screening level only.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above the soil BV in 1 of 2 shallow soil samples with a maximum concentration 1.1 times the soil BV but less than the maximum soil background concentration. The 1994 RFI data are screening level only.

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 139-2. 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 139-2.

Monitoring location 2M-SMA-1.9 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments 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—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is greater than both of these values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from 2012 is between these values.

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

139.4 Inspections and Maintenance

RG121.9 recorded three storm events at 2M-SMA-1.9 during the 2013 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 139-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30687	4-23-2013
Storm Rain Event	BMP-33594	7-25-2013
Storm Rain Event	BMP-35545	9-24-2013
Annual Erosion Evaluation	COMP-36626	11-8-2013

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

Table 139-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31627	Repair or replace damaged gravel bags E01103100002	4-29-2013	6 day(s)	Maintenance conducted in timely manner.
BMP-31628	Repair or replace damaged gravel bags E01103100003	4-29-2013	6 day(s)	Maintenance conducted in timely manner.

139.5 Compliance Status

The Site associated with 2M-SMA-1.9 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 139-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-003(a)	Corrective Action Initiated	Corrective Action Initiated	Initiated 08-23-2012



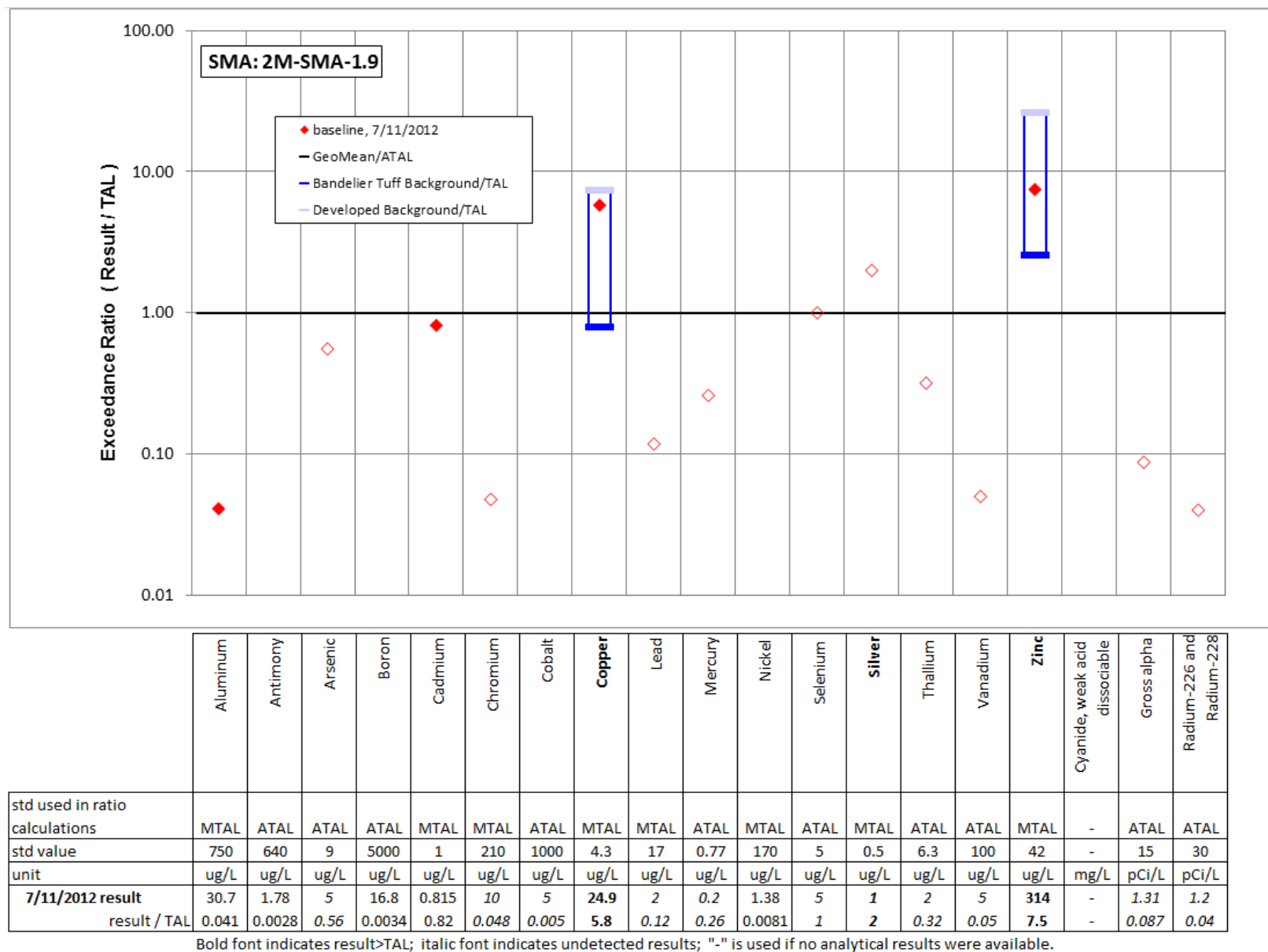


Figure 139-2 Inorganic analytical results summary plot for 2M-SMA-1.9

140.0 2M-SMA-2: SWMUs 03-050(d) and 03-054(b)

140.1 Site Descriptions

Two historical industrial activity areas are associated with E012, 2M-SMA-2: Sites 03-050(d) and 03-054(b).

SWMU 03-050(d) consists of potential soil contamination from historical emissions of particulates possibly released from the former air-pollution control device on the exhaust system at the south side of the tech shops addition (building 03-102). The device was a shaker-type baghouse located on a concrete pad. Building 03-102 was built in 1957 for machining radioactive materials. Machined items included those with uranium-235 and -238, lithium hydride, and small quantities of other inorganic chemicals. The baghouse was the primary air-pollution-control device to remove lithium hydride particulates in the gas stream to the stack. The baghouse was also used as a secondary air-pollution-control device to remove uranium graphite particulates in the gas stream to the stack. The bag house ceased operating in 1992 because of failure in the dioctyl phthalate penetration test, which measures the efficiency of the collection system. All ventilation ducts associated with machining operations then were diverted to a high-flow-rate ventilation system connected to an operational baghouse located immediately east of the inoperative baghouse. Radionuclide air emissions at the inoperative baghouse were monitored from the beginning of its use in 1957. Release of radioactive uranium particulates to the concrete pad through the inoperative baghouse fabric filter also was documented. The concrete pad was painted in 1993 to immobilize any existing uranium particulates. Radiological survey results after the pad was painted showed no detectable activity on the pad or in the soil around the pad.

No Consent Order or other investigations have been conducted at SWMU 03-050(d).

SWMU 03-054(b) is an outfall at TA-03 that discharges into Twomile Canyon. This outfall, located southeast of building 03-1411 and southwest of building 03-1316, was formerly permitted as NPDES 03A009 to receive discharge water from the cooling tower effluent blowdown and noncontact cooling water from building 03-0102. This discharge was rerouted to the TA-46 sanitary WWTP in 1993, and the outfall is no longer on the NPDES permit.

Two active storm drain inlets [SWMUs 03-052(a) and 03-052(e)] are connected to a drainline that goes to the outfall. Storm water runoff from surface areas surrounding 26 buildings and 94 roof drains in TA-03 currently discharge to this outfall.

The project map (Figure 140-1) 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>.

140.2 Control Measures

The paved parking north of the channel at SWMU 03-054(b) is graded to the north, thus alleviating parking lot run-on. The culvert outlet captures storm water from the drop inlets associated with the TA-03 metals fabrication facility. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 140-1).

Enhanced controls were installed and certified on June 4, 2013, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

Table 140-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01202040015	Established Vegetation		X	X		B
E01203090006	Curbing	X			X	CB
E01205020014	Sediment Basin		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

140.3 Storm Water Monitoring

SWMUs 03-050(d) and 03-054(b) are monitored within 2M-SMA-2. Following the installation of baseline control measures, two baseline storm water samples were collected on July 28, 2011, and September 4, 2011 (Figures 140-2 and 140-3). Analytical results from these samples yielded three TAL exceedances:

- Copper concentrations of 5.5 µg/L and 14.9 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 72.3 µg/L and 140 µg/L (MTAL is 42 µg/L), and
- PCB concentration of 65 ng/L (ATAL is 0.6 ng/L).

Following the installation of enhanced control measures at 2M-SMA-2, corrective action storm water samples were collected on June 1, 2013, and September 4, 2013 (Figures 140-2 and 140-3). Analytical results from this corrective action monitoring sample yielded three TAL exceedances:

- Copper concentrations of 18.5 µg/L and 19.9 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 102 µg/L and 123 µg/L (MTAL is 42 µg/L), and
- PCB concentration of 50 ng/L and 15 ng/L (ATAL is 0.6 ng/L).

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

SWMU 03-050(d):

Copper, zinc, and PCBs are not known to be associated with industrial materials historically managed at this Site.

SWMU 03-054(b):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in shallow (i.e., less than 3 ft bgs) site characterization samples collected in 2002 before construction activities began near the Site. Copper was detected above BV in 17 of 18 shallow samples with a maximum concentration 17 times the soil BV.
- Zinc is not known to be associated with industrial materials historically managed at the Site. Zinc was detected above the soil BV in shallow samples collected in 2002 before construction activities began near the Site. Zinc was detected above BV in 18 of 18 shallow samples with a maximum concentration 17 times the soil BV.

- PCBs are not known to be associated with industrial materials historically managed at the Site. Samples collected at the Site in 2002 were not analyzed for PCBs because they were not identified as a potential contaminant at this Site.

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 140-2 and 140-3. 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 140-2 and 140-3.

Monitoring location 2M-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One of the zinc results from 2011 and 2013 is less than both of these values, and the other result from both 2011 and 2013 is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 and 2013 are between these values.

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

140.4 Inspections and Maintenance

RG121.9 recorded three storm events at 2M-SMA-2 during the 2013 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 140-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Enhanced Control Measure re-verification after Maintenance	BMP-30364	1-3-2013
Annual Erosion Evaluation	COMP-30688	4-23-2013
Storm Rain Event	BMP-33595	7-25-2013
Storm Rain Event	BMP-35546	9-24-2013
Annual Erosion Evaluation	COMP-36627	11-7-2013
TAL Exceedance	COMP-35280	9-5-2013

No maintenance activities were conducted at 2M-SMA-2 in 2013.

140.5 Compliance Status

The Sites associated with 2M-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 140-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 03-050(d)	Corrective Action Initiated	Corrective Action Initiated after 2 nd TAL exceedance	2 nd initiation on 9-24-13
SWMU 03-054(b)	Corrective Action Initiated	Corrective Action Initiated after 2 nd TAL exceedance	2 nd initiation on 9-24-13

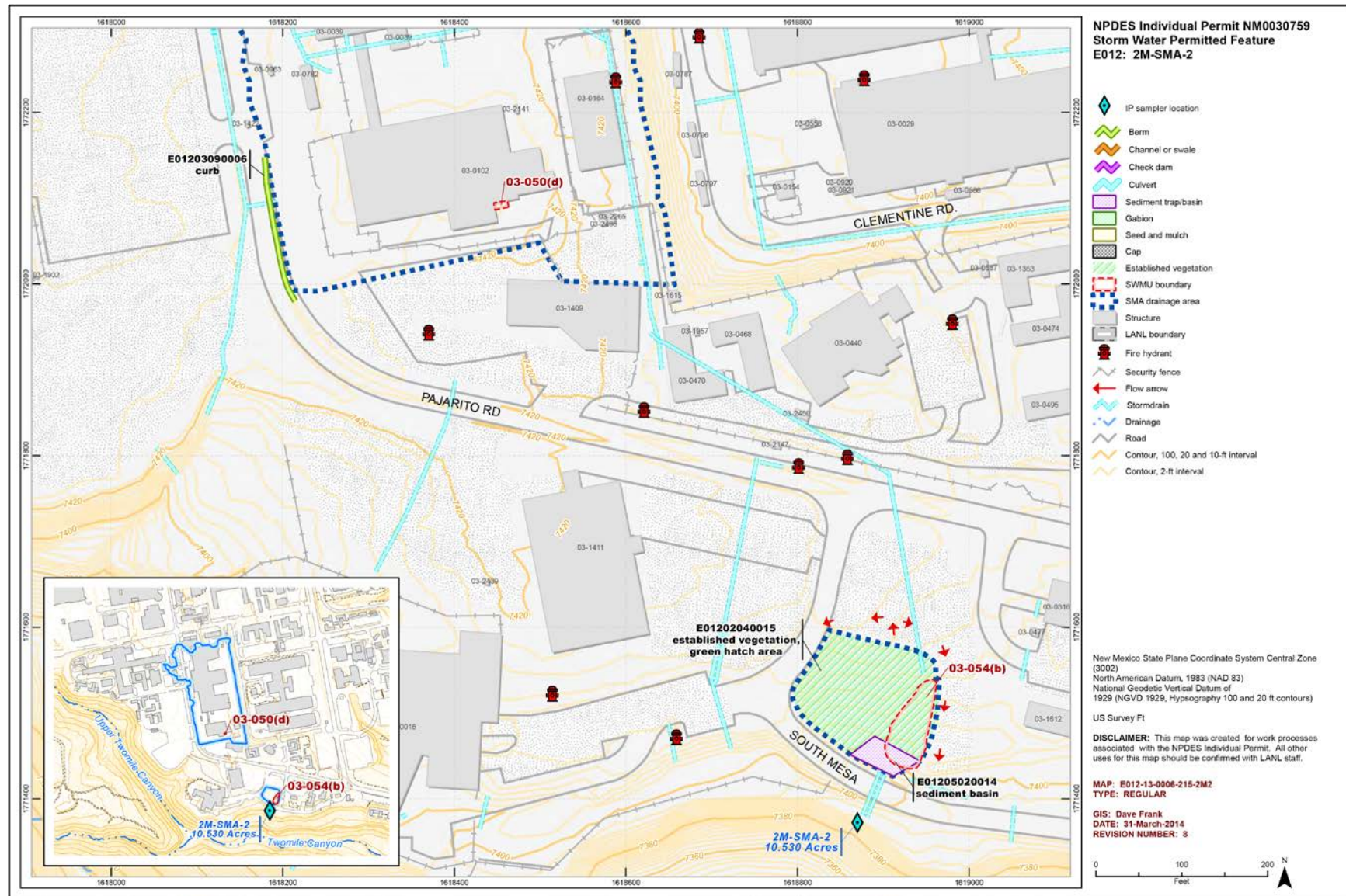


Figure 140-1 2M-SMA-2 location map

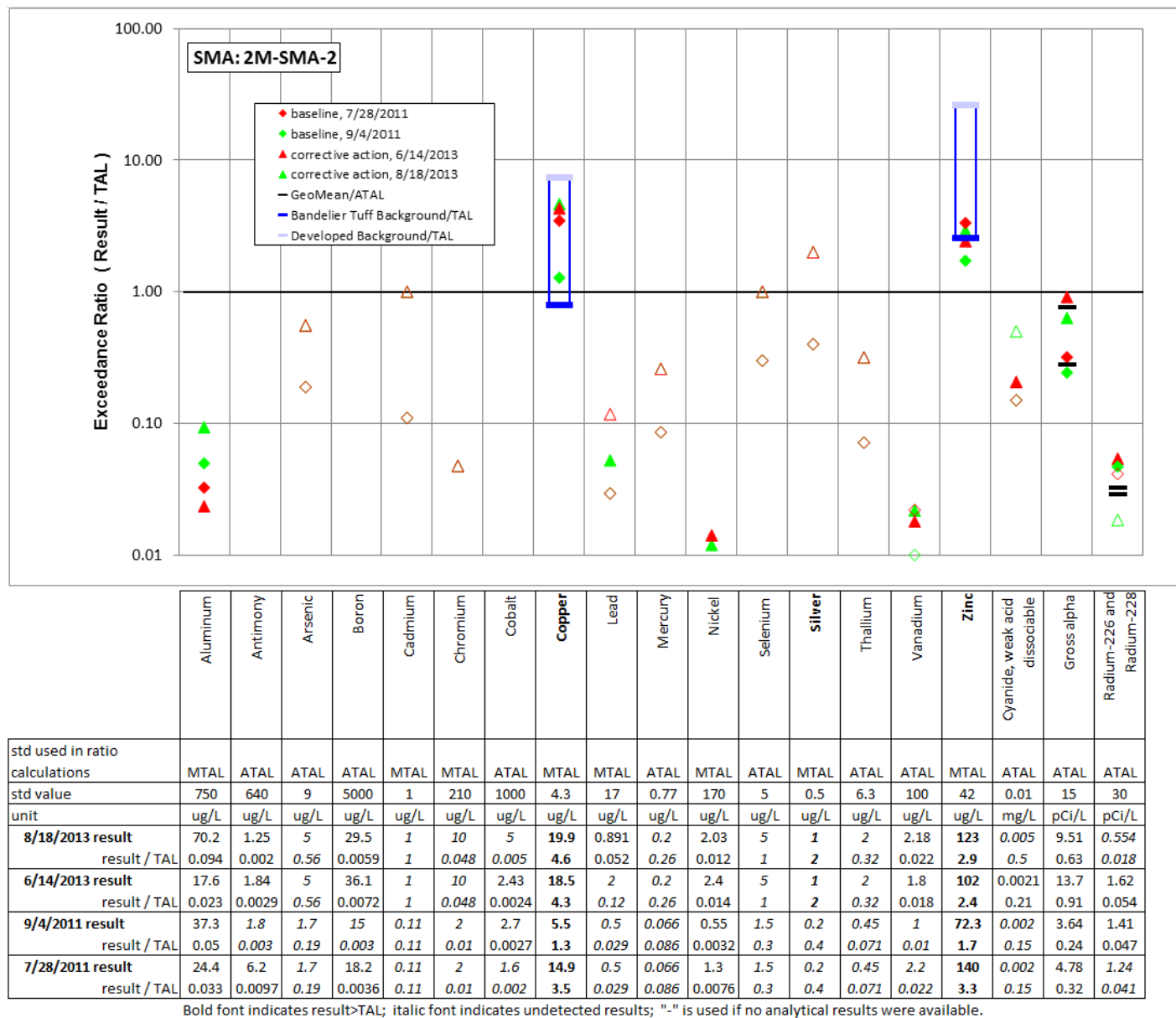


Figure 140-2 Inorganic analytical results summary plot for 2M-SMA-2

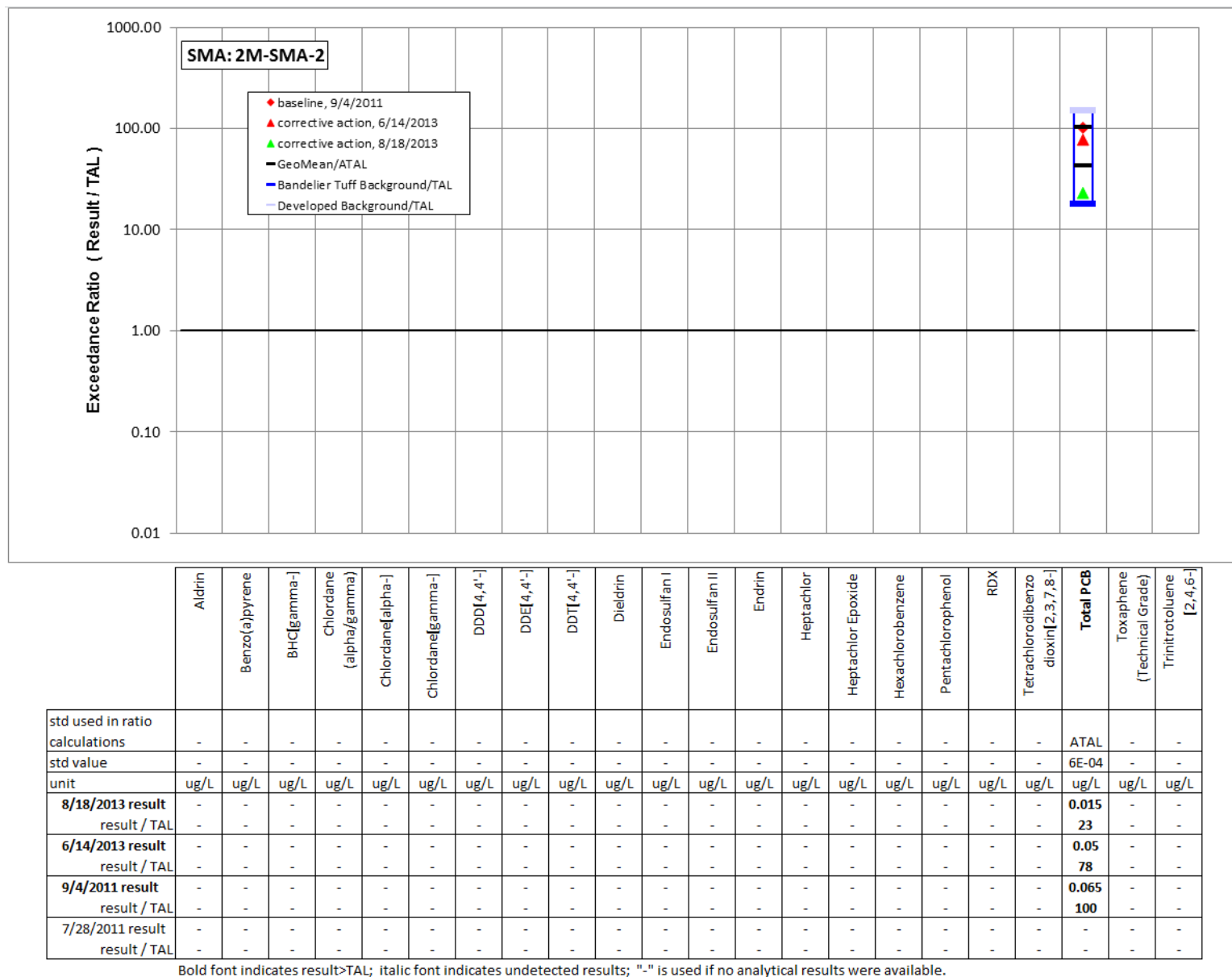


Figure 140-3 Organic analytical results summary plot for 2M-SMA-2

141.0 2M-SMA-2.2: AOC 03-003(k)

141.1 Site Descriptions

One historical industrial activity area is associated with E013, 2M-SMA-2.2: Site 03-003(k).

AOC 03-003(k) is an area of potential soil contamination associated with the location of a former non-PCB transformer (less than 50 ppm PCB), reportedly staged on the east side of building 03-0316. No additional information is available for this Site.

Consent Order or other environmental investigations have not been performed at AOC 03-003(k); there is no investigation data for this Site.

The project map (Figure 141-1) 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>.

141.2 Control Measures

Curbing is located on the northern side of building 03-2006 and diverts run-on from the paved areas away from the Permitted Feature. An asphalt swale prevents erosion resulting from runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 141-1).

Table 141-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01303090002	Curbing	X				CB
E01304020003	Concrete/Asphalt Channel/Swale		X	X		CB
E01306010004	Rock Check Dam		X		X	CB
E01306010005	Rock Check Dam		X		X	CB
E01308030006	Concrete/Asphalt Cap	X		X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

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

141.3 Storm Water Monitoring

AOC 03-003(k) is monitored within 2M-SMA-2.2. Following the installation of baseline control measures, two baseline storm water samples were collected on August 13, 2011, and September 4, 2011 (Figures 141-2 and 141-3). Analytical results from these samples yielded three TAL exceedances:

- Copper concentrations of 10.1 µg/L and 16.4 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 90.1 µg/L and 97.2 µg/L (MTAL is 42 µg/L), and
- PCB concentrations of 7 ng/L and 10 ng/L (ATAL is 0.6 ng/L).

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

AOC 03-003(k):

- Copper is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).
- Zinc is not known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).
- PCBs are known to be associated with industrial materials historically managed at the Site. No investigation data are available for AOC 03-003(k).

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 141-2 and 141-3. 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 141-2 and 141-3.



Monitoring location 2M-SMA-2.2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments 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. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are less than both of these values.

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

141.4 Inspections and Maintenance

RG121.9 recorded three storm events at 2M-SMA-2.2 during the 2013 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 141-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30689	4-23-2013
Storm Rain Event	BMP-33596	7-25-2013
Storm Rain Event	BMP-35547	9-24-2013
Annual Erosion Evaluation	COMP-36628	11-7-2013

Table 141-3 Maintenance during 2013

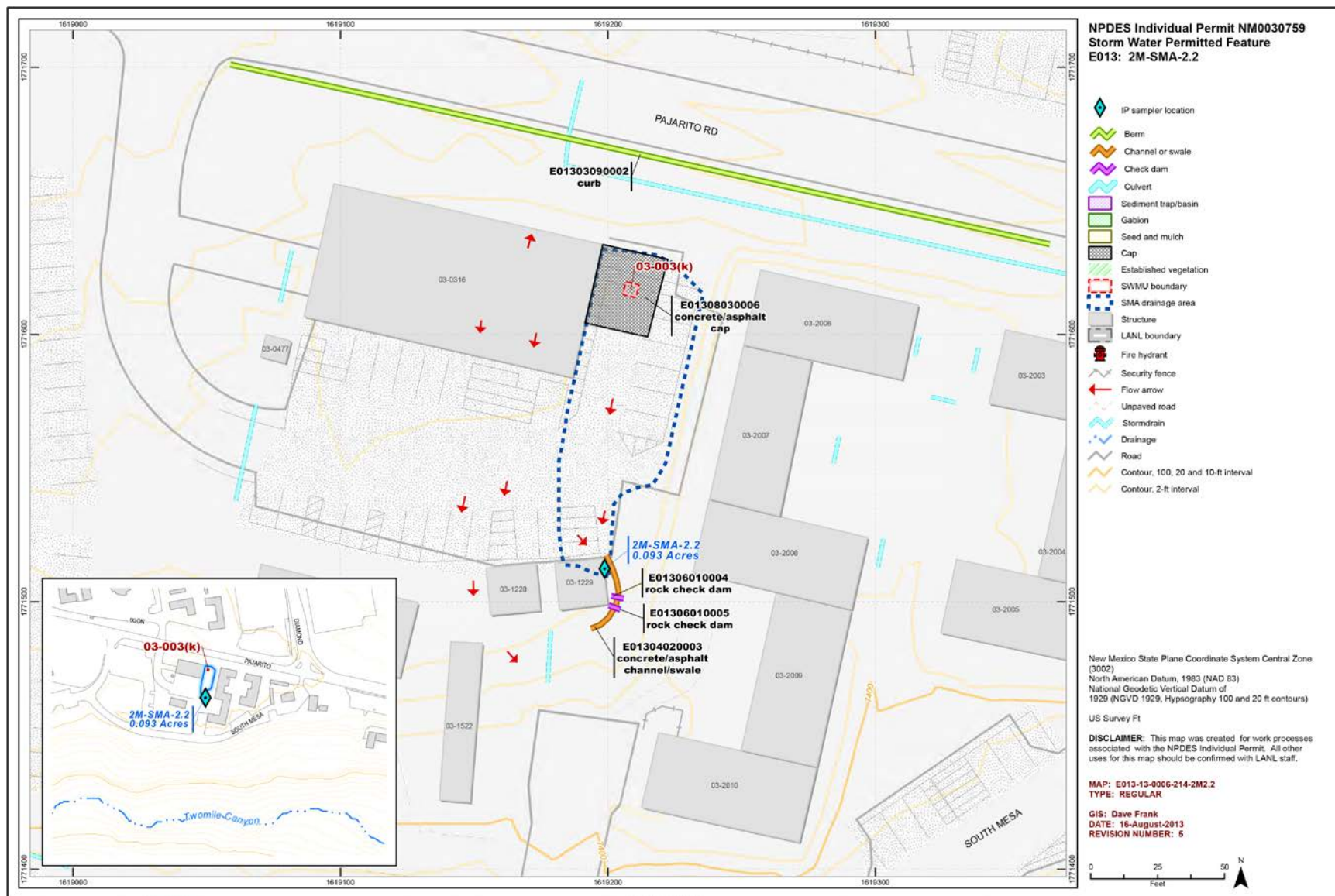
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34542	Remove all vegetation within the sealed area of E01308030006	8-7-2013	2 day(s)	Maintenance conducted in timely manner.

141.5 Compliance Status

The Site associated with 2M-SMA-2.2 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 141-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 03-003(k)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-03-2011



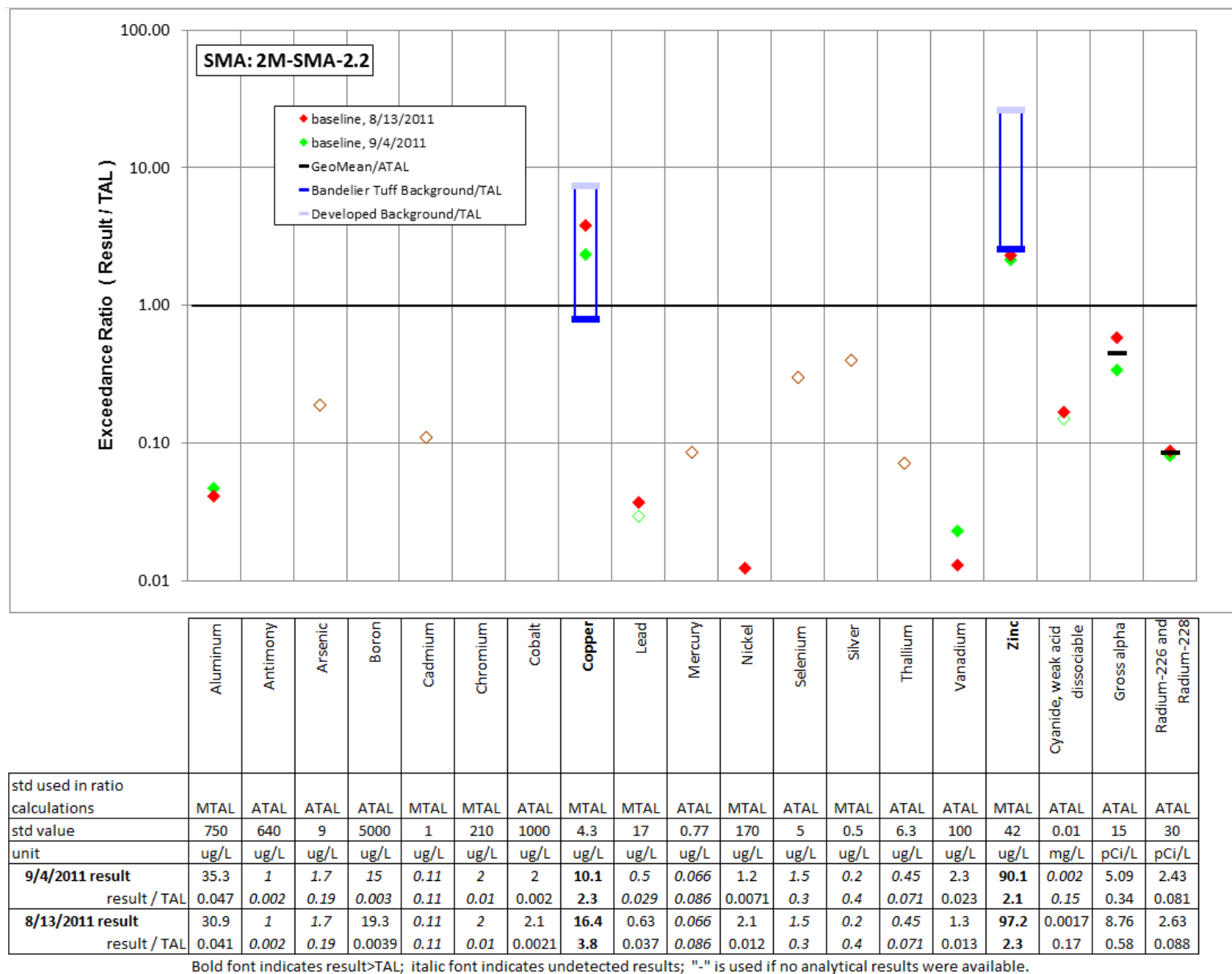


Figure 141-2 Inorganic analytical results summary plot for 2M-SMA-2.2

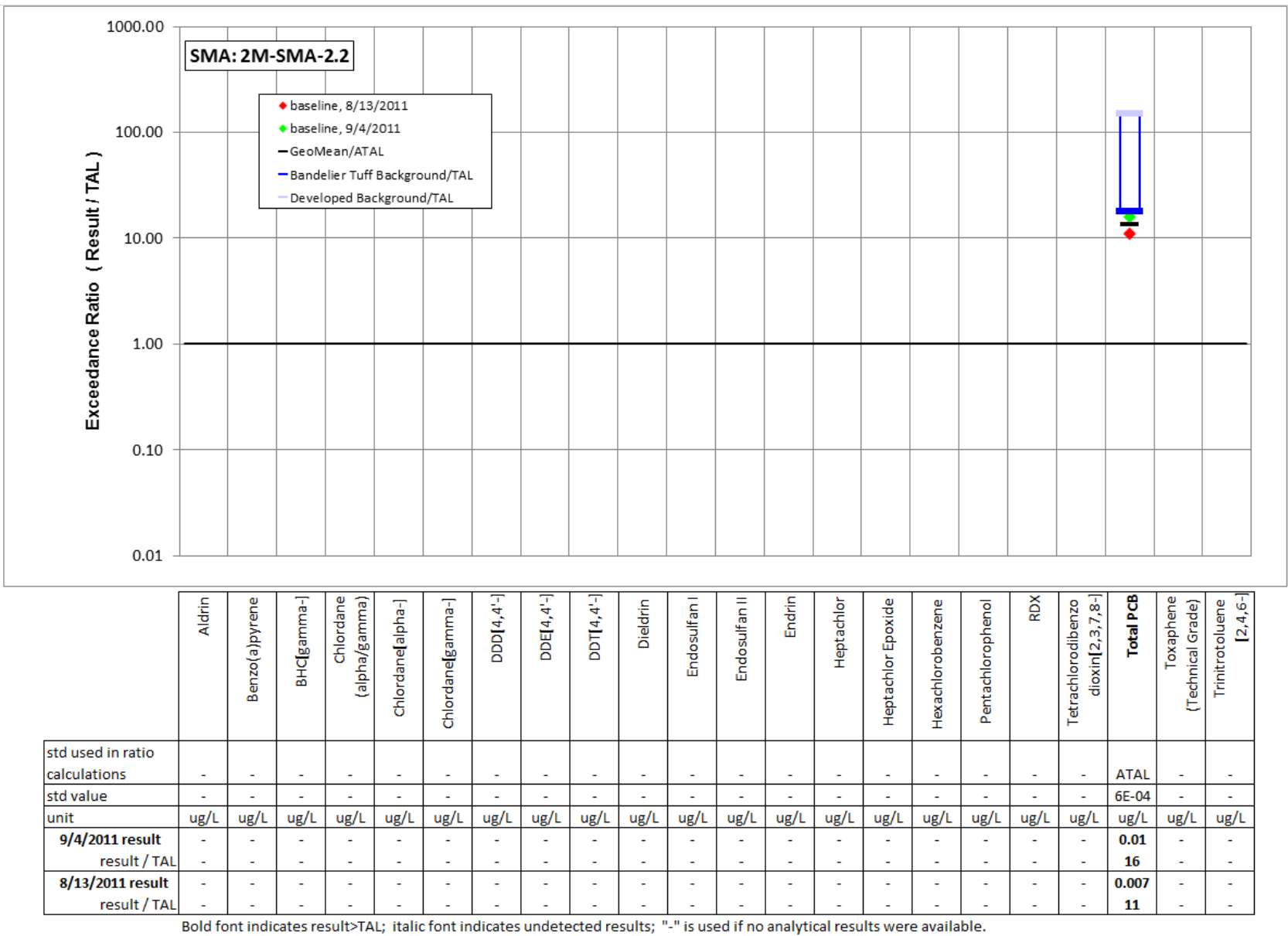


Figure 141-3 Organic analytical results summary plot for 2M-SMA-2.2

142.0 2M-SMA-2.5: SWMU 40-001(c)

142.1 Site Descriptions

One historical industrial activity area is associated with E015, 2M-SMA-2.5: Site 40-001(c).

SWMU 40-001(c) is a septic tank (structure 40-0025) located at TA-40 approximately 25 ft east of building 40-0011. Constructed of reinforced concrete, the septic tank measures 4 ft wide × 7 ft long × 6 ft deep and has a capacity of 540 gal. The septic tank was installed in 1950 and serves building 40-0011, which houses changing rooms and restrooms. Originally, the septic tank discharged northeast into Twomile Canyon. In 1951, the drainline was rerouted to discharge south to Pajarito Canyon. In 1988, the septic tank outlet was again rerouted, this time to discharge to a leach field constructed south of the septic tank.

This SWMU was investigated during a 1994 RFI; however, no sampling has been conducted under the Consent Order, and no decision-level data are available.

The project map (Figure 142-1) 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>.

142.2 Control Measures

The primary source of run-on to the project area originates on the paved area south of the sampler. Existing controls are in place to divert the run-on to the east. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 142-1).

Table 142-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01502040006	Established Vegetation		X	X		B
E01503010004	Earthen Berm	X			X	CB
E01503010005	Earthen Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

142.3 Storm Water Monitoring

SWMU 40-001(c) is monitored within 2M-SMA-2.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 9, 2012 (Figure 142-2). Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for 2M-SMA-2.5 and the associated SWMU 40-001(c) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for 2M-SMA-2.5 for the duration of the IP.

142.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-2.5 during the 2013 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 142-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30874	5-7-2013
Storm Rain Event	BMP-33414	7-23-2013
Storm Rain Event	BMP-35498	9-25-2013
Annual Erosion Evaluation	COMP-36813	11-7-2013

No maintenance activities were conducted at 2M-SMA-2.5 in 2013.

142.5 Compliance Status

The Site associated with 2M-SMA-2.5 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 142-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-001(c)	Baseline Confirmation Complete	Baseline Confirmation Complete	No Comment



2M-SMA-2.5, Earthen Berm, E01503010005 (photo ID 8534-1)

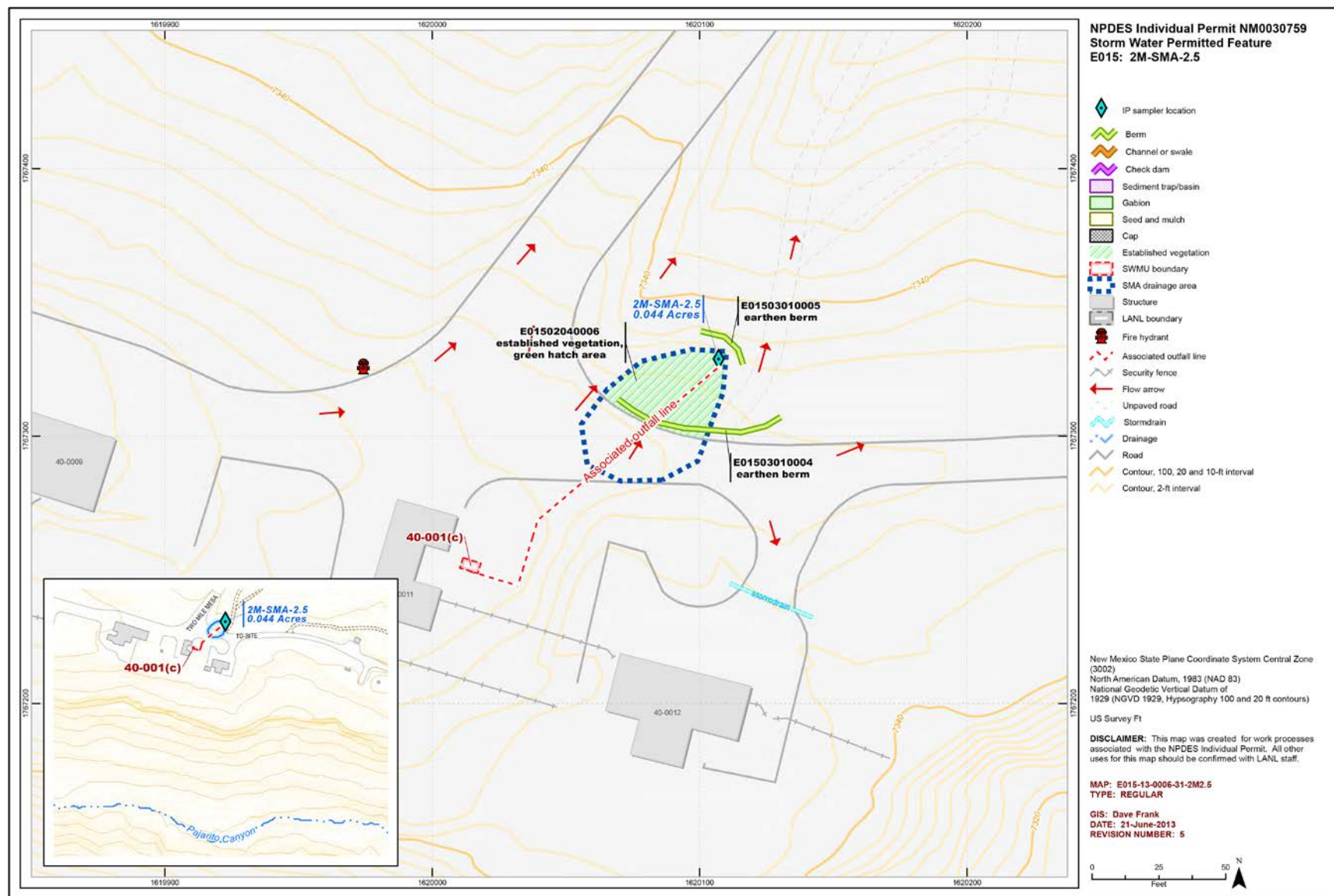


Figure 142-1 2M-SMA-2.5 location map

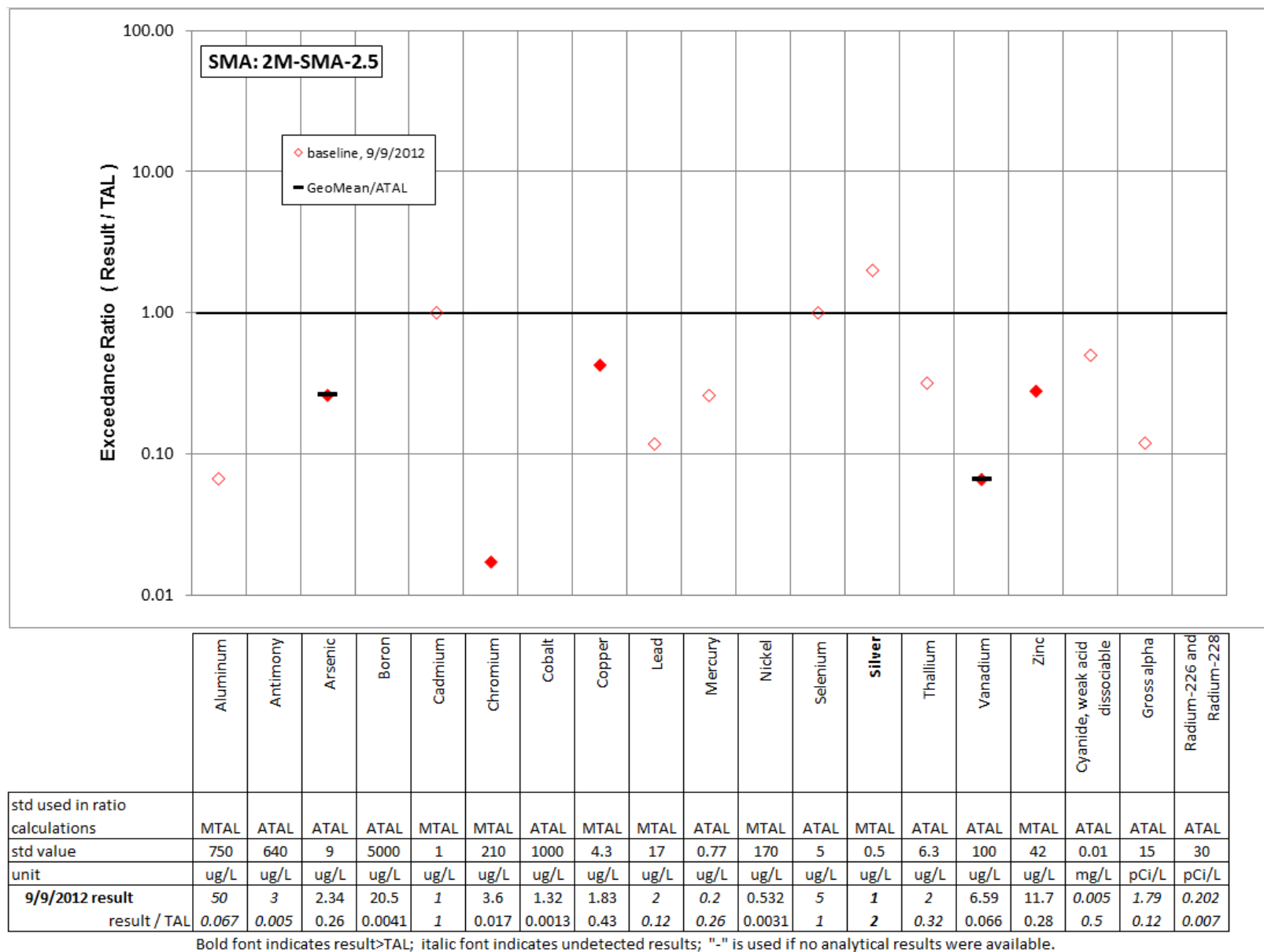


Figure 142-2 Inorganic analytical results summary plot for 2M-SMA-2.5

143.0 2M-SMA-3: SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d)

143.1 Site Descriptions

Four historical industrial activity areas are associated with E014, 2M-SMA-3: Sites 07-001(a), 07-001(b), 07-001(c), and 07-001(d).

SWMU 07-001(a) is an inactive firing pit located near the east end of TA-06. The Site consists of a circular depression surrounded by an annular berm about 4 ft high and approximately 30 ft in diameter. The firing pit was used in the 1950s to destroy scrap detonators and explosives. Materials to be destroyed were mixed with Composition B scraps or flaked TNT and the mixture was detonated. A 1959 memorandum states this method was very effective for destroying detonators, with no intact detonators thrown out of a pit and no undestroyed detonators found during a site survey, although pellets of unexploded PBX were found in post-firing debris. Small amounts of lead or mercury compounds may have been present in the blasting caps used to set off the HE used to destroy the detonators. This method of destroying detonators was discontinued at this Site in 1959.

The original IP Site narrative stated that beryllium and DU may have been released at this Site. A thorough review of Site records did not identify the use of either beryllium or DU.

Consent Order investigations have not been performed at SWMU 07-001(a), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only.

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

Consent Order investigations have not been performed at SWMU 07-001(b), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only.

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

Consent Order investigations have not been performed at SWMU 07-001(c), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only.

SWMU 07-001(d) is an inactive firing site located near the eastern boundary of TA-06. The Site is an approximately 20-ft-diameter × 3-ft-deep crater. Detonator parts have been found near the crater. Little is known about this Site's operating history, but it is believed to be the location of a one-time "celebratory shot" fired in 1945 after the Japanese surrender at the end of World War II. No debris is visible at or around the Site.

Consent Order investigations have not been performed at SWMU 07-001(d), and no decision-level data are available for this Site. An RFI was conducted at the Site in 1994. The RFI data are screening level only.

The project map (Figure 143-1) 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>.

143.2 Control Measures

There is minimal potential for run-on at this SMA. The Site is flat on the eastern end and run-on flow to other areas is sheet flow from natural areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 143-1).

Table 143-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
E01402040013	Established Vegetation		X	X		B
E01403060011	Straw Wattles		X		X	B
E01403060012	Straw Wattles		X		X	B
E01403060014	Straw Wattles	X			X	B
E01403060015	Straw Wattles		X		X	B
E01403060017	Straw Wattles		X		X	B
E01403060018	Straw Wattles	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

143.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 2M-SMA-3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d) are monitored within 2M-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figures 143-2 and 143-3). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 3750 µg/L (MTAL is 750 µg/L), and
- Copper concentrations of 6.05 µg/L (MTAL is 4.3 µg/L),

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

SWMU 07-001(a):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 11 shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site.
- Copper was likely associated with industrial materials historically managed at the Site. Copper was not detected above the soil BV in any of the 11 shallow (i.e., less than 3 ft bgs) soil samples collected during the 1994 RFI at the Site.

SWMU 07-001(b):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 12 shallow 1994 RFI soil samples collected at the Site.
- Copper was likely associated with industrial materials historically managed at the Site. Copper was detected above the soil BV 8 of 12 shallow 1994 RFI soil samples collected at the Site.

SWMU 07-001(c):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the three shallow 1994 RFI soil samples.
- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above the soil BV in any of the three shallow 1994 RFI soil samples.

SWMU 07-001(d):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Aluminum was not detected above the soil BV in any of the 13 shallow 1994 RFI soil samples.
- Copper was likely associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in 7 of 13 shallow 1994 RFI soil samples at a maximum concentration 5.3 times the soil BV.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 143-2 and 143-3. 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 143-2 and 143-3.

Monitoring location 2M-SMA-3 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum are found at low concentrations in the Bandelier Tuff.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is greater than both of these values.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is between these two values.

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

143.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 2M-SMA-3 during the 2013 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 143-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30690	5-7-2013
Storm Rain Event	BMP-33415	7-23-2013
Storm Rain Event	BMP-35499	9-25-2013
Annual Erosion Evaluation	COMP-36629	11-19-2013
TAL Exceedance	COMP-35821	11-19-2013

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

Table 143-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36897	Repair straw wattles E01403060015 by backfilling all areas of undercutting.	11-7-2013	43 day(s)	Maintenance conducted as soon as practicable.

143.5 Compliance Status

The Sites associated with 2M-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 143-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 07-001(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-16-13
SWMU 07-001(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-16-13
SWMU 07-001(c)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-16-13
SWMU 07-001(d)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-16-13

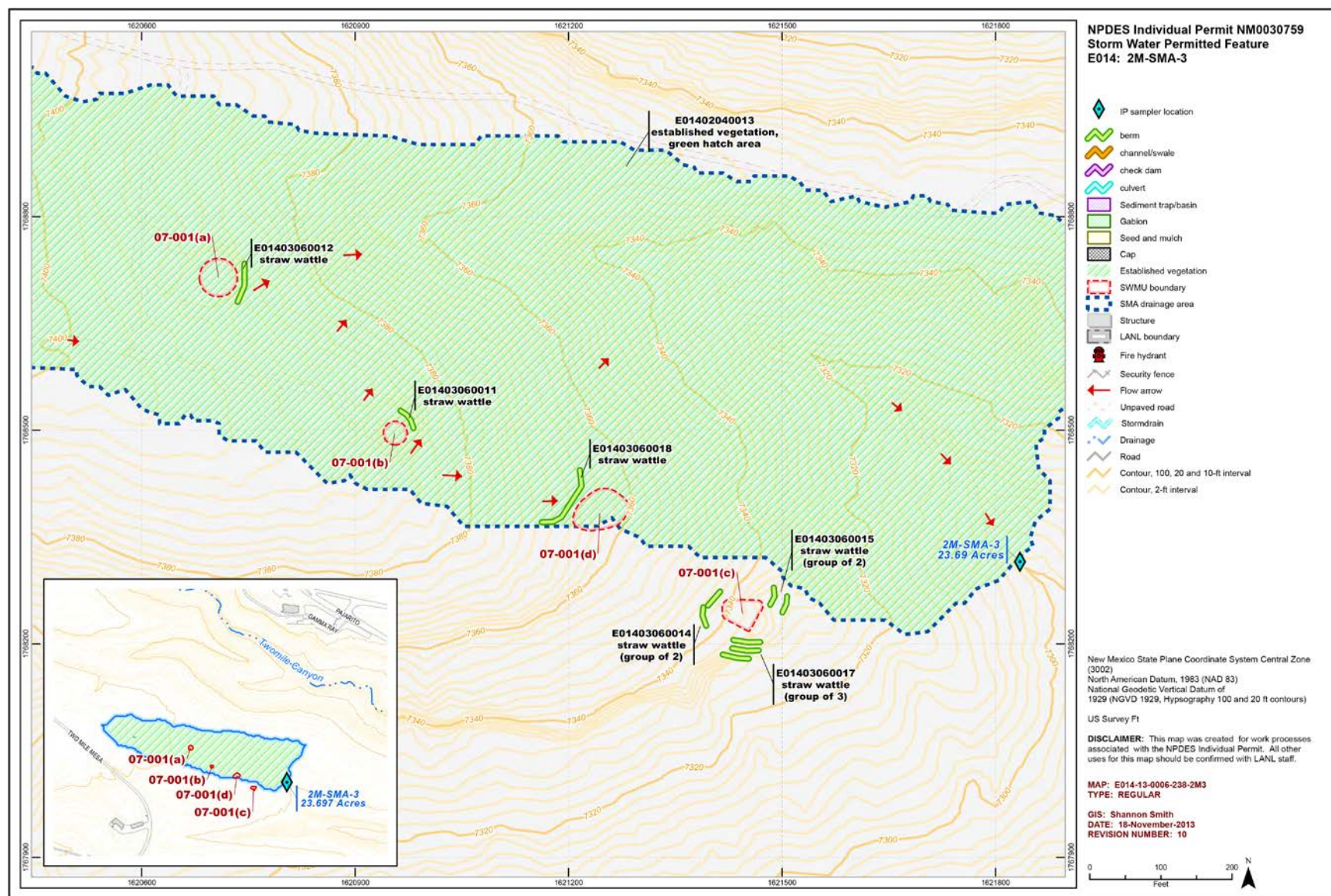


Figure 143-1 2M-SMA-3 location map

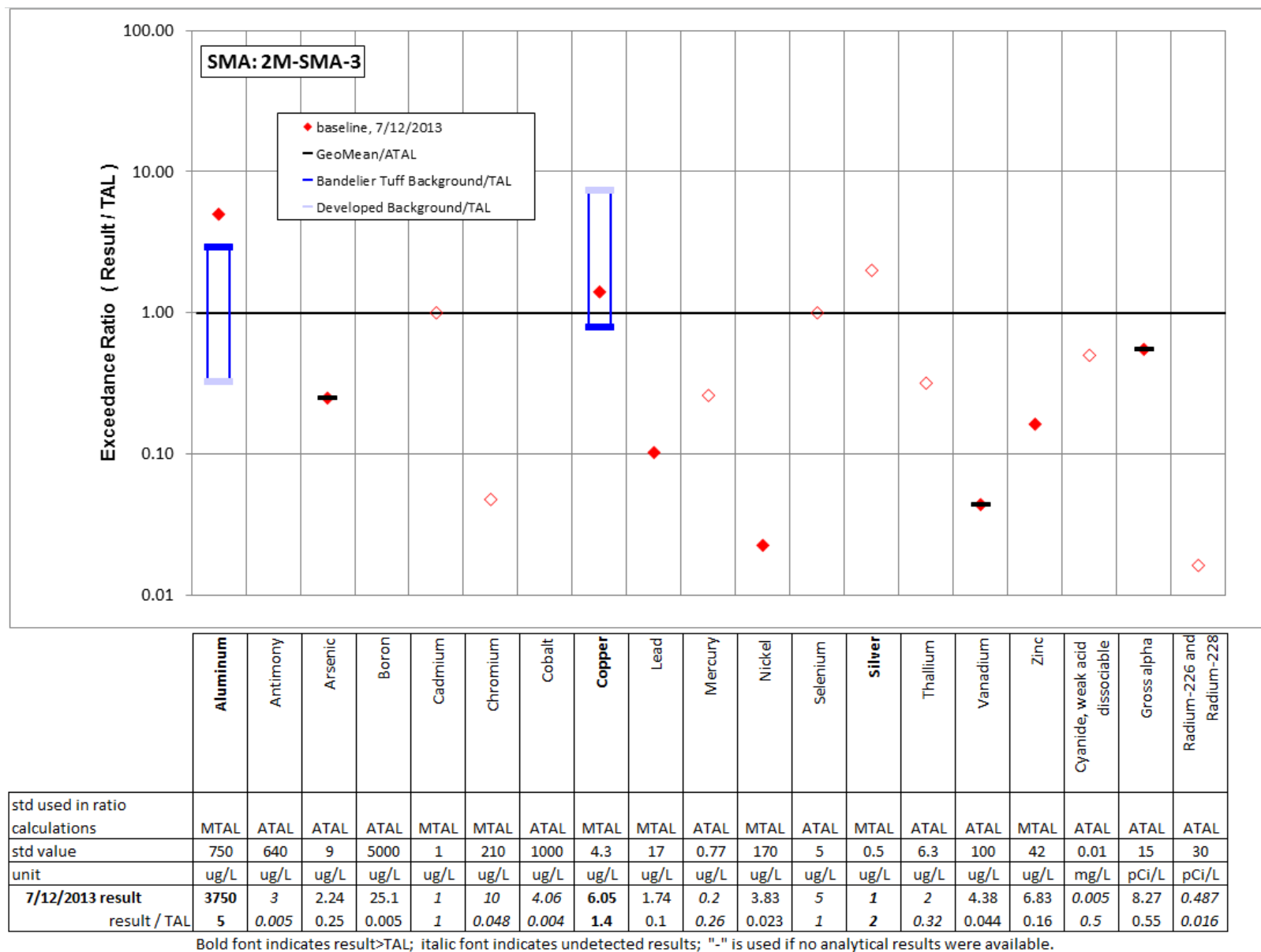


Figure 143-2 Inorganic analytical results summary plot for 2M-SMA-3

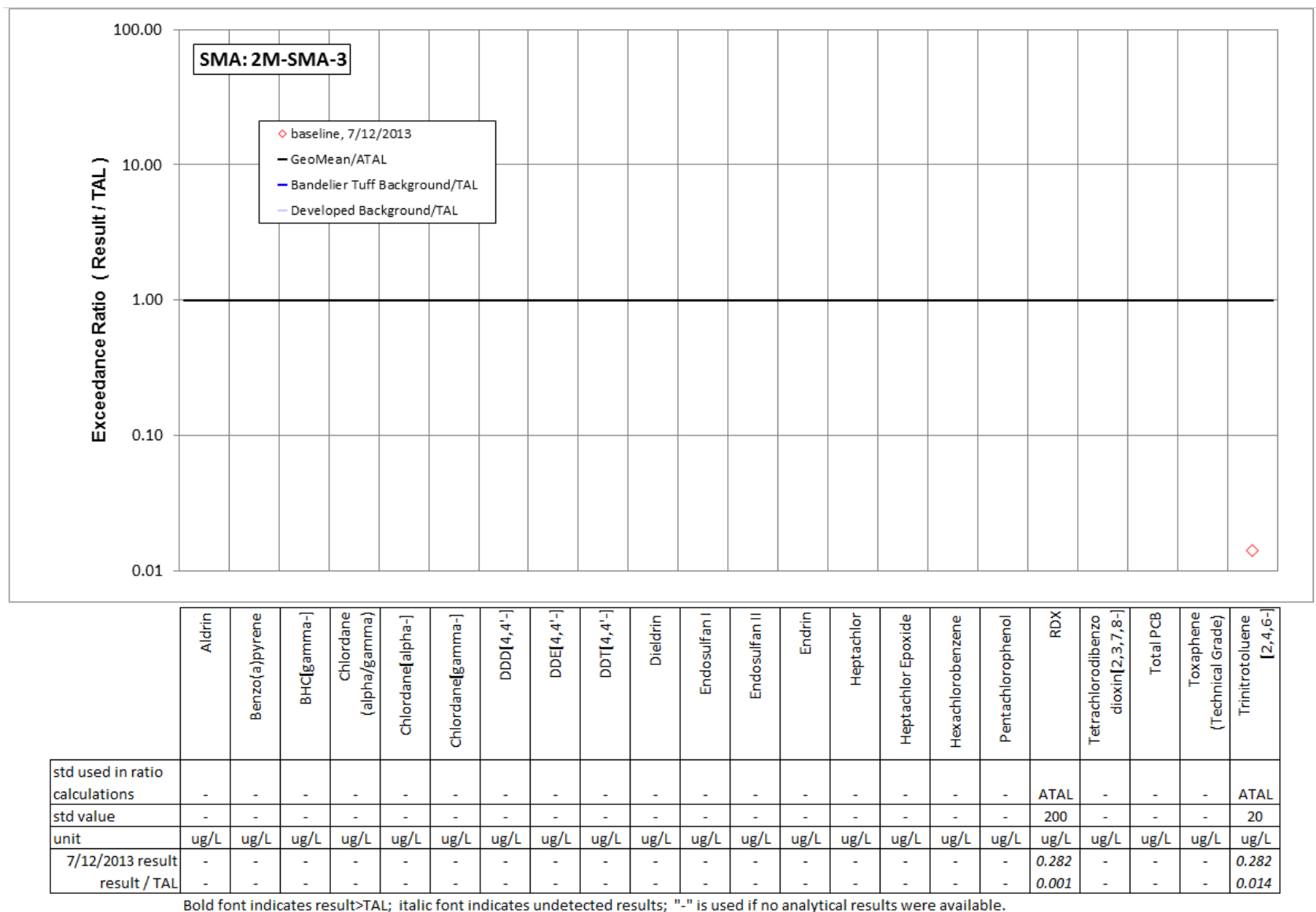


Figure 143-3 Organic analytical results summary plot for 2M-SMA-3

144.0 3M-SMA-0.2: SWMU 15-010(b)

144.1 Site Descriptions

One historical industrial activity area is associated with H001, 3M-SMA-0.2: Site 15-010(b).

SWMU 15-010(b) is a settling tank (structure 15-147) located in the northwest corner of TA-15 near former shop building 15-8. The tank, constructed in 1947 of concrete, measures 5 × 5 × 5.5 ft with an approximate capacity of 900 gal. The tank was originally designed to be a septic tank; however, subsequent engineering records confirm the tank was used as an HE settling tank. The settling tank served former building 15-8, which housed HE-machining operations during the 1950s, and discharged to an outfall at the edge of Threemile Canyon. The tank is no longer in operation; however, the date it ceased to be used is not known. The investigation work plan proposed removing the tank. However, facility restrictions on the handling of HE prevented removing the tank, which was found to contain liquid, until the contents were characterized. The liquid content was sampled for waste characterization purposes, was found to be nonhazardous and nonradioactive, and was removed. The facility closed the tank in place and filled it with concrete in 2012.

Phase I Consent Order sampling is complete for SWMU 15-010(b); the Site meets residential risk levels. Nature and extent will be reevaluated under the supplemental investigation report for Threemile Canyon Aggregate Area, scheduled to be submitted to NMED in 2015. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 144-1) 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>.

144.2 Control Measures

Run-on from the R-Site Road north along the unpaved access road bisecting the Permitted Feature is significant. This run-on is diverted along a natural drainage channel on the western side of the SMA. This run-on source does not impact the settling tank outfall area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 144-1).

Table 144-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00102040006	Established Vegetation		X	X		B
H00103010005	Earthen Berm	X			X	B
H00106010002	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

144.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-0.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

144.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at 3M-SMA-0.2 during the 2013 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 144-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30875	5-7-2013
Storm Rain Event	BMP-33416	7-24-2013
Storm Rain Event	BMP-35500	9-23-2013
Annual Erosion Evaluation	COMP-36814	11-4-2013

No maintenance activities were conducted at 3M-SMA-0.2 in 2013.

144.5 Compliance Status

The Site associated with 3M-SMA-0.2 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 144-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-010(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



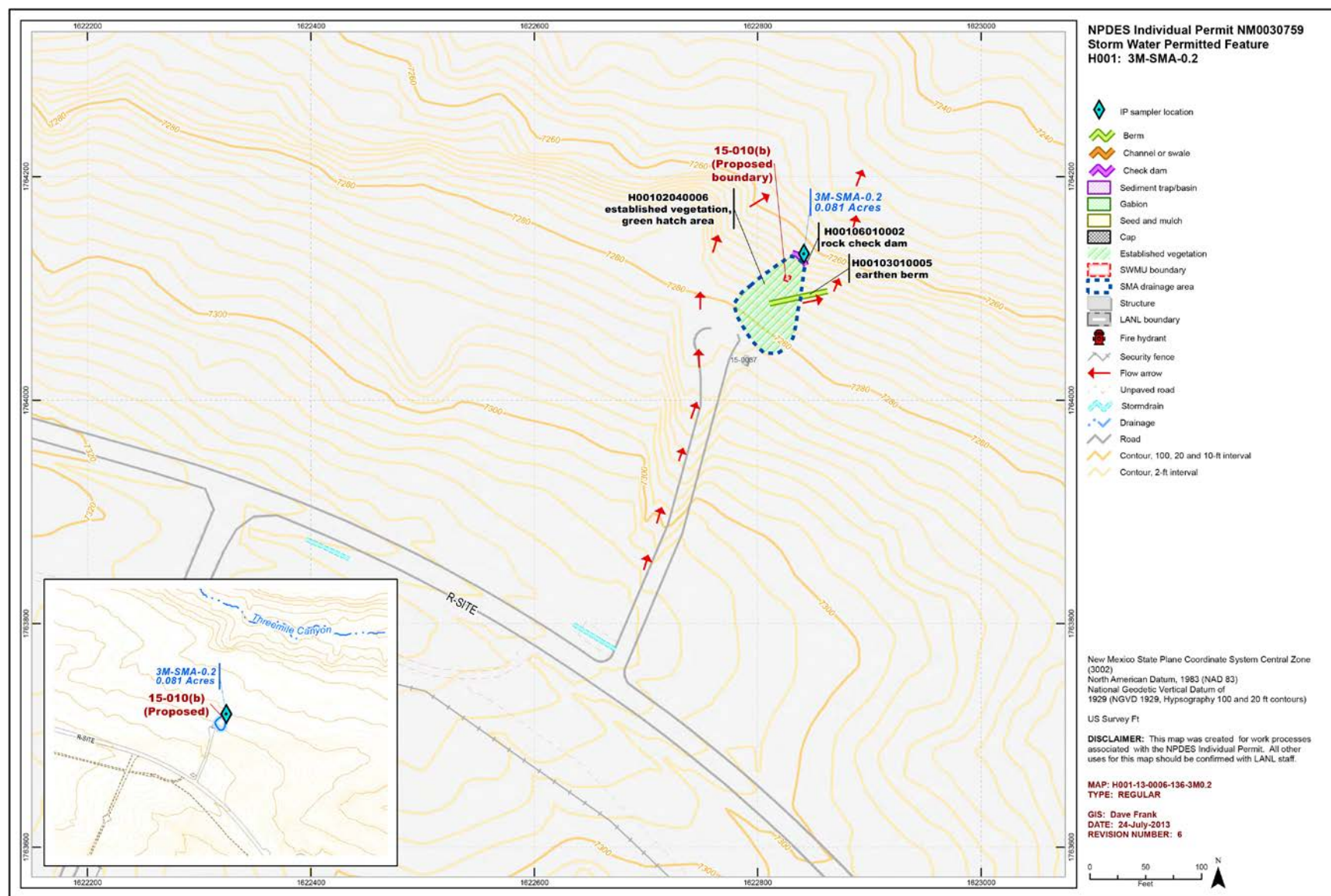


Figure 144-1 3M-SMA-0.2 location map

145.0 3M-SMA-0.4: SWMU 15-006(b)

145.1 Site Descriptions

One historical industrial activity area is associated with H002, 3M-SMA-0.4: Site 15-006(b).

SWMU 15-006(b) is the Ector firing site. Located along the eastern side of TA-15, the firing site was used for dynamic radiography of explosion-driven weapons components. It was originally established in 1973 and was used periodically until 1982. The Ector radiography machine was constructed at this Site, and the Site has operated with this machine from the mid-1980s to the present. Structures associated with the firing site are the firing point chamber (structure 15-276), the multidagnostic hydrotest (building 15-306), and the blast-protection structure (15-319).

Investigation of SWMU 15-006(b) is deferred per Table IV-2 of the Consent Order. The NMED-approved investigation work plan proposed no sampling for this Site.

The project map (Figure 145-1) 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>.

145.2 Control Measures

There are no significant run-on sources at this SMA. Engineered controls are associated with the paved access road and are working to divert storm water from the roads away from the Permitted Feature. The Permitted Feature is flat and without a significant run-on source. Planned controls are to address runoff around the existing drop inlet. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 145-1).

Table 145-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00202040005	Established Vegetation		X	X		B
H00203010003	Earthen Berm		X		X	CB
H00203010004	Earthen Berm		X		X	B
H00208020006	Rock Cap			X		B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

145.3 Storm Water Monitoring

SWMU 15-006(b) is monitored within 3M-SMA-0.4. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figures 145-2 and 145-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 120 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 15-006(b):

- Alpha-emitting radionuclides are not known to be associated with industrial materials managed at this Site. These radionuclides are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 145-2 and 145-3. 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 145-2 and 145-3.

Monitoring location 3M-SMA-0.4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

145.4 Inspections and Maintenance

RG262.4 recorded eight storm events at 3M-SMA-0.4 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 145-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30876	5-13-2013
Construction	COMP-32613	6-20-2013
Storm Rain Event	BMP-33173	7-9-2013
Storm Rain Event	BMP-33682	7-22-2013
Storm Rain Event	BMP-34185	8-5-2013
Storm Rain Event	BMP-35636	9-24-2013
Annual Erosion Evaluation	COMP-36815	11-19-2013
TAL Exceedance	COMP-35382	9-26-2013

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

Table 145-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-32113	Repair or replace matting on berm H00203010004. The new layer of matting can be placed on top of the existing matting.	7-31-2013	79 day(s)	Maintenance conducted as soon as practicable.

145.5 Compliance Status

The Site associated with 3M-SMA-0.4 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 145-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-006(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-27-13



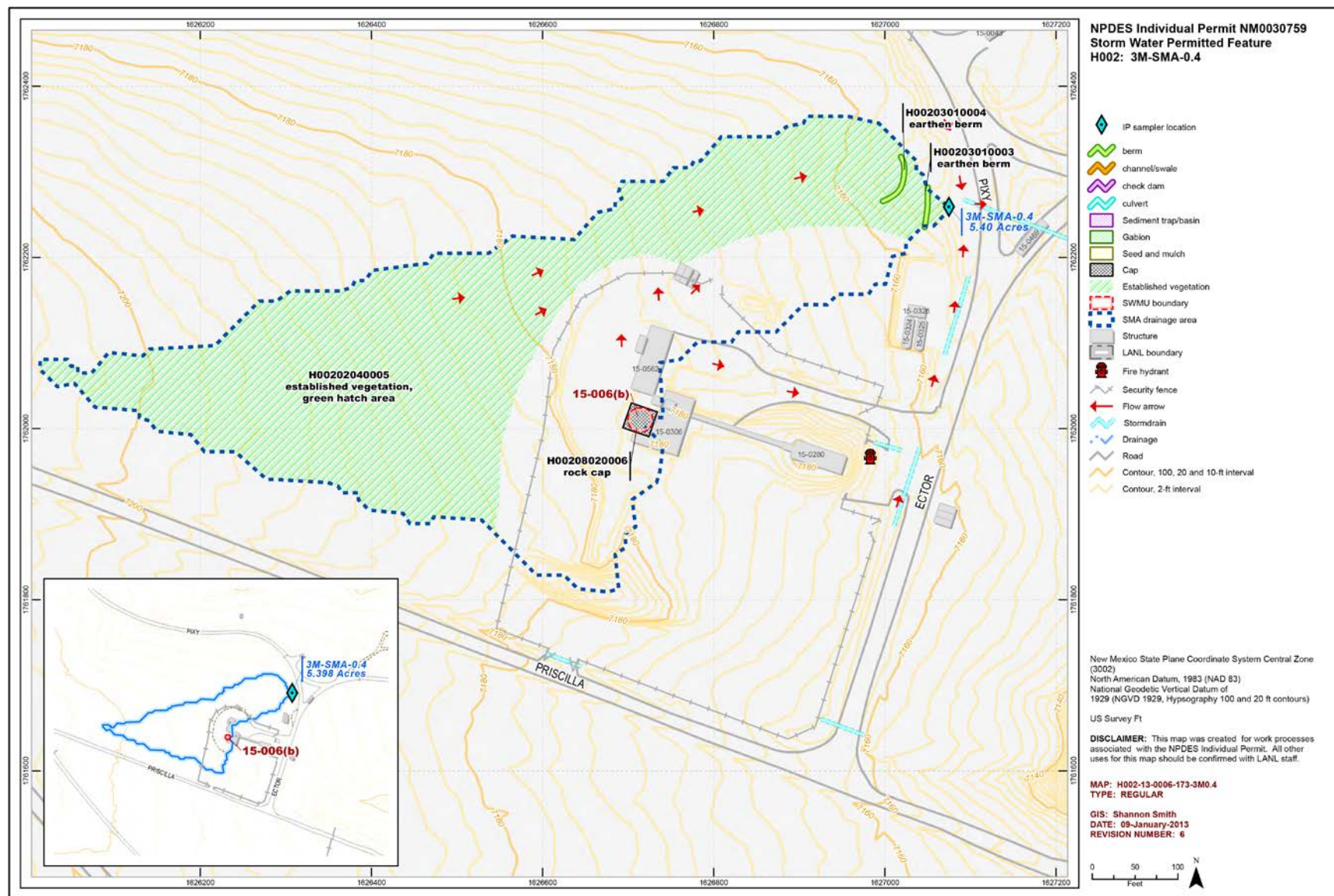


Figure 145-1 3M-SMA-0.4 location map

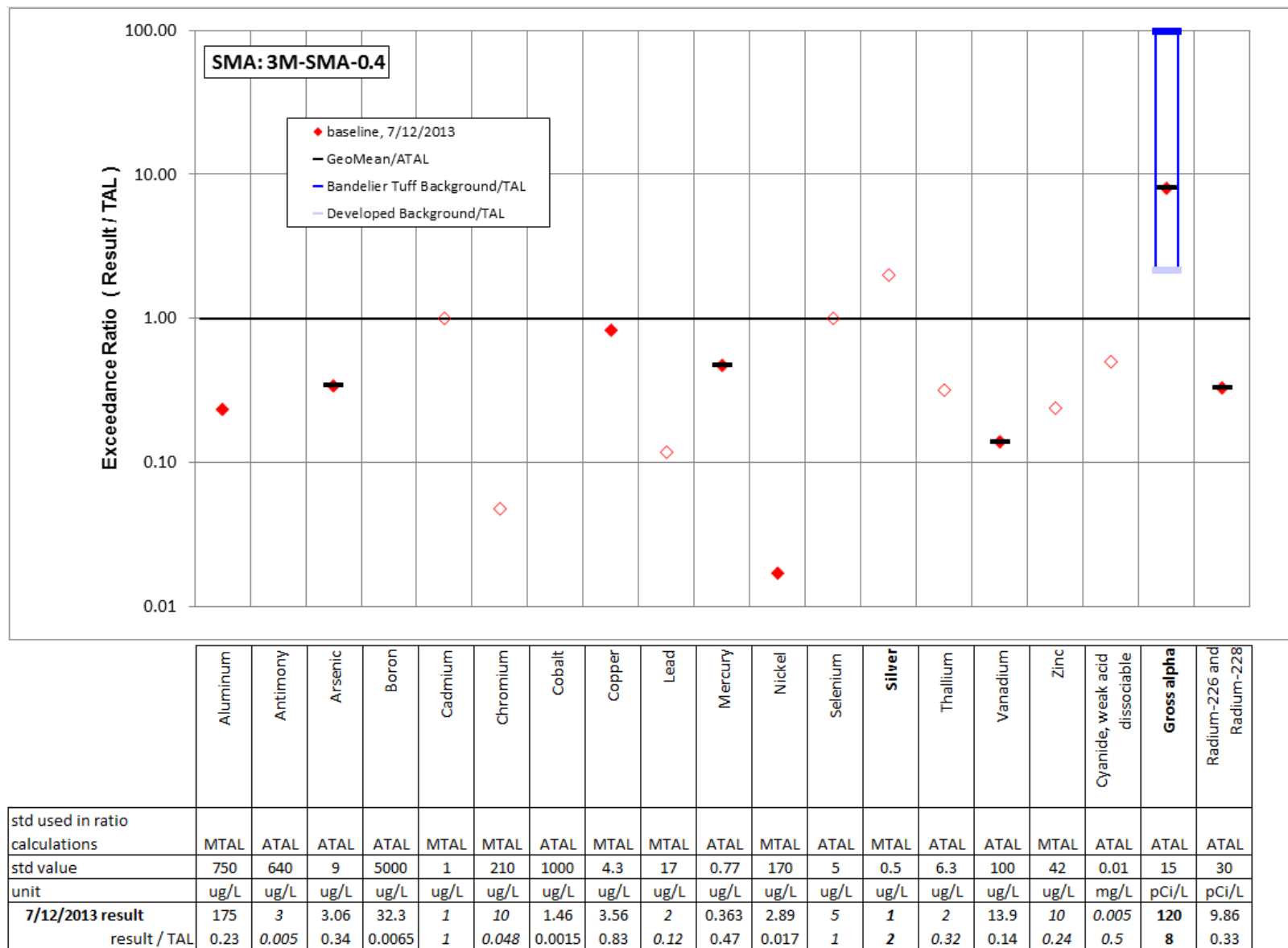


Figure 145-2 Inorganic analytical results summary plot for 3M-SMA-0.4

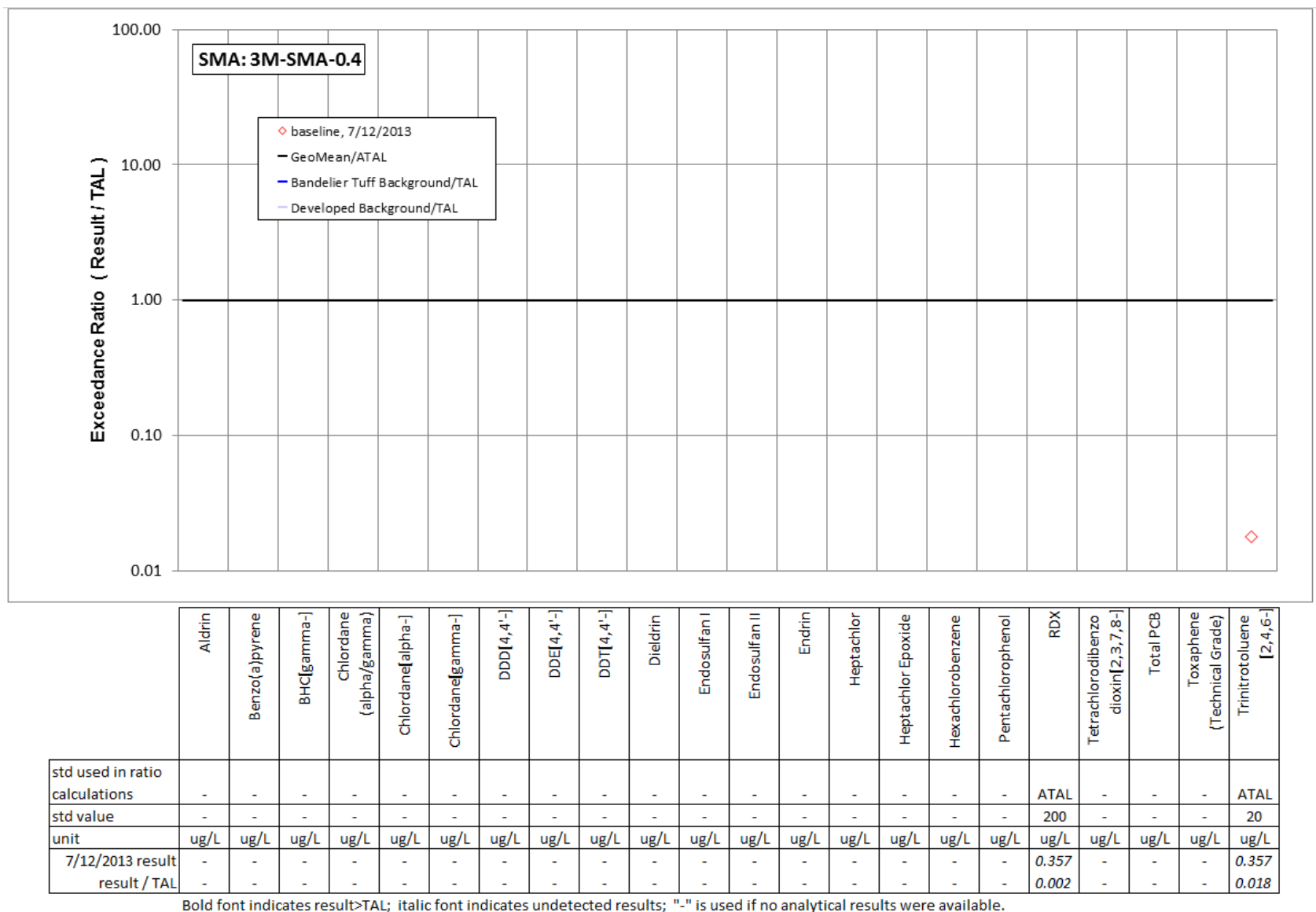


Figure 145-3 Organic analytical results summary plot for 3M-SMA-0.4

146.0 3M-SMA-0.5: SWMUs 15-006(c) and 15-009(c)

146.1 Site Descriptions

Two historical industrial activity areas are associated with H003, 3M-SMA-0.5: Sites 15-006(c) and 15-009(c).

SWMU 15-006(c) is the inactive firing site R-44. This firing site, located along the eastern side of TA-15, was originally constructed in 1951 and was used extensively from 1956 to 1978 for diagnostic tests of weapons components. After the PHERMEX and Ector firing sites became operational, firing site R-44 was used only for small experiments. Firing site R-44 was last used in 1992. Materials used in the tests included uranium, tritium, beryllium, lead, and HE. This firing site is located on a flat open area on a narrow mesa that overlooks Threemile Canyon. Debris from explosives tests has scattered onto the slope and into the canyon.

SWMU 15-006(c) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site, and no decision-level data are available for SWMU 15-006(c). Screening-level data from the 1995 RFI showed numerous inorganic chemicals detected above residential SSLs, several inorganic chemicals detected above industrial SSLs, and the HE RDX detected above residential and industrial SSLs; HMX was not detected above the residential SSL, and tritium was not detected above the residential SAL.

SWMU 15-009(c) is a septic system located at Firing Site R 44 at TA-15. The septic system consisted of a septic tank (former structure 15-62), associated drainlines, and an outfall. The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity. The system received effluent from restroom facilities in the firing site control building 15-44. The drainlines are constructed of cast iron and discharged to an outfall into the south fork of Threemile Canyon. The outfall is located approximately 25 ft downgradient of the tank. A 2003 engineering drawing shows that the outfall has been plugged and the septic tank was removed during the 2009–2010 site investigation, but the drainlines remain in place.

A Phase I investigation was conducted in 2010. Based on the 2010 data and data from a 1998 interim action RFI, no chemical or radionuclide constituents were detected above residential SSLs or SALs.

The project map (Figure 146-1) 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>.

146.2 Control Measures

Run-on associated with paved and bare areas is present. The existing controls serve to direct and control portions of the run-on source associated with paved areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 146-1).

Table 146-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00302040017	Established Vegetation		X	X		B
H00303010014	Earthen Berm		X		X	CB
H00304060001	Rip Rap		X	X		CB
H00304060004	Rip Rap		X	X		CB
H00306010002	Rock Check Dam		X		X	CB
H00306010005	Rock Check Dam	X			X	CB
H00306010006	Rock Check Dam	X			X	CB
H00306010007	Rock Check Dam	X			X	CB
H00306010008	Rock Check Dam	X			X	CB
H00306010009	Rock Check Dam	X			X	CB
H00306010010	Rock Check Dam	X			X	CB
H00306010011	Rock Check Dam	X			X	CB
H00306010012	Rock Check Dam	X			X	CB
H00306010013	Rock Check Dam		X		X	CB
H00306010016	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

146.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-0.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

146.4 Inspections and Maintenance

RG262.4 recorded eight storm events at 3M-SMA-0.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 146-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30877	5-8-2013
Storm Rain Event	BMP-33174	7-9-2013
Storm Rain Event	BMP-33683	7-22-2013
Storm Rain Event	BMP-34186	7-29-2013
Storm Rain Event	BMP-34510	8-14-2013
Storm Rain Event	BMP-35637	9-20-2013
Annual Erosion Evaluation	COMP-36816	11-19-2013

No maintenance activities were conducted at 3M-SMA-0.5 in 2013.

146.5 Compliance Status

The Sites associated with 3M-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 146-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 15-009(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

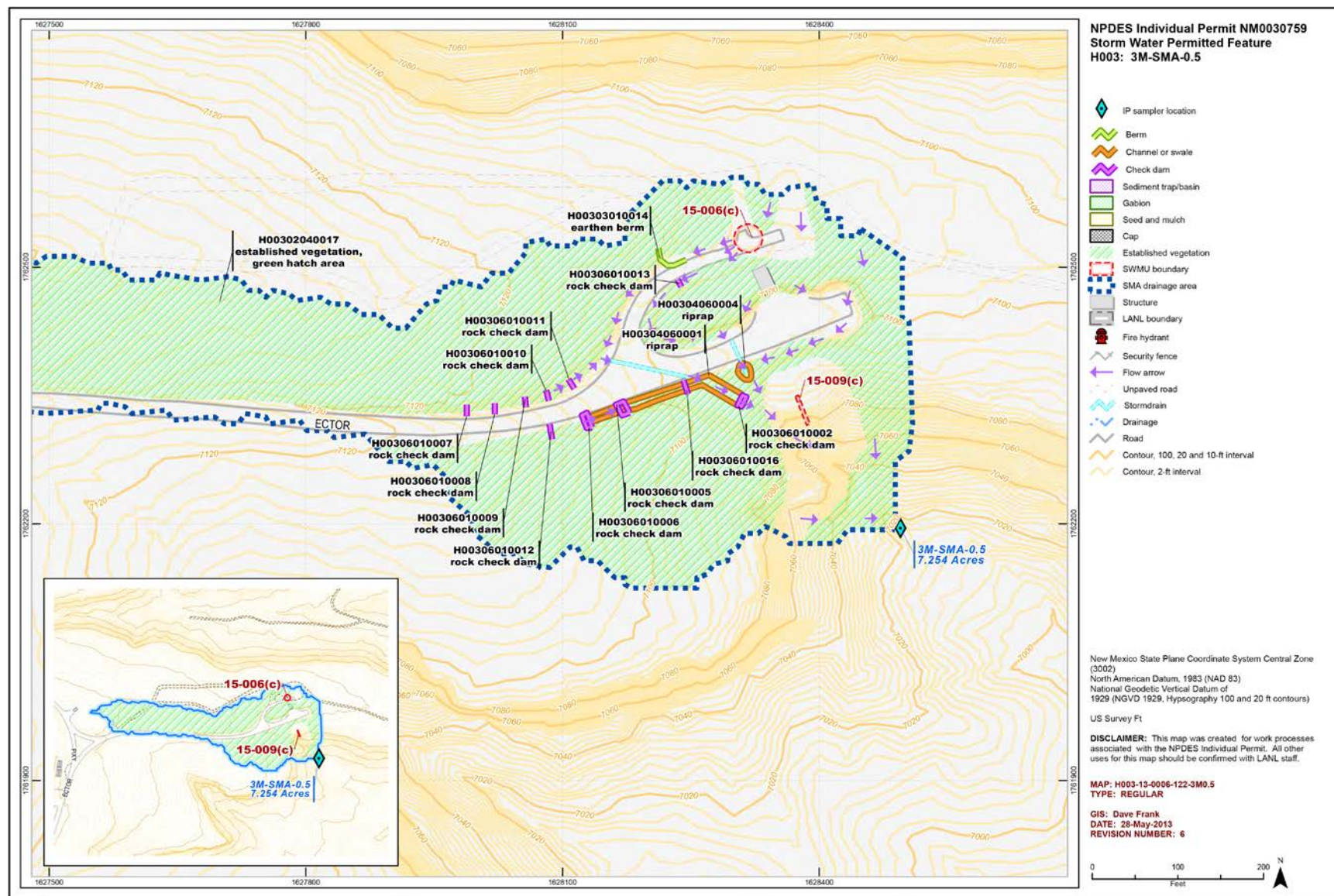


Figure 146-1 3M-SMA-0.5 location map

147.0 3M-SMA-0.6: SWMU 15-008(b)

147.1 Site Descriptions

One historical industrial activity area is associated with H004, 3M-SMA-0.6: Site 15-008(b).

SWMU 15-008(b) is a surface disposal area at TA-15, located north of Firing Site R-44 [SWMU 15-006(c)] and extending along the edge of the mesa and downslope into Threemile Canyon. The surface disposal area covers approximately 8.5 acres. Firing Site R-44 was built in 1951 for diagnostic tests of weapons components and used extensively until 1978 and sporadically until 1992. Soil and debris from the firing site activities were disposed of at SWMU 15-008(b). An expedited cleanup was performed in July 2000 after the Cerro Grande fire, which included removing 20 yd³ of firing site debris from the SWMU and surrounding area and installing erosion-control features, such as straw wattles, rock check dams, and silt fencing to control run-on and runoff.

Soil samples were analyzed for TAL metals, explosive compounds, PCBs, and radionuclides from investigations in 1994 and 2010. Aluminum, antimony, arsenic, copper, lead, and uranium were detected above residential SSLs in 1 to 12 samples but well below industrial SSLs; lead concentrations exceed the industrial SSL at 3 locations. All detected organic chemicals are below residential SSLs. All detected radionuclides were below residential SALs, except uranium-238, which was detected above the residential SAL in 10 samples but below the industrial SAL.

The project map (Figure 147-1) 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>.

147.2 Control Measures

There is minor run-on from the storage area above the Site. An unpaved road above the northern boundary of the Site also contributes run-on to the area. Extensive sheet flow across the area results in concentrated flow discharges. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 147-1).

Table 147-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00402040029	Established Vegetation		X	X		B
H00403060002	Straw Wattles	X			X	CB
H00403060003	Straw Wattles	X			X	CB
H00403060006	Straw Wattles	X			X	CB
H00403060008	Straw Wattles	X			X	CB
H00403060010	Straw Wattles	X			X	CB
H00403060011	Straw Wattles		X		X	CB
H00403060012	Straw Wattles		X		X	CB
H00403060015	Straw Wattles	X			X	CB
H00403060017	Straw Wattles		X		X	CB
H00403060018	Straw Wattles		X		X	CB
H00403060019	Straw Wattles		X		X	CB
H00403060021	Straw Wattles		X		X	CB
H00403060022	Straw Wattles	X			X	CB
H00403060027	Straw Wattles		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

147.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-0.6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

147.4 Inspections and Maintenance

RG245.5 recorded five storm events at 3M-SMA-0.6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 147-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30878	5-8-2013
Storm Rain Event	BMP-33251	7-22-2013
Storm Rain Event	BMP-34166	7-29-2013
Storm Rain Event	BMP-35579	9-20-2013
Annual Erosion Evaluation	COMP-36817	11-19-2013

No maintenance activities were conducted at 3M-SMA-0.6 in 2013.

147.5 Compliance Status

The Site associated with 3M-SMA-0.6 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 147-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-008(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

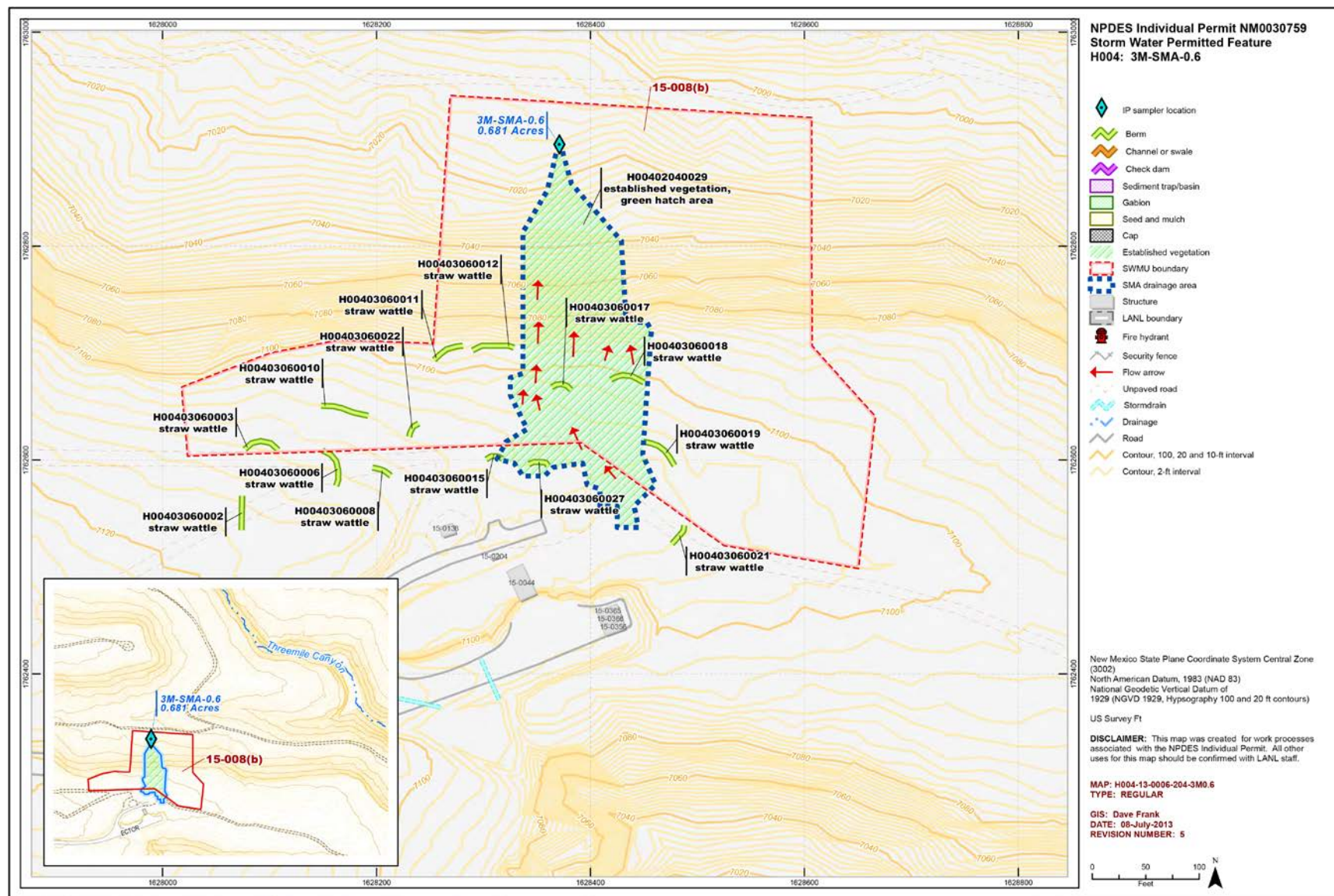


Figure 147-1 3M-SMA-0.6 location map

148.0 3M-SMA-2.6: SWMUs 36-008 and C-36-003

148.1 Site Descriptions

Two historical industrial activity areas are associated with H005, 3M-SMA-2.6: Sites 36-008 and C-36-003.

SWMU 36-008 is a surface disposal area located at TA-36 on the south rim of Threemile Canyon behind building 36-1. The disposal area covers an estimated 1 to 2 acres and extends below the building over the steeply sloping edge of the mesa. The dates the Site was used for disposal are not known, but the Site appears to be associated with building 36-1 (an office and laboratory), which was constructed in 1949. Materials disposed of at the Site included laboratory glassware, metal cans, metal pipe, miscellaneous metal pieces, and other debris. This disposal area was revealed in June 2000 after the Cerro Grande fire burned the vegetation surrounding the site. As part of the emergency response actions associated with the fire, approximately 5 yd³ of debris was collected from the Site, segregated, and staged for disposal, and storm water BMPs were installed to prevent erosion.

Phase I sampling was conducted in 2009–2010. Two inorganic chemicals, copper and mercury, were detected above residential SSLs, and several PAHs were detected above residential and industrial SSLs. All other detected chemicals and radionuclides were below residential SSLs and SALs, respectively.

SWMU C-36-003 is a former NPDES-permitted outfall (EPA06A106) located at TA-36 on the south rim of Threemile Canyon, north of office and laboratory building 36-1. The outfall became operational in the 1950s and served the sink and floor drains on the first floor of the building and the floor, sink, and equipment drains in the photoprocessing laboratories on the second floor of the building. In 1993, the floor and sink drains were rerouted to the SWSC plant. The outfall was removed from the NPDES permit in 2001.

An RFI was conducted in 1994. Decision-level data were collected during a Phase I investigation in 2010: one PAH was detected above residential and industrial SSLs, and all other detected chemicals and radionuclides were below residential SSLs and SALs, respectively.

The project map (Figure 148-1) 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>.

148.2 Control Measures

Road run-on south of the SMA is captured by an asphalt swale, drop inlet, and culvert and discharges to the slope west of the SWMU boundary. A portion of this flow runs onto the SMA at the western boundary. Planned controls are to address this run-on source along the western boundary. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 148-1).

Table 148-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00502040007	Established Vegetation		X	X		B
H00503120005	Rock Berm	X			X	CB
H00504040003	Culvert	X				CB
H00506010006	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

148.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-2.6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

148.4 Inspections and Maintenance

RG245.5 recorded five storm events at 3M-SMA-2.6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 148-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30879	5-2-2013
Storm Rain Event	BMP-33252	7-22-2013
Storm Rain Event	BMP-34167	8-5-2013
Storm Rain Event	BMP-35580	9-19-2013
Annual Erosion Evaluation	COMP-36818	11-22-2013

No maintenance activities were conducted at 3M-SMA-2.6 in 2013.

148.5 Compliance Status

The Sites associated with 3M-SMA-2.6 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 148-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 36-008	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU C-36-003	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

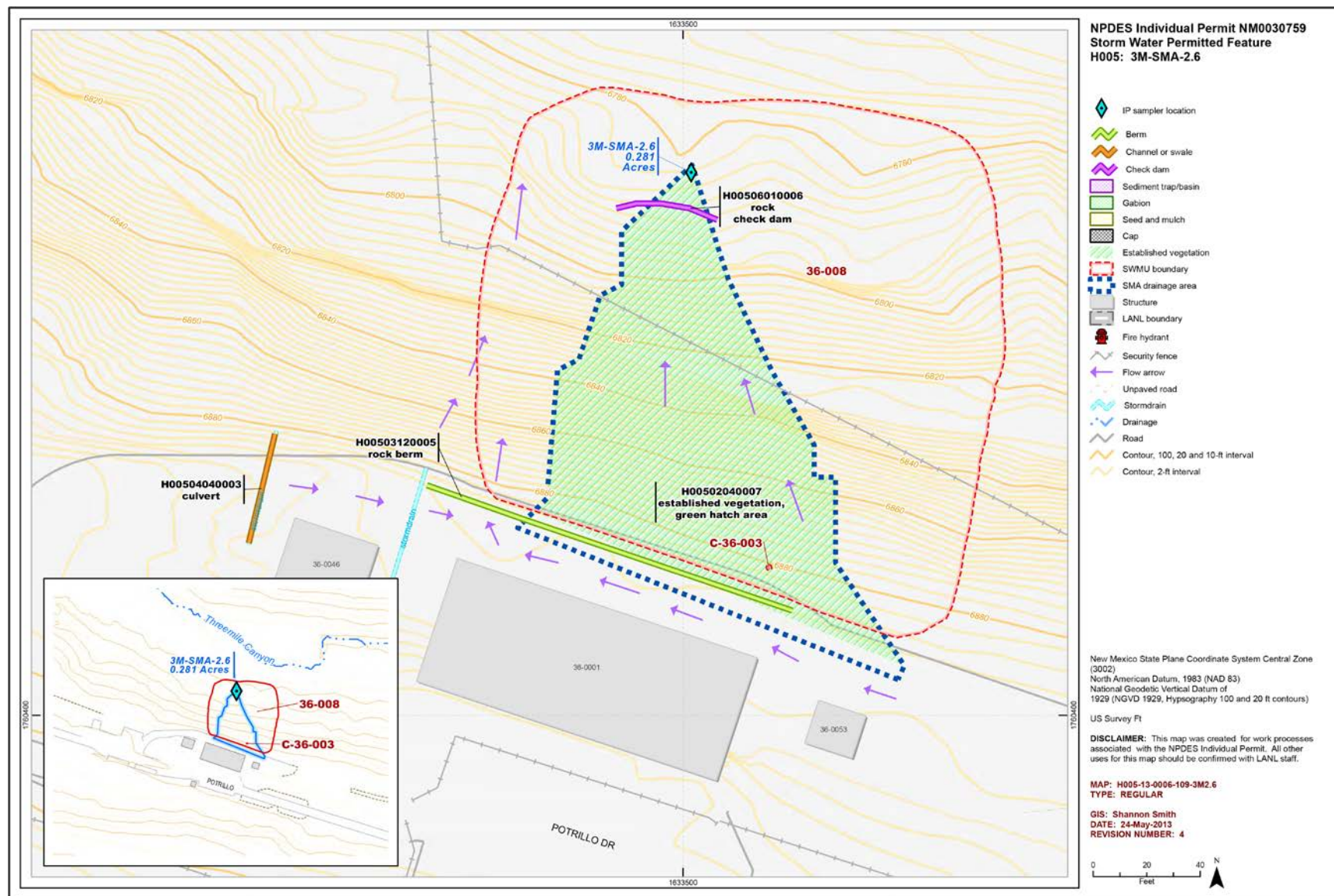


Figure 148-1 3M-SMA-2.6 location map

149.0 3M-SMA-4: SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f)

149.1 Site Descriptions

Three historical industrial activity areas are associated with H006, 3M-SMA-4: Sites 18-002(b), 18-003(c), and 18-010(f).

SWMU 18-002(b) is the former location of a firing points at TA-18 in Threemile Canyon near the former location of former building 18-32. The firing site was used from 1944 to 1945. The Site consisted of a 2-ft-long × 2-ft-wide × 2-ft-deep firing chamber (former structure 18-04) constructed from 1-in.-thick steel and an aboveground armored bunker (structure 18-05), commonly called a “battleship,” used to protect shot instrumentation. The top of the firing chamber was open and set flush with the ground west of structure 18-05. A ground-level wooden structure (former structure 18-06), located east of structure 18-05, was the battery building for the firing site cable conduit system and contained racks of lead-acid batteries. Structure 18-04 was removed in 1945, structure 18-06 was dismantled in 1951, and structure 18-05 underwent D&D in 2011 and 2012. Three additional former firing points that were located upcanyon and west of the first former firing point are associated with SWMU 18-002(b). Firing Point C (beneath former building 18-0032) and Firing Point G (located at the southeast corner of the former storage building 18-0122) were used in firing operations involving smaller charges, while the third firing point, Medium Firing Point, was built to handle HE charges of up to 2 tons. A flat graded area west of former building 18-32 marks the location of this former firing point. The firing points were removed in the late 1940s, before the construction of former building 18-32.

SWMU 18-002(b) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet been started. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 18-002(b).

SWMU 18-003(c) is an inactive septic system at TA-18 that received sanitary waste from former building 18-32 (a former critical assembly building) from 1952 to 1995. The system includes an inlet line, a reinforced concrete septic tank (structure 18-42), a discharge line, a drain field, and an outfall. The septic tank is located approximately 15 ft east of former building 18-128 and approximately 90 ft northeast of former building 18-32. The tank had a capacity of 650 gal. The inlet line leading to the tank is approximately 130 ft in length, and the total length of the outlet line is approximately 115 ft. The drain field begins approximately 60 ft east of the septic tank and extends east 55 ft. The drain field consists of four drainlines spaced approximately 10 ft apart. Each drainline is approximately 75 ft long. An outfall, located at the distal end of the drain field, discharged into the stream channel in Threemile Canyon. During the 1996 IA conducted at the Site, the septic tank content were removed and disposed of off-site and the tank was pressure-washed. In addition, the floor drains in former building 18-32 were sealed by fastening a gasket and metal plate over the drain opening; water service to the building was shut off. During the 2000 VCM conducted at the Site, samples were collected from the tank interior and from subsurface soils around and beneath the tank; the tank was filled with pea gravel and closed in place. Buildings 18-32 and 18-128 underwent D&D in 2011 and 2012.

SWMU 18-003(c) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet been started. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014

AOC 18-010(f) is a former outfall at TA-18 that received discharges from the roof and floor drains associated with former building 18-32. Roof and floor drains associated with former building 18-32 discharged to a drainline that was located at the northeast corner of the building. The drainline ran under the pavement and discharged to an outfall located approximately 100 ft north of former building 18-32, on the south side of the stream channel in Threemile Canyon. Building 18-32 was built in 1951 and used for nuclear critical assembly work. The date this outfall became operational is not known, but it is likely that the outfall has operated from the time building 18-0032 was constructed in 1951. Building 18-32 was decommissioned in 2008 and underwent D&D in 2011 and 2012; the storm drainline was cut and capped at the foundation of former building 18-32 during D&D activities.

AOC 18-010(f) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for AOC 18-010(f).

The project map (Figure 149-1) 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>.

149.2 Control Measures

This SMA is located in a canyon floodplain. A discrete drainage channel runs north of the Permitted Feature. Installed controls are in place to stabilize this channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 149-1).

Table 149-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
H00602040010	Established Vegetation		X	X		B
H00603010007	Earthen Berm		X		X	CB
H00603010008	Earthen Berm		X		X	CB
H00604020009	Concrete/Asphalt Channel/Swale	X		X		CB
H00604060005	Rip Rap	X		X		CB
H00604060006	Rip Rap		X	X		CB
H00607010002	Gabions	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

149.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at 3M-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

149.4 Inspections and Maintenance

RG245.5 recorded five storm events at 3M-SMA-4 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 149-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30880	5-2-2013
Storm Rain Event	BMP-33253	7-22-2013
Storm Rain Event	BMP-34168	8-5-2013
Storm Rain Event	BMP-35581	9-19-2013
Annual Erosion Evaluation	COMP-36819	12-5-2013

No maintenance activities were conducted at 3M-SMA-4 in 2013.

149.5 Compliance Status

The Sites associated with 3M-SMA-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 149-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 18-002(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 18-003(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 18-010(f)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

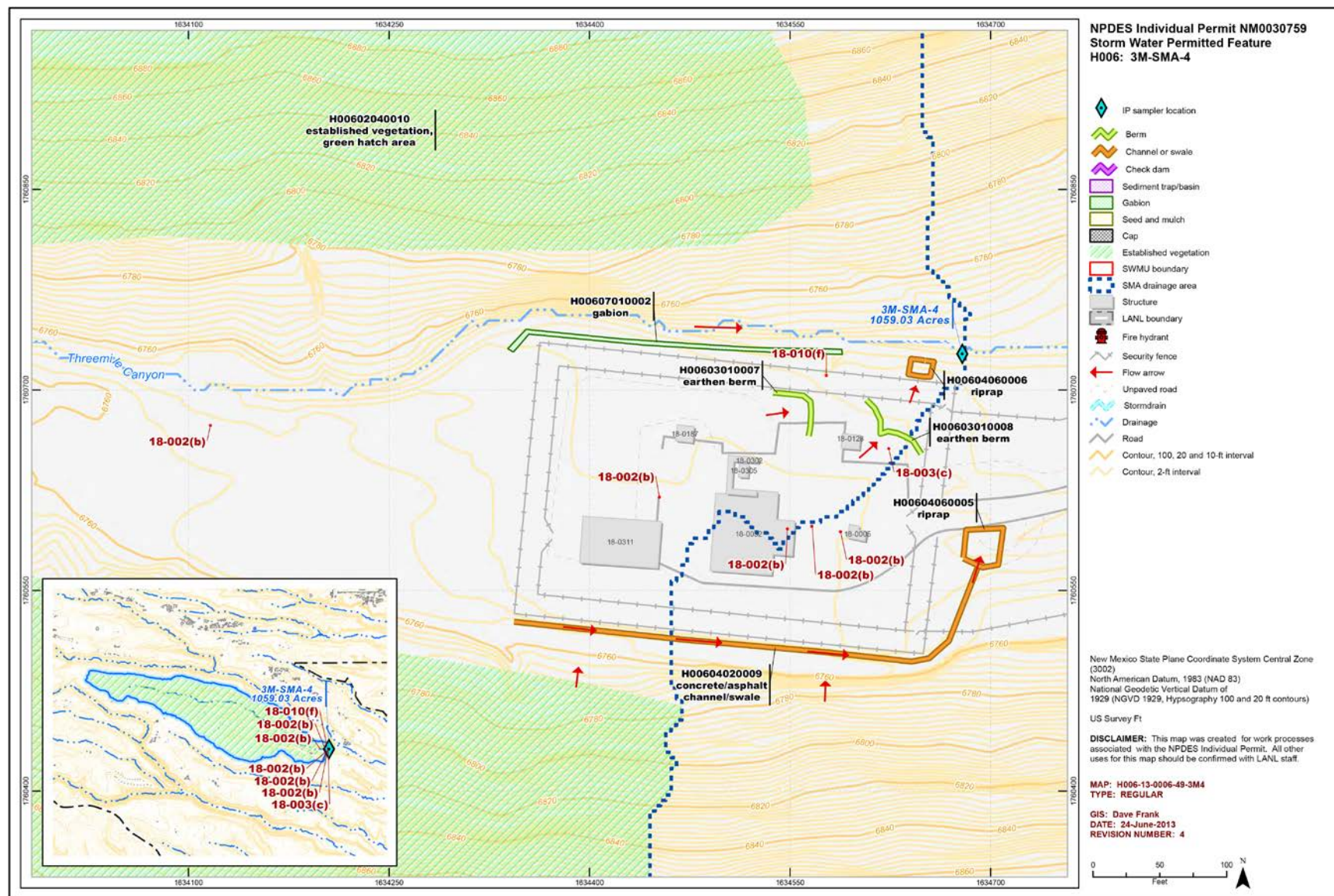


Figure 149-1 3M-SMA-4 location map

150.0 PJ-SMA-1.05: SWMU 09-013

150.1 Site Descriptions

One historical industrial activity area is associated with J001, PJ-SMA-1.05: Site 09-013.

SWMU 09-013 is MDA M, which consists of two surface disposal areas at TA-09, a main area and a smaller satellite area. The main area occupies about 3.2 acres and is located approximately 1600 ft southwest of building 22-120. The 150-ft-wide × 260-ft-long satellite area is located approximately 750 ft northwest of the main area. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA 08 and TA 09 facilities (1949–1965) and other sites (1960–1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earth berm that eroded through by surface-water runoff. MDA M has been inactive since 1965. All debris and contaminated soil were removed from MDA M during an expedited cleanup conducted in 1995–1996.

A Consent Order investigation has not been performed at SWMU 09-013, and no decision-level soil sampling data are available for this Site. Sampling was performed at the Site during a 1994 RFI and the 1995–1996 expedited cleanup.

The project map (Figure 150-1) 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>.

150.2 Control Measures

This Permitted Feature is gently sloped although there is evidence of minor run-on from the unpaved access road that bisects the Site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 150-1).

Table 150-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00101010015	Seed and Wood Mulch			X		B
J00102040019	Established Vegetation		X	X		B
J00103010017	Earthen Berm		X		X	B
J00103010018	Earthen Berm		X		X	B
J00104050008	Water Bar		X	X		CB
J00104050009	Water Bar	X		X		CB
J00104050012	Water Bar	X		X		B
J00104050013	Water Bar	X		X		B
J00104050014	Water Bar	X		X		B
J00104060011	Rip Rap		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

150.3 Storm Water Monitoring

SWMU 09-013 is monitored within PJ-SMA-1.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 150-2 and 150-3). Analytical results from this sample yielded one TAL exceedance:

- PCB concentration of 9 ng/L (ATAL is 0.6 ng/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 09-013:

- Based on descriptions of the wastes present at MDA M, PCBs are not known to have been associated with industrial materials historically managed at this Site. PCBs were detected in RFI samples with Aroclor-1254 being detected above the 1 mg/kg SAL in two samples, both collected within the main (i.e., southern) area. The maximum concentration of Aroclor-1254 is 2.3 times the residential SSL. The PCB hotspots identified during the RFI were removed during the expedited cleanup, and confirmation samples were collected from grids. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow (i.e., 0 to 3 ft bgs) expedited cleanup confirmation samples. Aroclor-1248 was detected in 5 of 11 shallow samples collected within the main area and was not detected in 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1254 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1260 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 1% of the residential SSL. The RFI and expedited cleanup data are screening-level data.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 150-2 and 150-3. 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 150-2 and 150-3.

Monitoring location PJ-SMA-1.05 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff.

- PCBs—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is below both of these values.

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

150.4 Inspections and Maintenance

RG240 recorded six storm events at PJ-SMA-1.05 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 150-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30793	4-23-2013
Storm Rain Event	BMP-33639	7-23-2013
Storm Rain Event	BMP-34504	8-14-2013
Storm Rain Event	BMP-34971	8-22-2013
Storm Rain Event	BMP-35209	9-17-2013
Annual Erosion Evaluation	COMP-36732	11-6-2013
TAL Exceedance	COMP-37070	11-6-2013

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

Table 150-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31629	Move mulch back into place (snow removal activities have moved material).	5-1-2013	8 day(s)	Maintenance conducted in timely manner.
BMP-31630	Recontour water bar J00104050009 (snow removal activities have moved material).	5-1-2013	8 day(s)	Maintenance conducted in timely manner.

150.5 Compliance Status

The Sites associated with PJ-SMA-1.05 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 150-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-013	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 11-3-13

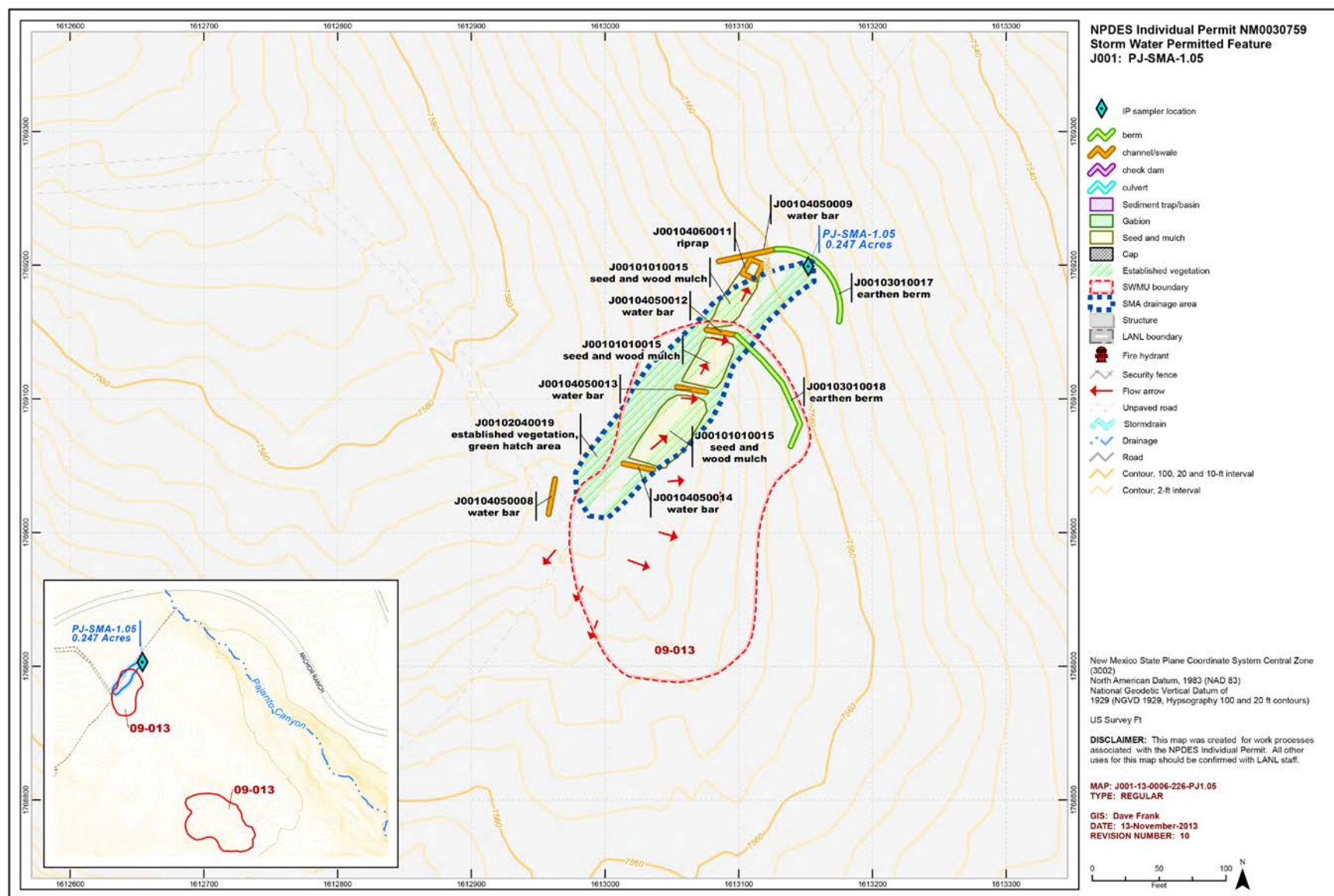
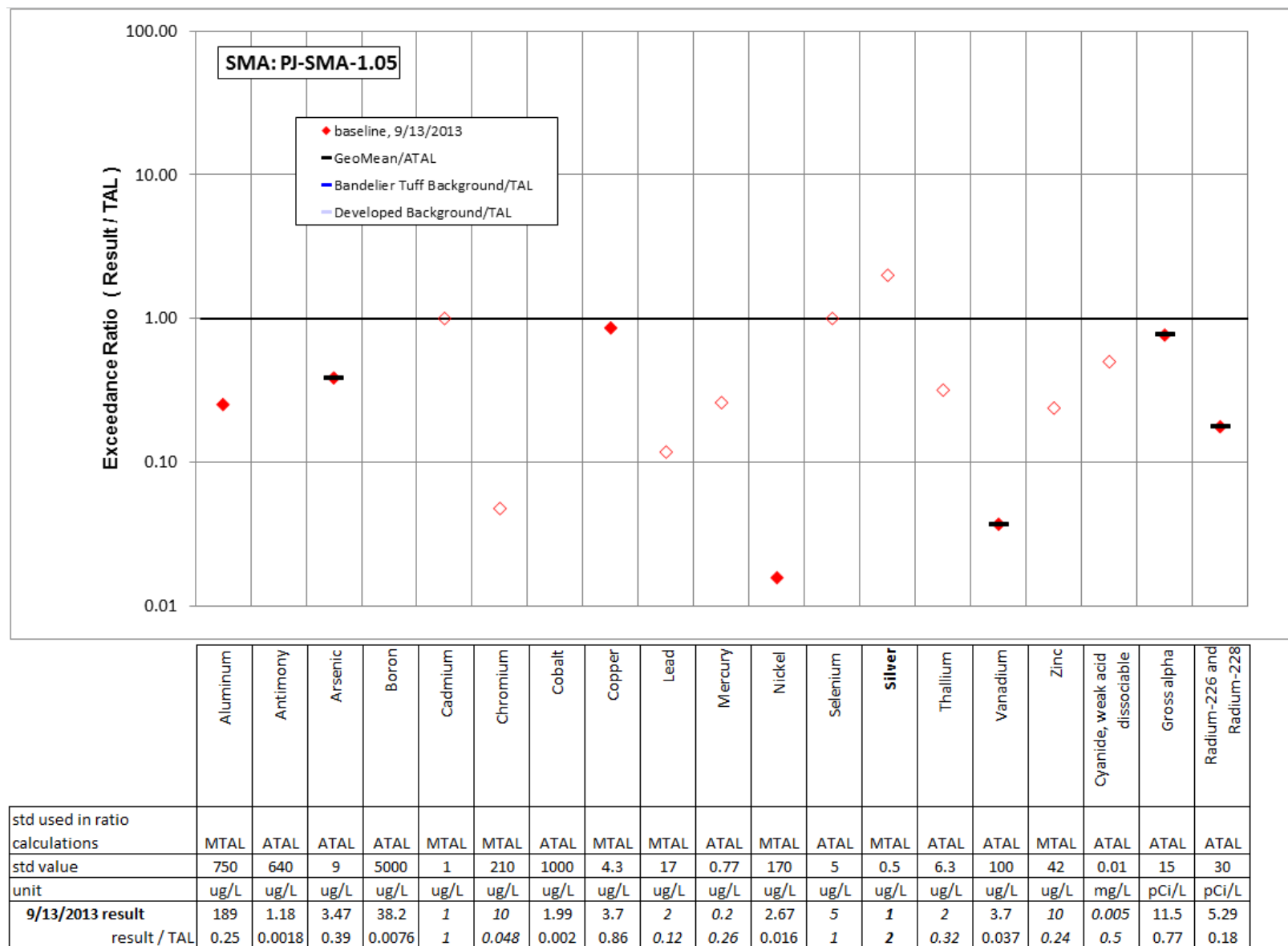


Figure 150-1 PJ-SMA-1.05 location map



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

Figure 150-2 Inorganic analytical results summary plot for PJ-SMA-1.05

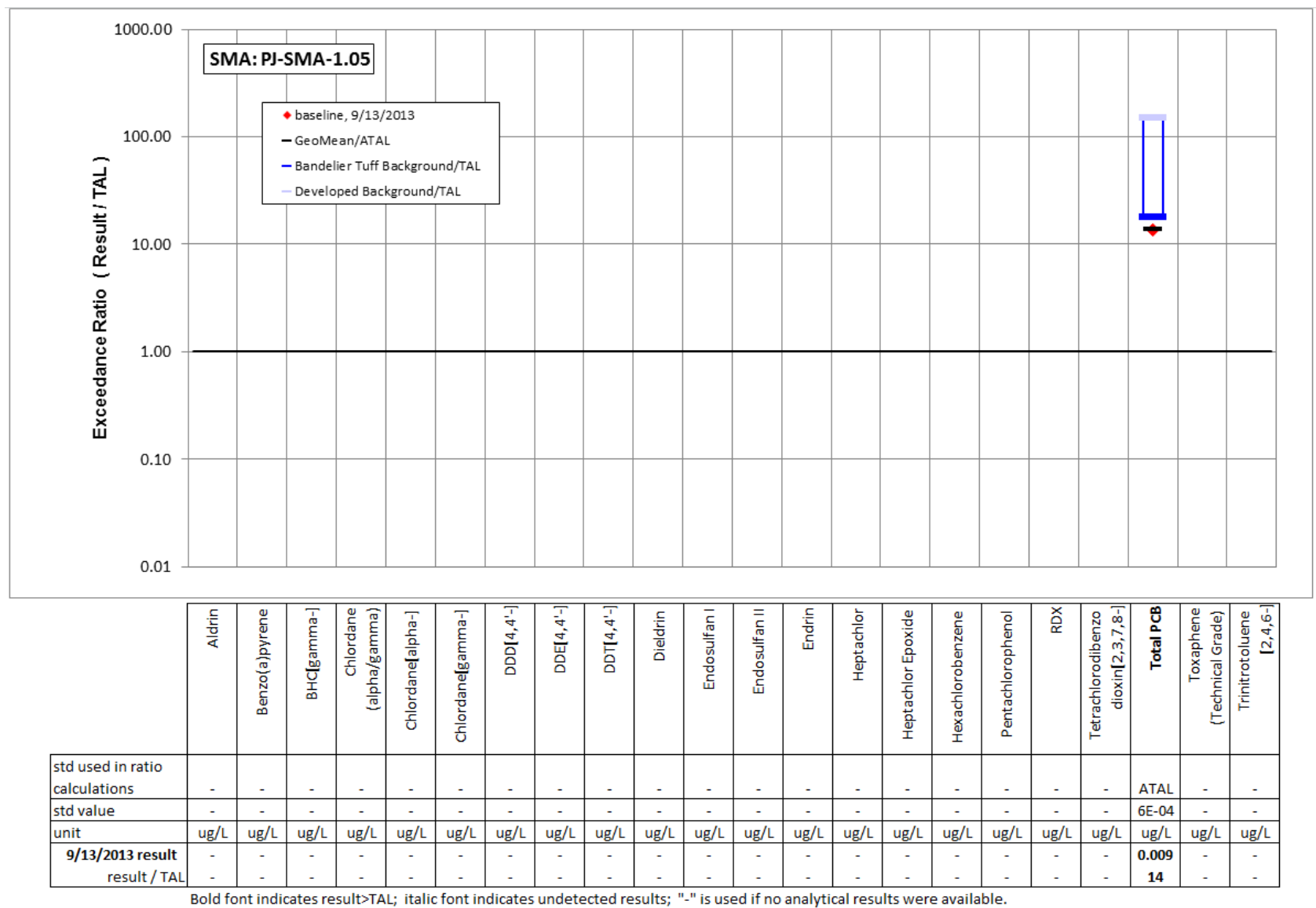


Figure 150-3 Organic analytical results summary plot for PJ-SMA-1.05

151.0 PJ-SMA-2: SWMU 09-009

151.1 Site Descriptions

One historical industrial activity area is associated with J002, PJ-SMA-2: Site 09-009.

SWMU 09-009 consists of a decommissioned surface impoundment (structure 09-218) and two associated decommissioned sand filters at TA-09. The surface impoundment is located approximately 120 ft northeast of building 09-40, and the associated sand filters are approximately 120 ft northeast of the surface impoundment. The surface impoundment is 32 ft wide × 60 ft long × 7 ft deep; the sides are constructed of concrete and the bottom of bentonite. The two sand filters, which cover a total area of 33 ft wide × 60 ft long and approximately 4 ft deep, have a flexible membrane liner (butyl rubber), and are surrounded by a concrete curb. The surface impoundment was constructed in 1961 to treat sanitary waste from buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38 and discharged to an outfall approximately 300 ft to the northwest. After the sand filters were installed in 1974, the surface impoundment discharged effluent to the sand filters. After flowing through the sand filters, effluent discharged to a former NPDES-permitted outfall (55502S). In 1986, the sewer lines from TA-08 were connected to the surface impoundment, including the sewer line from building 08-24, where a strontium-90 spill occurred in 1954. The surface impoundment and sand filter system were decommissioned when the SWSC came online in 1992. All active buildings previously connected to the impoundment continue to discharge sanitary wastewater to the SWSC.

SWMU 09-009 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011; the investigation report for the aggregate area is due to NMED by December 31, 2014. Decision-level data are not available for SWMU 09-009.

The project map (Figure 151-1) 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>.

151.2 Control Measures

Run-on is possible from concentrated flow generated from the unpaved access road southeast of the SWMU and the hillside, south of the fence and south of the SWMU. Planned controls are to divert this run-on source and to provide additional sediment capture in runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 151-1).

Table 151-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00202040022	Established Vegetation		X	X		B
J00203010006	Earthen Berm	X			X	CB
J00203010007	Earthen Berm	X			X	CB
J00203010008	Earthen Berm	X			X	CB
J00203010009	Earthen Berm	X			X	CB
J00203010015	Earthen Berm	X			X	B
J00206010014	Rock Check Dam		X		X	CB
J00206010019	Rock Check Dam	X			X	B
J00206010020	Rock Check Dam	X			X	B
J00206010021	Rock Check Dam	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

151.3 Storm Water Monitoring

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

151.4 Inspections and Maintenance

RG253 recorded seven storm events at PJ-SMA-2 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 151-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30806	5-8-2013
Storm Rain Event	BMP-33644	7-24-2013
Storm Rain Event	BMP-34283	7-31-2013
Storm Rain Event	BMP-34577	8-15-2013
Storm Rain Event	BMP-35598	9-23-2013
Annual Erosion Evaluation	COMP-36745	11-6-2013

No maintenance activities were conducted at PJ-SMA-2 in 2013.

151.5 Compliance Status

The Site associated with PJ-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 151-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-009	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

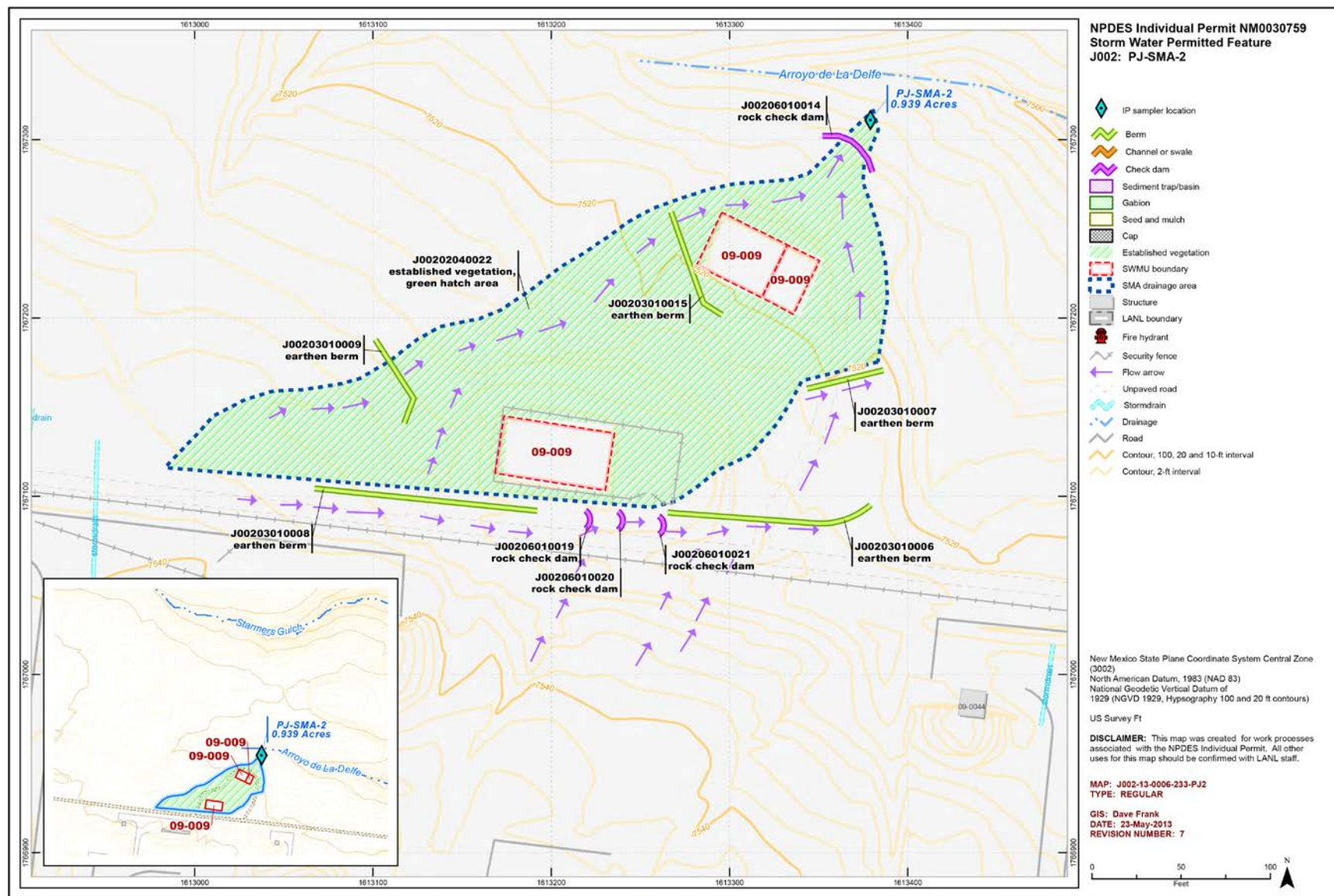


Figure 151-1 PJ-SMA-2 location map

152.0 PJ-SMA-3.05: SWMU 09-004(o)

152.1 Site Descriptions

One historical industrial activity area is associated with J003, PJ-SMA-3.05: Site 09-004(o).

SWMU 09-004(o) is an active sump (structure 09-198) that receives industrial waste from an HE machining building (09-48) at TA-09. The sump, installed between 1950 and 1952, is made of aluminum-lined reinforced concrete, and receives industrial waste from building 09-48. Activities in the building involve HE machining. The belowgrade sump collects settled HE particles that are not filtered out by the building's waste system. Originally, effluent from the sump was discharged to an NPDES-permitted outfall (EPA 05A068). The sump outlet was plugged and the outfall was removed from the Permit in the 1990s. The sump is now periodically cleaned by pumping to a specially equipped truck, which transports the wastewater to a treatment facility. The sump is equipped with an overfill alarm and is regularly inspected.

Consent Order investigations have not been performed at SWMU 09-004(o). Decision-level data are available from an RFI performed in 1999. RFI samples, however, were only analyzed for HE.

The project map (Figure 152-1) 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>.

152.2 Control Measures

The Permitted Feature has potential for run-on from the paved areas around building 09-0048, but this run-on source provides little contribution to the monitored area. An asphalt berm diverts pavement run-on away from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 152-1).

Enhanced controls were installed and certified 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 152-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00302040012	Established Vegetation		X	X		B
J00303010010	Earthen Berm	X			X	EC
J00303010011	Earthen Berm		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

152.3 Storm Water Monitoring

SWMU 09-004(o) is monitored within PJ-SMA-3.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figure 152-2). Analytical results from this sample yielded two TAL exceedances:

- Weak acid dissociable cyanide concentration of 0.02 mg/L (MTAL is 0.01 mg/L), and
- Gross-alpha activity of 65.9 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 09-004(o):

- Cyanide is not known to be associated with industrial materials historically managed at the Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.

PJ-SMA-3.05 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 sediment derived from Bandelier Tuff were compared with weak acid dissociable cyanide and gross-alpha MTAL and 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 sediment derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.
- Cyanide—The weak acid dissociable cyanide UTLs for storm water run-on containing sediment derived from Bandelier Tuff were not calculated because samples collected from these areas were not analyzed for weak acid dissociable cyanide. Therefore, a comparison to background weak acid dissociable cyanide UTLs could not be made.

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

152.4 Inspections and Maintenance

RG257 recorded eight storm events at PJ-SMA-3.05 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 152-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30808	5-8-2013
Storm Rain Event	BMP-33034	7-15-2013
Storm Rain Event	BMP-33954	7-24-2013
Storm Rain Event	BMP-34598	8-15-2013
Storm Rain Event	BMP-35619	9-23-2013
Annual Erosion Evaluation	COMP-36747	11-6-2013

No maintenance activities were conducted at PJ-SMA-3.05 in 2013.

152.5 Compliance Status

The Site associated with PJ-SMA-3.05 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 152-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-004(o)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-18-2012

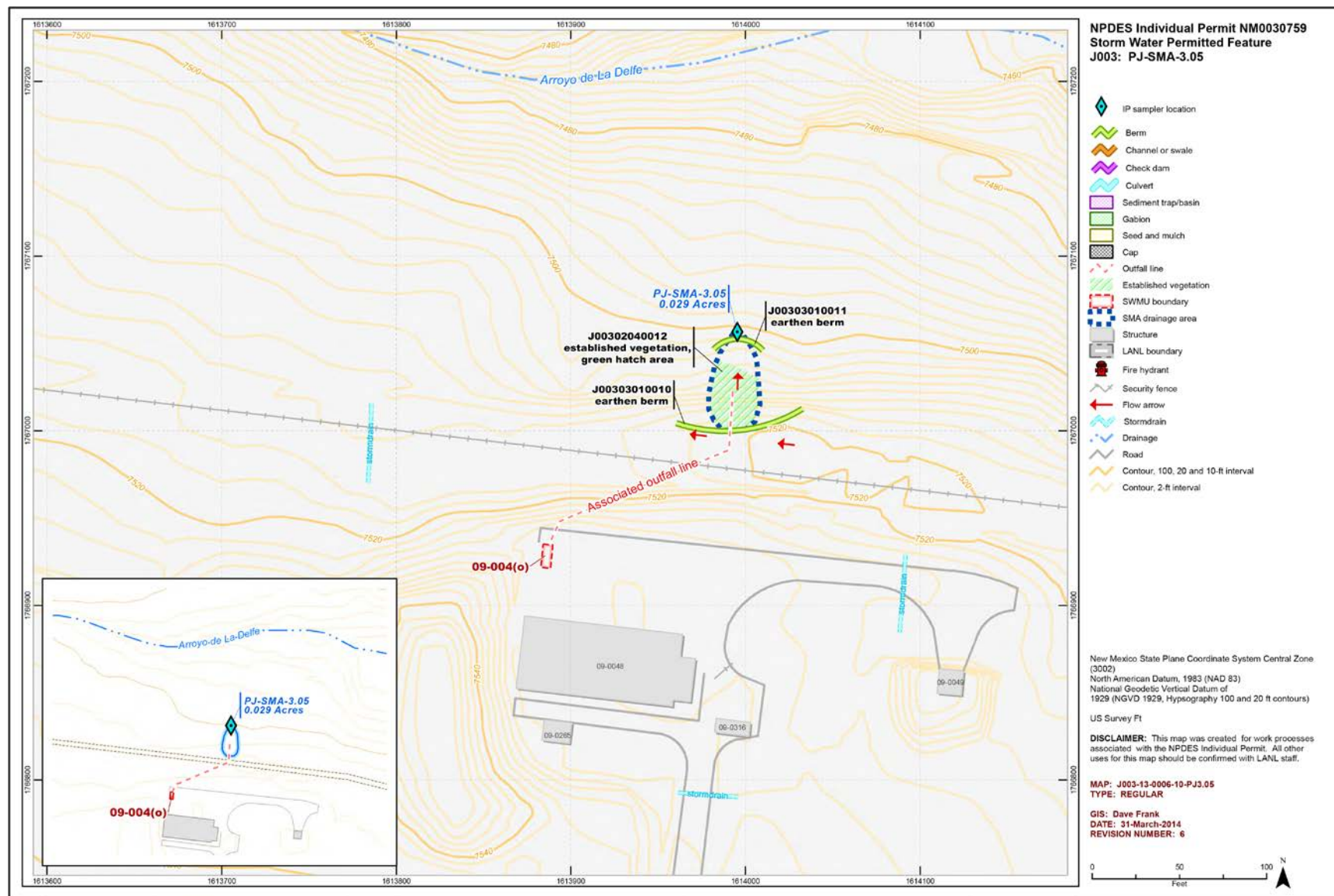


Figure 152-1 PJ-SMA-3.05 location map

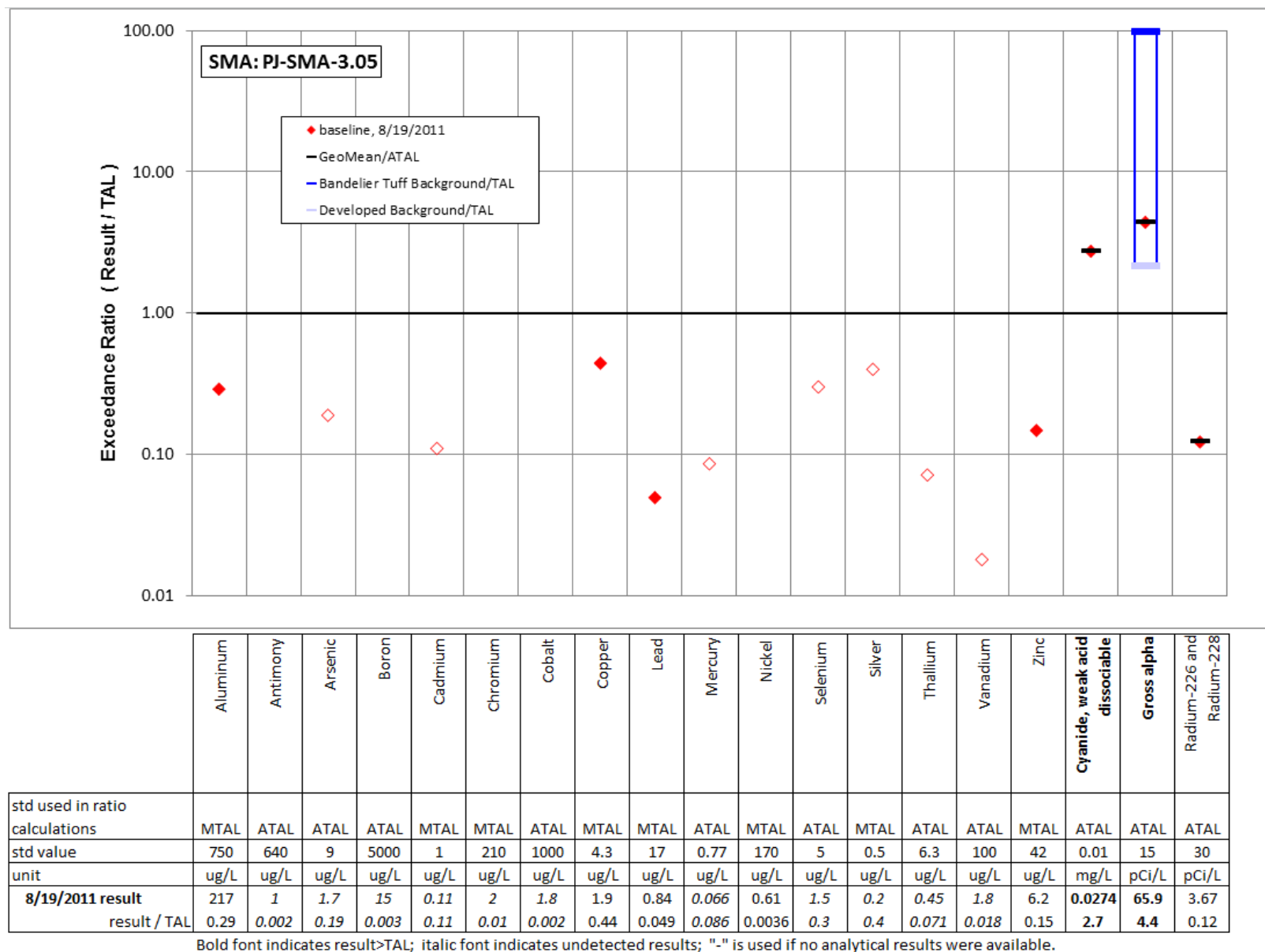


Figure 152-2 Inorganic analytical results summary plot for PJ-SMA-3.05

153.0 PJ-SMA-4.05: SWMU 09-004(g)

153.1 Site Descriptions

One historical industrial activity area is associated with J004, PJ-SMA-4.05: Site 09-004(g).

SWMU 09-004(g) is the decommissioned sump (structure 09-190) located at TA-09 on the east side of building 09-50 (a shipping and receiving building). The original IP Site narrative described the SWMU as a settling tank but the structure is a sump. The sump, installed between 1950 and 1952, is made of reinforced concrete and formerly received industrial waste from building 09-50. Activities in the building involved shipping, receiving, short-term storage of HE, and small-scale laser experiments. Since 1993, building 09-50 has been used for storage only. The sump collected settling HE particles that were not filtered out by the building's waste system and discharged effluent to a former NPDES-permitted outfall (EPA 04A155), which is part of SWMU 09-005(g), a septic system that formerly received sanitary wastewater from building 09-50. Periodically, the sump was inspected, debris was removed using specially equipped trucks, and the sump was cleaned. In October 2006, the sump was removed.

No Consent Order investigation, RFI, or other investigations have been conducted at SWMU 09-004(g).

The project map (Figure 153-1) 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>.

153.2 Control Measures

Run-on contributions to the area are primarily from paved areas in proximity to the monitored area. Existing controls are designed to provide runoff controls and retain sediment. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 153-1).

Table 153-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00402040008	Established Vegetation		X	X		B
J00403010007	Earthen Berm	X			X	B
J00406010006	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

153.3 Storm Water Monitoring

SWMU 09-004(g) is monitored within PJ-SMA-4.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 153-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 47.2 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 09-004(g):

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 153-2. 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 153-2.

Monitoring location PJ-SMA-4.05 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

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

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

153.4 Inspections and Maintenance

RG257 recorded eight storm events at PJ-SMA-4.05 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 153-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30809	5-8-2013
Storm Rain Event	BMP-33033	7-15-2013
Storm Rain Event	BMP-33953	7-24-2013
Storm Rain Event	BMP-34597	8-15-2013
Storm Rain Event	BMP-35618	9-23-2013
Annual Erosion Evaluation	COMP-36748	11-6-2013
TAL Exceedance	COMP-37073	11-6-2013

No maintenance activities were conducted at PJ-SMA-4.05 in 2013.

153.5 Compliance Status

The Site associated with PJ-SMA-4.05 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 153-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-004(g)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

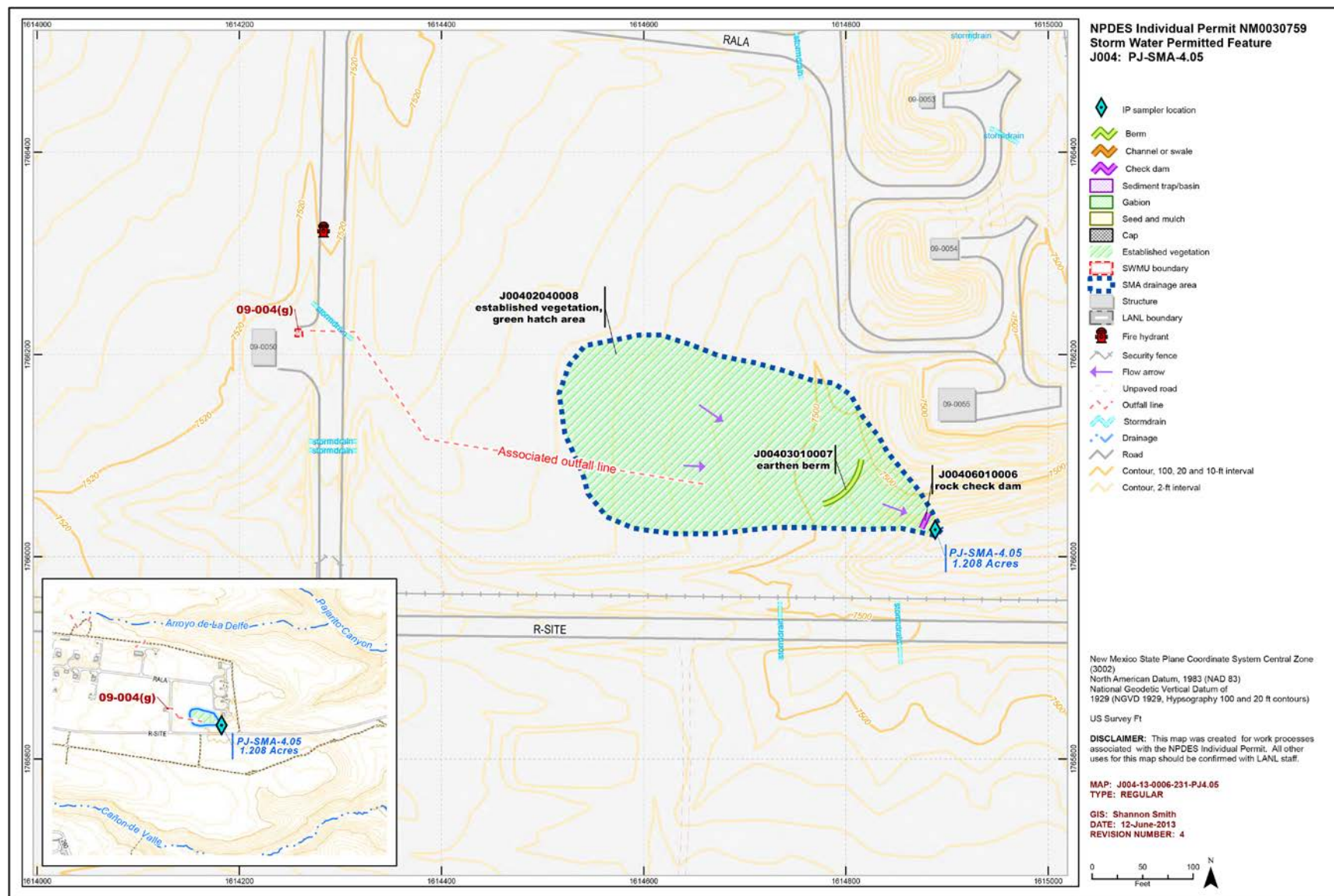


Figure 153-1 PJ-SMA-4.05 location map

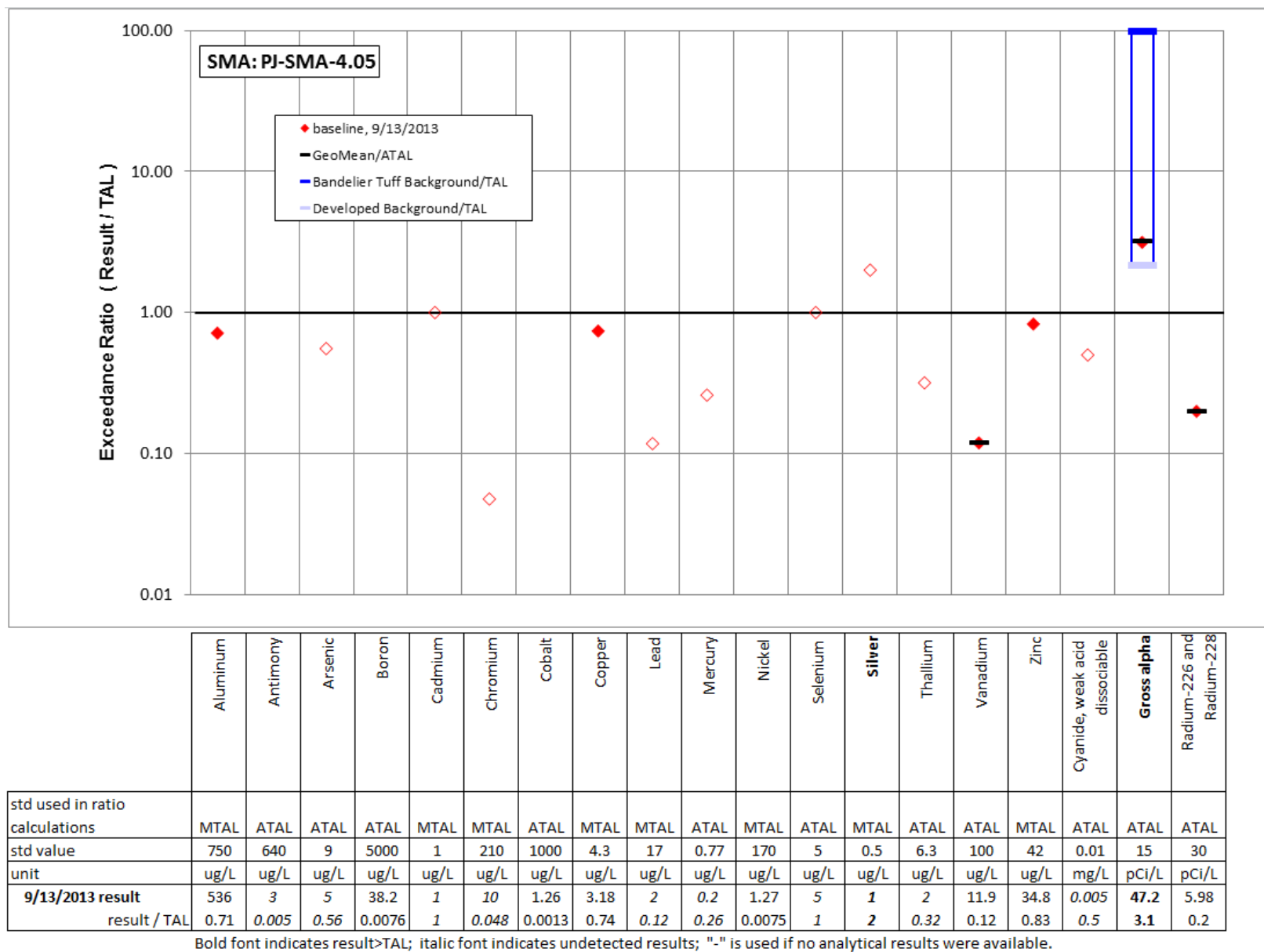


Figure 153-2 Inorganic analytical results summary plot for PJ-SMA-4.05

154.0 PJ-SMA-5: SWMU 22-015(c)

154.1 Site Descriptions

One historical industrial activity area is associated with J005, PJ-SMA-5: Site 22-015(c).

SWMU 22-015(c) consists of a former NPDES-permitted outfall (06A077) located at TA-22 approximately 80 ft south of building 22-52. The outfall received discharge from the floor drains in building 22-52, which were connected to the outfall via a 6-in.-diameter VCP drainline. The outfall daylighted in a channel that drained to a pond located near the edge of the mesa. Drainage from the pond eventually discharged into Pajarito Canyon. Beginning in 1952, building 22-52 was used as a plating laboratory and was later converted into a printed-circuit etching laboratory. Although most waste from the plating and etching operations at building 22-52 was collected manually, effluent from the rinse tanks overflowed to the floor drains. Discharge to the outfall was discontinued in 1977, when all liquid wastes were collected in drums and sent off-site for treatment. During the 1995 expedited cleanup of SWMU 22-015(c), 260 yd³ of contaminated soil was excavated from the drainage below the outfall and disposed of off-site.

The project map (Figure 154-1) 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>.

154.2 Control Measures

Most of the potential run-on to this SMA originates on the paved areas and access road north of the SMA. The paved areas and associated engineered controls divert storm water flow to a culvert outlet on the slope south of building 0110. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 154-1).

Table 154-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00502040015	Established Vegetation		X	X		B
J00503060013	Straw Wattles	X			X	B
J00503060014	Straw Wattles	X			X	B
J00504010003	Earthen Channel/Swale	X		X		CB
J00506010008	Rock Check Dam	X			X	CB
J00506010009	Rock Check Dam	X			X	CB
J00506010010	Rock Check Dam	X			X	CB
J00506010011	Rock Check Dam		X		X	CB
J00506010012	Rock Check Dam		X		X	CB
J00506030004	Juniper Bales	X			X	CB
J00506030007	Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

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

154.3 Storm Water Monitoring

SWMU 22-015(c) is monitored within PJ-SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on October 12, 2012 (Figures 154-2 and 154-3). Analytical results from this sample yielded one TAL exceedance:

- Copper concentration of 75.5 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 22-015(c):

- Copper was associated with industrial materials historically managed at the Site. Copper was detected above soil and tuff BVs in shallow (i.e., less than 3 ft below ground surface bgs) RFI and expedited cleanup confirmation samples. Copper was detected above BV in 11 of 11 shallow samples with a maximum concentration 7800 times the soil BV.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 154-2 and 154-3. 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 154-2 and 154-3.



PJ-SMA-5, Rock Check Dam,
J00506010011, 012 (photo ID 7506-5)

Monitoring location PJ-SMA-5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediments derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is greater than both of these values.

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

154.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-5 during the 2013 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 154-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30810	4-23-2013
Storm Rain Event	BMP-33422	7-23-2013
Storm Rain Event	BMP-35506	9-20-2013
Annual Erosion Evaluation	COMP-36749	11-5-2013

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

Table 154-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34332	Build up and extend rock check dam J00506010008. If necessary, remove sediment, place sediment upgradient, and stabilize with seed and mulch.	8-7-2013	15 day(s)	Maintenance conducted in timely manner.

154.5 Compliance Status

The Site associated with PJ-SMA-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 154-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 22-015(c)	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-15-2012

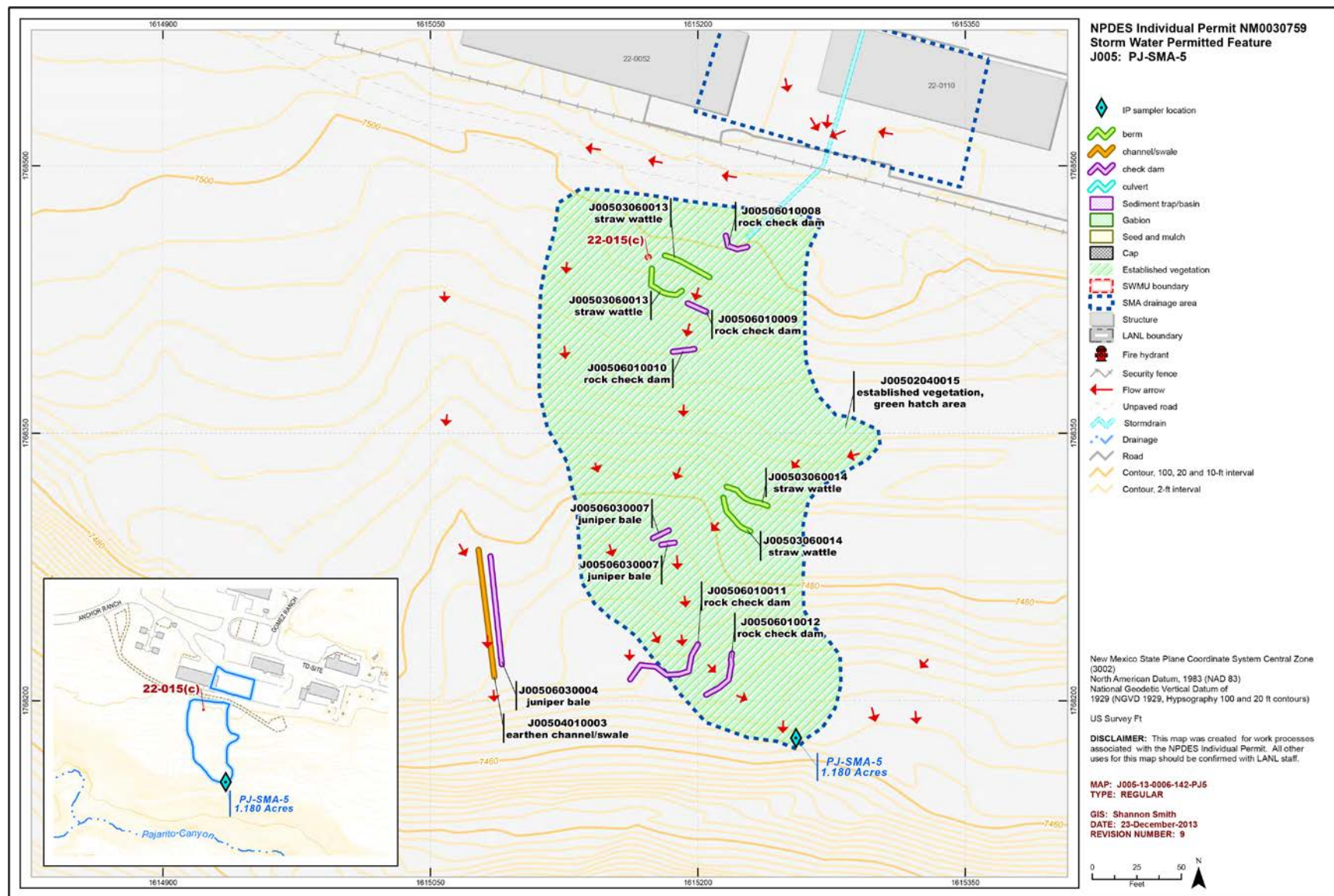


Figure 154-1 PJ-SMA-5 location map

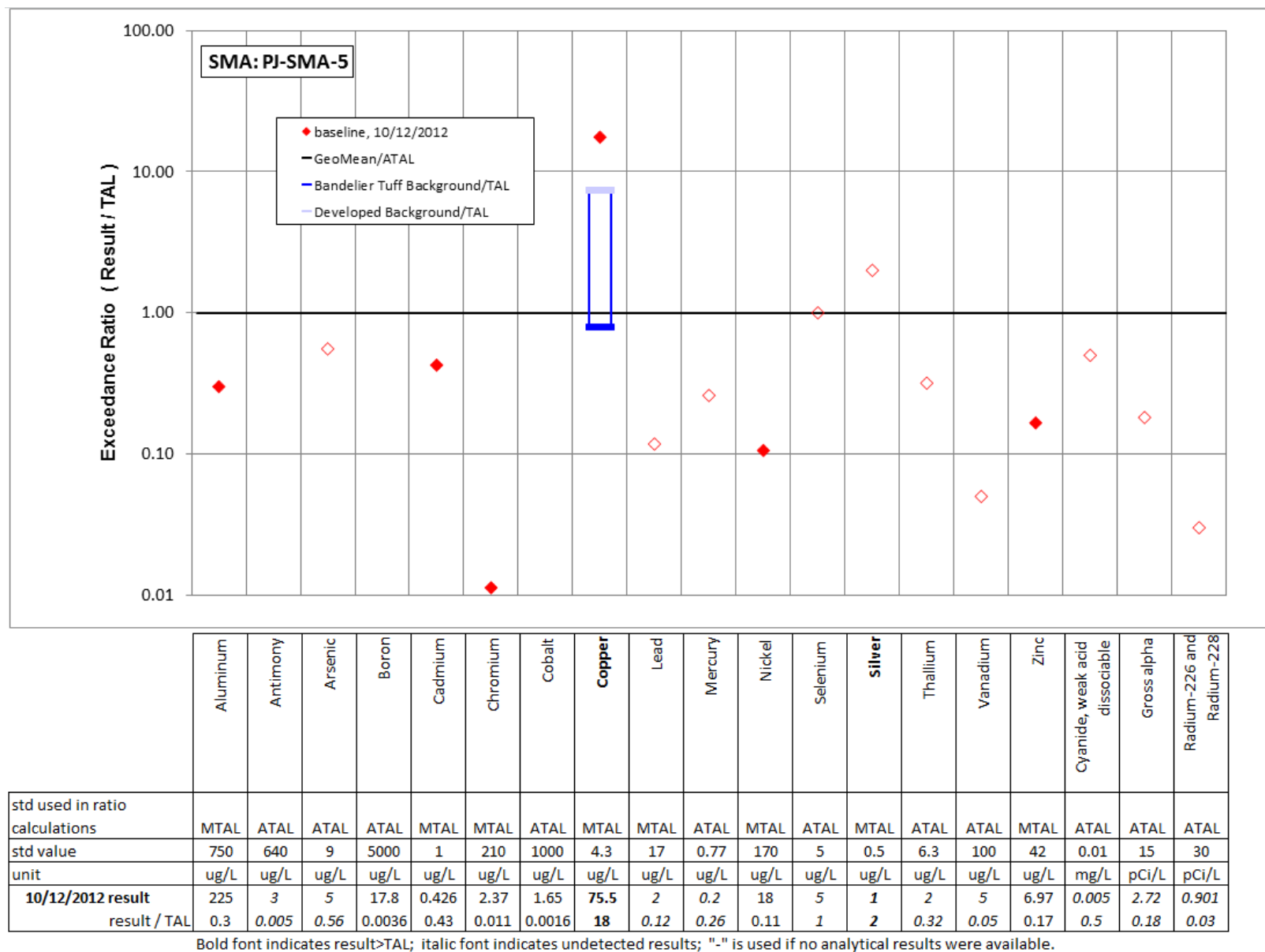


Figure 154-2 Inorganic analytical results summary plot for PJ-SMA-5

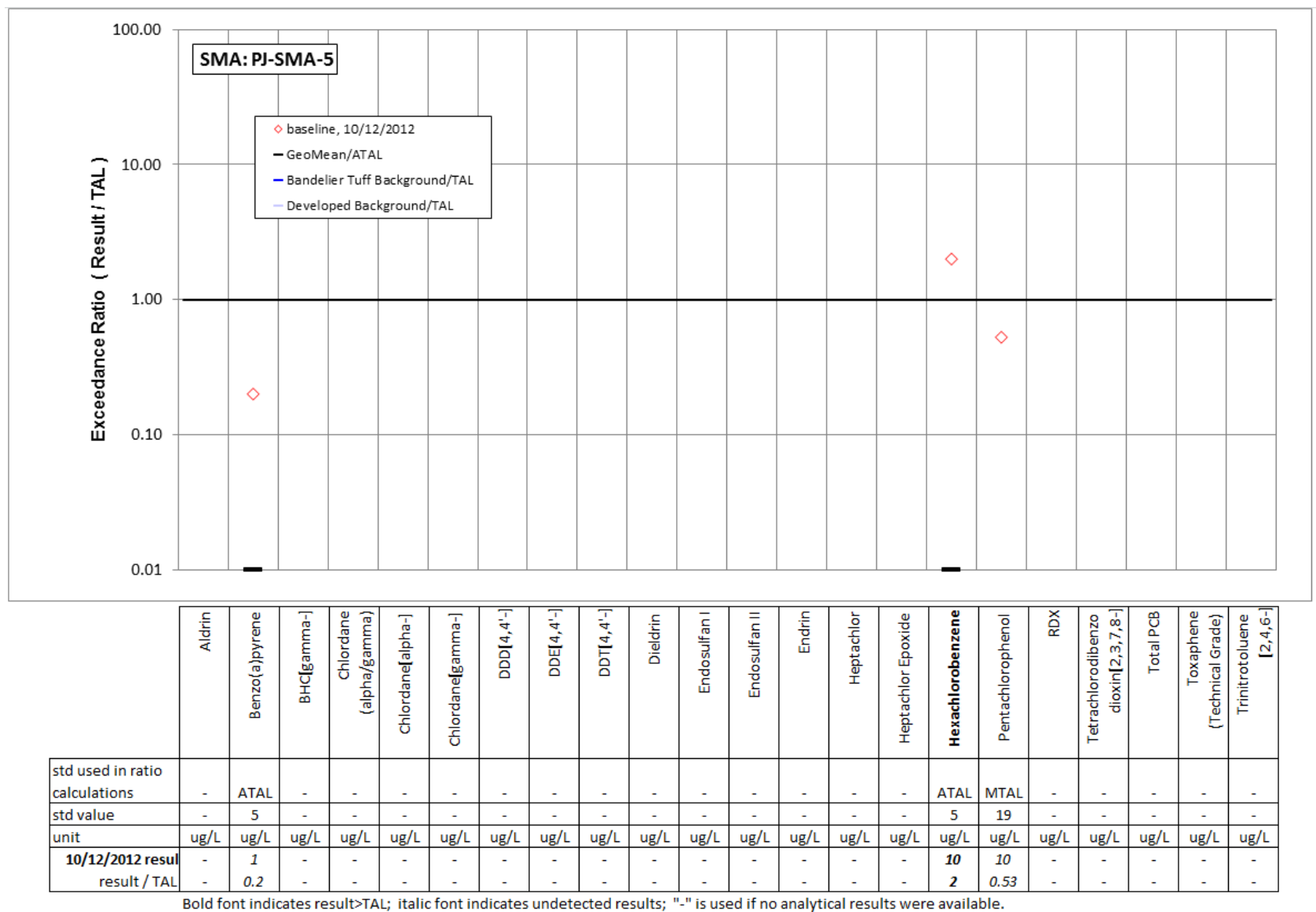


Figure 154-3 Organic analytical results summary plot for PJ-SMA-5

155.0 PJ-SMA-5.1: SWMU 22-010(b)

155.1 Site Descriptions

One historical industrial activity area is associated with J006, PJ-SMA-5.1: Site 22-010(b).

SWMU 22-010(b) is an inactive septic system located at TA-22 approximately 90 ft south of building 22-0001. The septic system consists of a septic tank (structure 22-0051), drainlines, a leach field, sand filter, and outfall. The septic tank was installed in 1948 and originally served buildings 22-0001 (an assembly building), 22-0004 (an office and fabrication building), and 22-0005 (a shop and laboratory building). In the 1950s, buildings 22-0032 (a guard shack) and 22-0052 (a plating and circuit-etching shop) were constructed and added to the septic system. In 1984, buildings 22-0090 (an office building), 22-0091 (an assembly building), and 22-0093 (a detonator development building) were constructed and added to the system. In 1973, a sand filter was constructed (east of the leach field) to replace the leach field. The sand filter discharged through a 6-in.-diameter VCP that extended south 120 ft before terminating at an outfall. The sand filter operated until the 1990s when it was rerouted to the SWSC.

Consent Order or other environmental investigations have not been performed at SWMU 22-010(b), and no investigation data are available for this Site.

The project map (Figure 155-1) 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>.

155.2 Control Measures

Significant run-on enters this Permitted Feature from paved areas to the north. Culvert run-on is controlled and diverted to the west of the SMA via the earthen channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 155-1).

Enhanced controls were installed and certified 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 155-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00602040010	Established Vegetation		X	X		B
J00603010009	Earthen Berm		X		X	EC
J00604010004	Earthen Channel/Swale	X		X		CB
J00606010007	Rock Check Dam		X		X	CB
J00603010011	Earthen Berm	X			X	B
J00608030012	Concrete/Asphalt Cap		X	X		B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

155.3 Storm Water Monitoring

SWMU 22-010(b) is monitored within PJ-SMA-5.1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 21, 2011, and September 7, 2011 (Figure 155-2). Analytical results from these samples yielded three TAL exceedances:

- Copper concentrations of 8.2 µg/L and 11.1 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 50.6 µg/L and 59.4 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activities of 38.4 pCi/L and 43.5 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 22-010(b):

- Copper is known to be associated with industrial materials historically managed at the Site.
- Zinc may have been known to be associated with industrial materials historically managed at the Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.

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 155-2. 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 155-2.



Monitoring location PJ-SMA-5.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing 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 from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than these values.

- Gross alpha—The gross-alpha background UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2011 gross-alpha results are between these values.

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

155.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-5.1 during the 2013 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 155-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30811	4-23-2013
Storm Rain Event	BMP-33423	7-23-2013
Storm Rain Event	BMP-35507	9-20-2013
Annual Erosion Evaluation	COMP-36750	11-5-2013

No maintenance activities were conducted at PJ-SMA-5.1 in 2013.

155.5 Compliance Status

The Site associated with PJ-SMA-5.1 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 155-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 22-016	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-18-2012

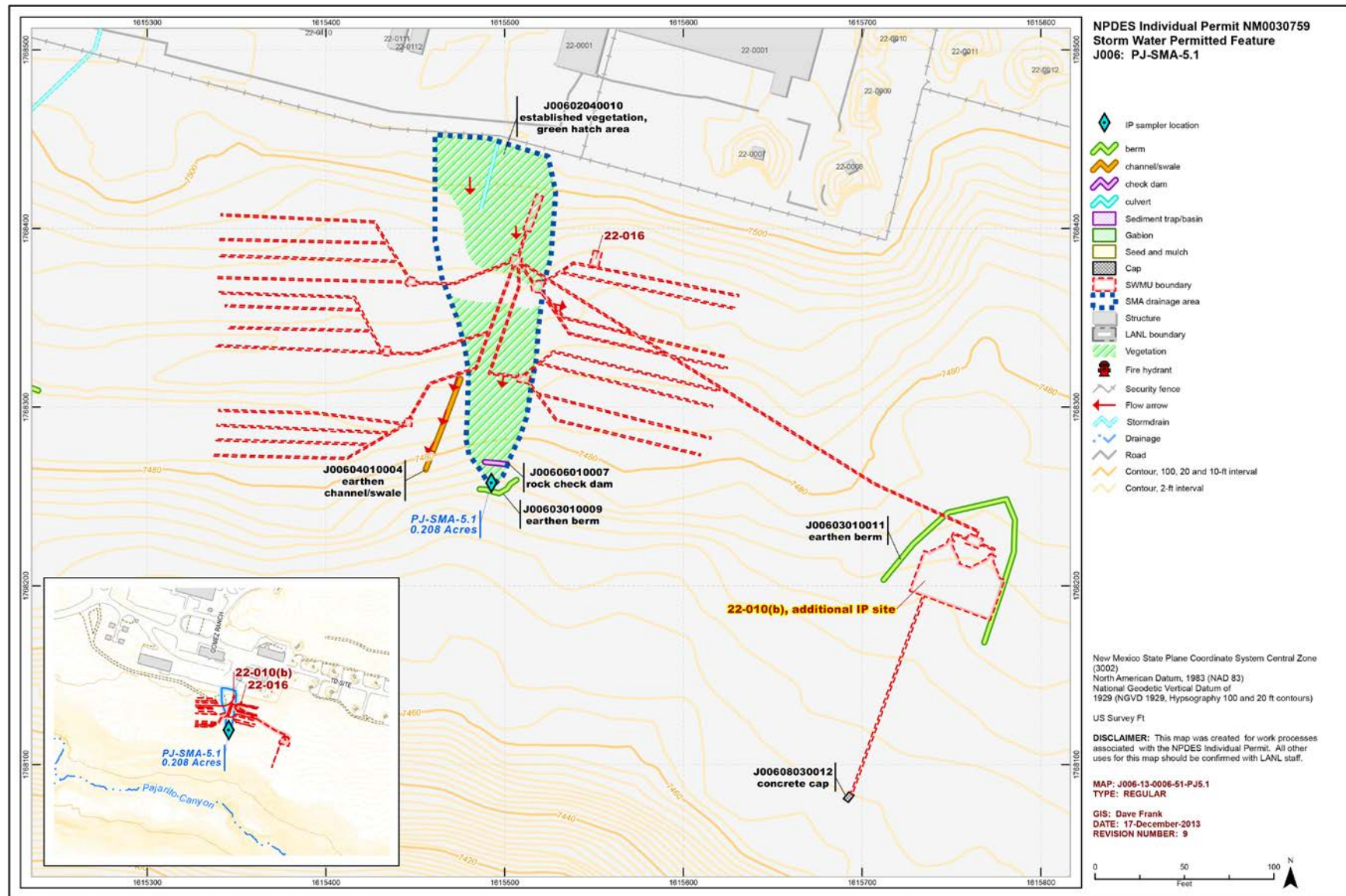


Figure 155-1 PJ-SMA-5.1 location map

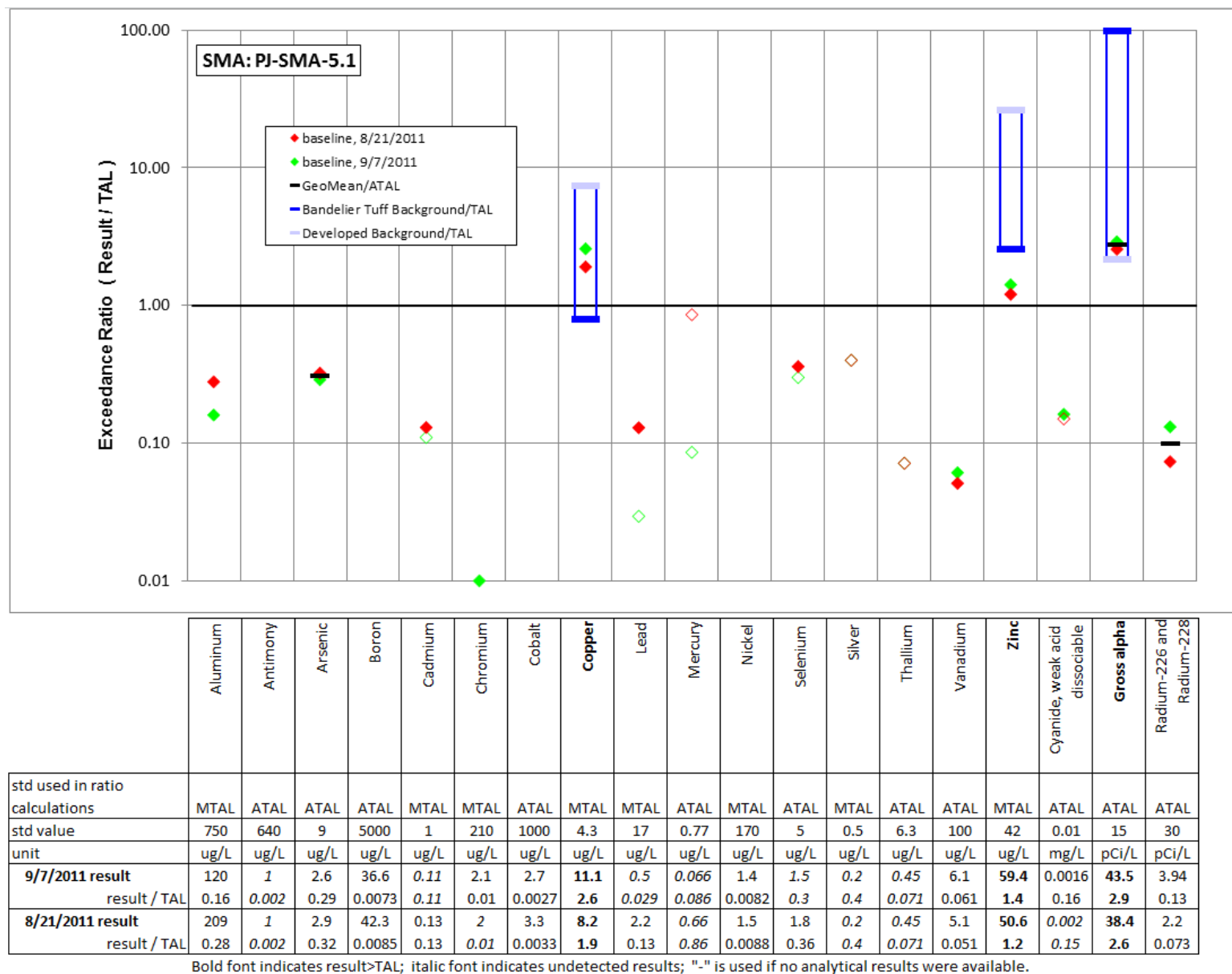


Figure 155-2 Inorganic analytical results summary plot for PJ-SMA-5.1

156.0 PJ-SMA-6: SWMU 40-010

156.1 Site Descriptions

One historical industrial activity area is associated with J007, PJ-SMA-6: Site 40-010.

SWMU 40-010 is a surface disposal area located at TA-40 on the edge of Pajarito Canyon, approximately 200 ft south of former building 40-72. The surface disposal area extends about 150 ft along the canyon edge and 140 ft down the canyon side. The area contained various types of debris, including twenty 30-gal. drums. This area also contains debris from farm and home implements that predate Manhattan Project activities. Post–Cerro Grande fire activities removed all the drums and exposed debris, with the exception of the pre–Manhattan Project debris, which is considered to be of archaeological importance and therefore cannot be removed. BMPs were installed at SWMU 40-010 in 2000 as part of the post–Cerro Grande fire recovery. The fire damage exposed the surface disposal area. Straw wattles were installed upgradient of the surface disposal area to provide run-on diversion. The area was raked, reseeded, and mulched. Surface debris near the edge was removed and disposed of as solid wastes.

SWMU 40-010 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011; the investigation report for the aggregate area is due to NMED by December 31, 2014. Decision-level data are not available for SWMU 40-010.

The project map (Figure 156-1) 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>.

156.2 Control Measures

There are no run-on contributions from developed areas at this SMA. There is concentrated flow associated with a natural channel west of the SMA. This natural channel is less defined along the mesa edge. Installed controls are designed to fortify sediment retention within this channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 156-1).

Table 156-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00701010017	Seed and Wood Mulch			X		B
J00702040018	Established Vegetation		X	X		B
J00703010009	Earthen Berm		X		X	B
J00703010010	Earthen Berm		X		X	B
J00703010011	Earthen Berm		X		X	B
J00703060013	Straw Wattles	X			X	B
J00703060014	Straw Wattles	X			X	B
J00703060015	Straw Wattles	X			X	B
J00703060016	Straw Wattles	X			X	B
J00703120012	Rock Berm	X			X	B
J00706010002	Rock Check Dam	X			X	CB
J00706010003	Rock Check Dam	X			X	CB
J00706010004	Rock Check Dam	X			X	CB
J00706030008	Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

156.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

156.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-6 during the 2013 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 156-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30910	5-7-2013
Storm Rain Event	BMP-33424	7-15-2013
Storm Rain Event	BMP-35508	9-25-2013
Annual Erosion Evaluation	COMP-36849	11-7-2013

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

Table 156-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33777	Repair seed/mulch J00701010017 as necessary.	7-30-2013	15 day(s)	Maintenance conducted in timely manner.

156.5 Compliance Status

The Site associated with PJ-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 156-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-010	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

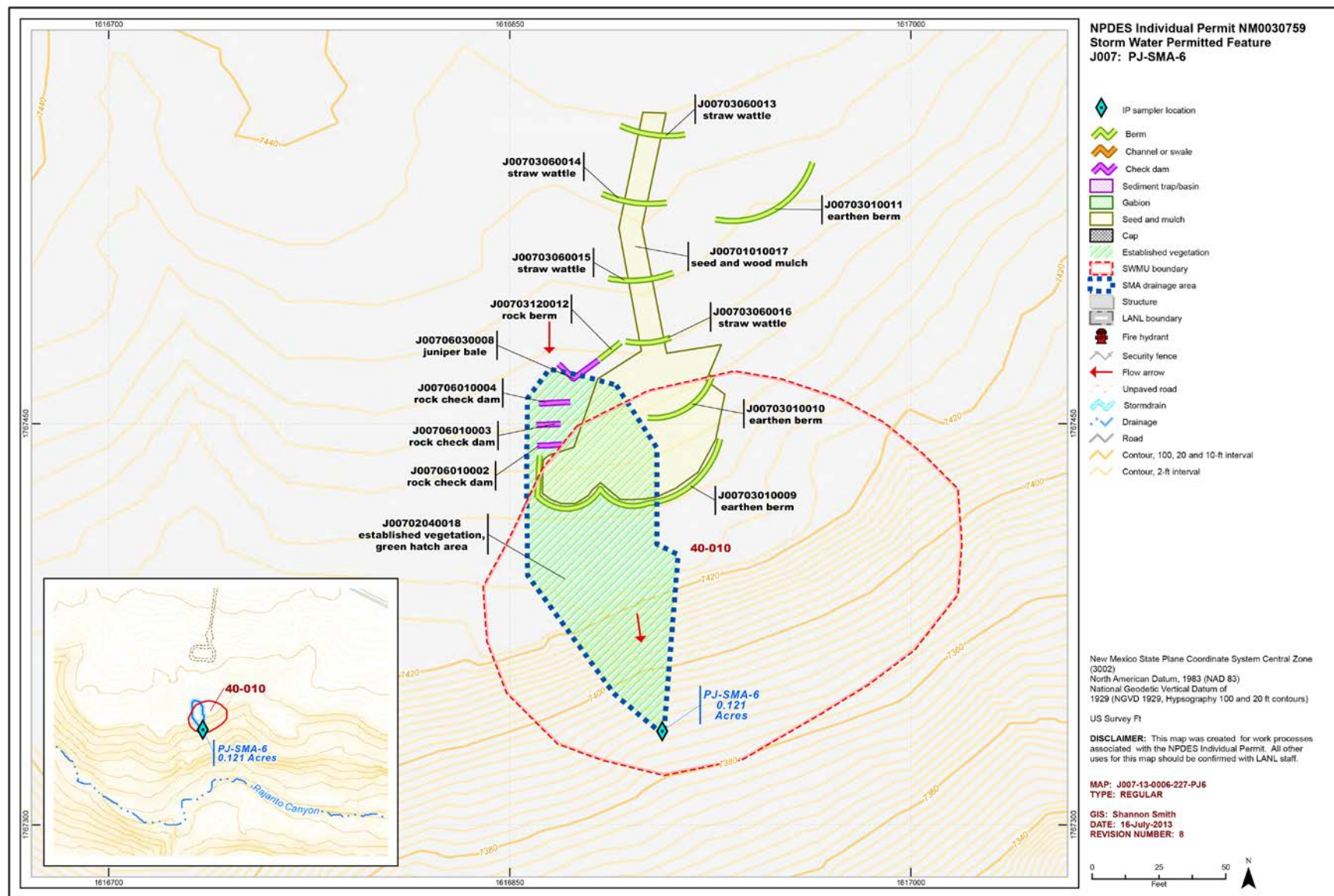


Figure 156-1 PJ-SMA-6 location map

157.0 PJ-SMA-7: SWMU 40-006(c)

157.1 Site Descriptions

One historical industrial activity area is associated with J008, PJ-SMA-7: Site 40-006(c).

SWMU 40-006(c) is an active firing site (structure 40-5) located at TA-40 on the north edge of Pajarito Canyon at the west end of TD Site Rd. The SWMU 40-006(c) firing site consists of a reinforced concrete and steel building that allows observation of test shots and a partially protected area on the south side of the building where shots are prepared. Since 1950, this firing site has been used to test detonators. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots (up to 50 lb) were fired. In the past, after each shot, large pieces of debris were removed and disposed of, and sand and debris were pushed to the edge of the canyon. This practice has created a soil berm near the canyon edge. The firing site is now used only to test and develop small explosive devices.

SWMU 40-006(c) is listed in Table IV-2 of the Consent Order (Deferred Sites in Testing Hazard Zones); investigation of this Site is deferred per Section IV.A.5.b and Table IV-2 of the Consent Order. Decision-level data are not available for SWMU 40-006(c).

The project map (Figure 157-1) 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>.

157.2 Control Measures

Potential run-on contributions to this SMA originate from the paved area south of building 40-005 and the related roof drainage. Paved roads and the parking area north of the SMA are diverted to the east of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 157-1).

Table 157-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00802040006	Established Vegetation		X	X		B
J00803010004	Earthen Berm		X		X	CB
J00804010002	Earthen Channel/Swale	X		X		CB
J00804040003	Culvert	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

157.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

157.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-7 during the 2013 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 157-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30911	5-7-2013
Storm Rain Event	BMP-33425	7-15-2013
Storm Rain Event	BMP-35509	9-19-2013
Annual Erosion Evaluation	COMP-36850	11-7-2013

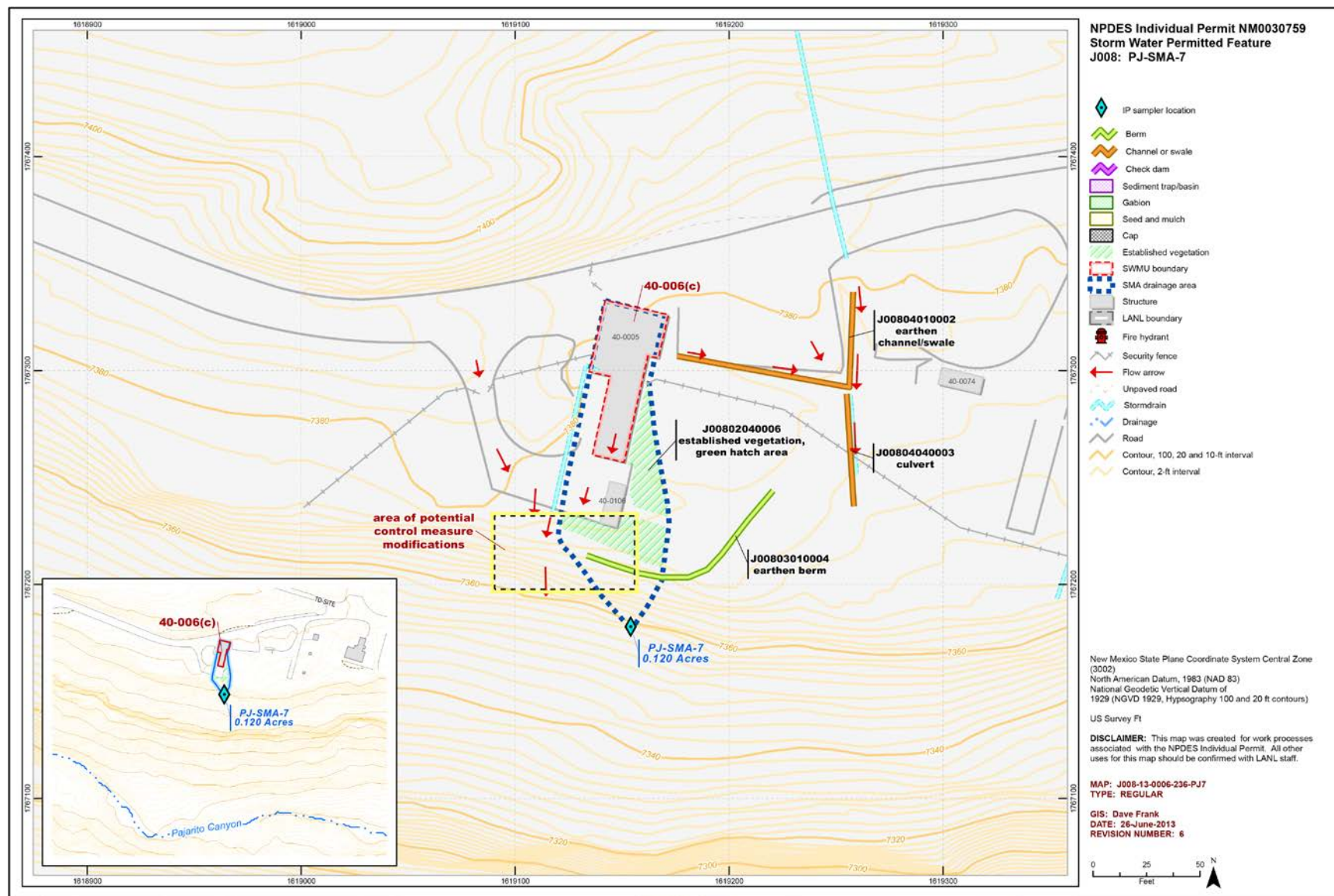
No maintenance activities were conducted at PJ-SMA-7 in 2013.

157.5 Compliance Status

The Site associated with PJ-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 157-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



158.0 PJ-SMA-8: SWMU 40-006(b)

158.1 Site Descriptions

One historical industrial activity area is associated with J009, PJ-SMA-8: Site 40-006(b).

SWMU 40-006(b) is an active firing site (structure 40-8) located at TA-40 on the northern rim of Pajarito Canyon, at the west end of TD Site Rd. The SWMU 40-006(b) firing site consists of a reinforced concrete and steel building that allows observation of the test shots and a partially protected area on the south side of the building where shots are prepared. Since 1950, this firing site has been used to test detonators. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots (up to 85 lb) were fired. In the past, after each shot, large pieces of debris were removed and disposed of off-site, and sand and debris were pushed to the edge of the canyon. This practice created a soil berm near the canyon edge. In 1992, the firing site was modified. The firing pad and the top 6 in. of soil were removed, and a containment system consisting of a large vessel with a high-efficiency particulate filtration system was installed. The firing site is now used only to test and develop small explosive devices.

SWMU 40-006(b) is listed in Table IV-2 of the Consent Order (Deferred Sites in Testing Hazard Zones); investigation of this Site is deferred per Section IV.A.5.b and Table IV-2 of the Consent Order. Decision-level data are not available for SWMU 40-006(b).

The project map (Figure 158-1) 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>.

158.2 Control Measures

Run-on contributions at this SMA originate from roof drainage associated with building 40-0008. Most of the run-on from the surrounding paved areas is diverted east, away from the monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 158-1).

Table 158-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J00902040010	Established Vegetation		X	X		B
J00903010006	Earthen Berm		X		X	CB
J00903010009	Earthen Berm		X		X	CB
J00904020005	Concrete/Asphalt Channel/Swale	X		X		CB
J00906010002	Rock Check Dam	X			X	CB
J00906010004	Rock Check Dam	X			X	CB
J00906010011	Rock Check Dam	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

158.3 Storm Water Monitoring

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

158.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-8 during the 2013 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 158-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30912	5-7-2013
Storm Rain Event	BMP-33426	7-23-2013
Storm Rain Event	BMP-35510	9-19-2013
Annual Erosion Evaluation	COMP-36851	11-7-2013

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

Table 158-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34419	Contact TA-40 Access Control to coordinate control measure work with WFO programmatic work. Repair earthen berm J00903010009 by removing existing matting from damaged/degraded areas of berm. Add clean fill to damaged/degraded areas. Compact clean fill. Apply seed and matting to repaired areas and any other areas of the berm as necessary. Apply seed and mulch to any disturbed areas (e.g. heavy equipment tracks).	9-25-2013	64 day(s)	Maintenance conducted as soon as practicable.
BMP-36257	Clear debris and needle cast from rock check dam J00906010002	11-27-2013	69 day(s)	Maintenance conducted as soon as practicable.
BMP-36258	Clear debris and needle cast from rock check dam Asset ID J00906010004	11-27-2013	69 day(s)	Maintenance conducted as soon as practicable.

158.5 Compliance Status

The Site associated with PJ-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 158-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-006(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



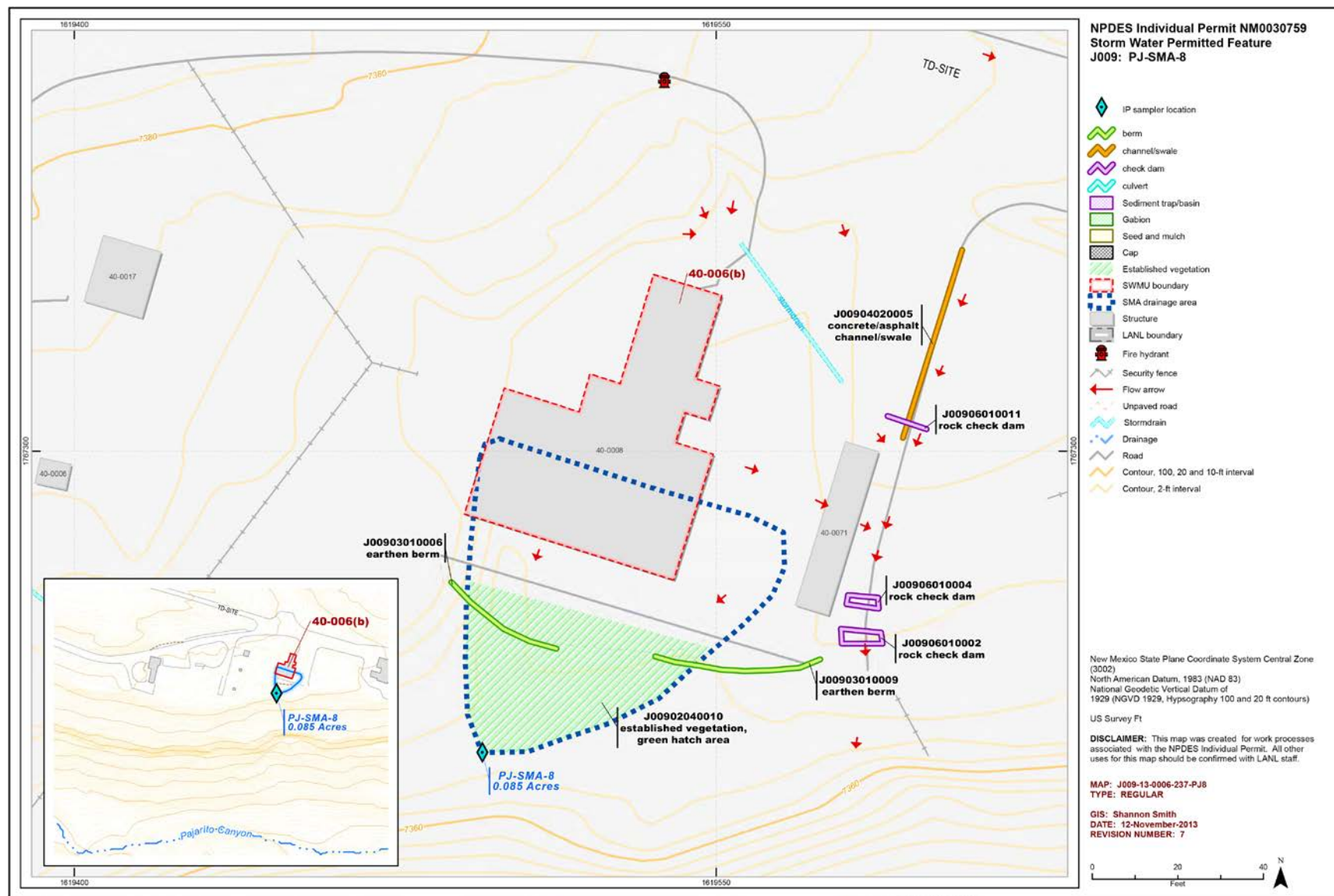


Figure 158-1 PJ-SMA-8 location map

159.0 PJ-SMA-9: SWMU 40-009

159.1 Site Descriptions

One historical industrial activity area is associated with J010, PJ-SMA-9: Site 40-009.

SWMU 40-009 is a landfill located at TA-40 south of building 40-9. The 1990 SWMU report states that the landfill resulted from a decommissioning effort undertaken at TA-15 in 1967. The SWMU report provides only a vague location and no estimate of the size or depth for the landfill, stating that debris from TA-15 was taken to TA-40 and disposed of in the canyon between buildings 40-5 and 40-15. The 1995 RFI field team walked the canyon area between the two buildings and found two prominent earthen berms on the steep hillside directly south of building 40-9. The field team suspected the berms to be the landfill. BMPs were installed at SWMU 40-009 in 2000 as part of the post-Cerro Grande fire recovery. Straw wattles were installed along the mesa edge to divert run-on from the slope. Rock check dams constructed using on-site materials were installed to dissipate flow within the drainage channels on both the east and west ends of the Site.

SWMU 40-009 is included in the Consent Order as part of the Starmer/Upper Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Starmer/Upper Pajarito Canyon Aggregate Area was approved in March 2011; the investigation report for the aggregate area is due to NMED by December 31, 2014. Decision-level data are available for SWMU 40-009 from the 1995 RFI.

The project map (Figure 159-1) 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>.

159.2 Control Measures

This SMA is influenced by run-on contributions from paved areas and roof drains associated with building 40-0009. A channel to the west of building 40-0009 may also contribute to run-on at this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 159-1).

Table 159-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01002040010	Established Vegetation		X	X		B
J01003010002	Earthen Berm		X		X	CB
J01004060001	Rip Rap	X		X		CB
J01006010006	Rock Check Dam		X		X	CB
J01006010007	Rock Check Dam	X			X	CB
J01006010008	Rock Check Dam	X			X	CB
J01006010009	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

159.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

159.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-9 during the 2013 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 159-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30913	5-7-2013
Storm Rain Event	BMP-33427	7-24-2013
Storm Rain Event	BMP-35511	9-19-2013
Annual Erosion Evaluation	COMP-36852	11-7-2013

No maintenance activities were conducted at PJ-SMA-9 in 2013.

159.5 Compliance Status

The Site associated with PJ-SMA-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 159-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-009	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



PJ-SMA-9, Rock Check Dam, J01006010008, 009 (photo ID 7511-1)



160.0 PJ-SMA-10: SWMU 40-006(a)

160.1 Site Descriptions

One historical industrial activity area is associated with J012, PJ-SMA-10: Site 40-006(a).

SWMU 40-006(a) is an active firing site (structure 40-15) located at TA-40 on the northern rim of Pajarito Canyon, at the east end of TD Site road. The SWMU 40-006(a) firing site consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area on the south side of the building where shots are prepared, and an open firing pad connected to the south of the building where larger shots are fired. Since 1950, this firing site has been used to test and develop detonators. Tests conducted at this Site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 50 lb of explosives. After each shot, large pieces of debris are removed and disposed of off-site; the open area is graded, and the sand and debris are pushed to the edge of the canyon, creating a sand berm near the canyon edge.

SWMU 40-006(a) is listed in Table IV-2 of the Consent Order (Deferred Sites in Testing Hazard Zones); investigation of this Site is deferred per Section IV.A.5.b and Table IV-2 of the Consent Order. Decision-level data are not available for SWMU 40-006(a).

The project map (Figure 160-1) 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>.

160.2 Control Measures

Run-on contributions to this SMA originate from bare areas, structures, and an access road south of the developed area. These run-on sources are managed by an existing berm. This monitored area is flat, but the hill slope south of the berm is steep with minimal vegetation. Flow is generated south, or below, the berm on the hill slope. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 160-1).

Table 160-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01203020001	Base Course Berm	X			X	CB
J01204060004	Rip Rap		X	X		CB
J01206010008	Rock Check Dam		X		X	B
J01206010009	Rock Check Dam		X		X	B
J01206010010	Rock Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

160.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-10. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

The monitoring station for PJ-SMA-10 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

160.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-10 during the 2013 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 160-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30907	5-7-2013
Storm Rain Event	BMP-33419	7-23-2013
Storm Rain Event	BMP-35503	9-19-2013
Annual Erosion Evaluation	COMP-36846	11-7-2013

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

Table 160-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-30418	Remove floatable debris from rip rap J01204060004	3-3-2013	160 day(s)	Maintenance conducted as soon as practicable.

160.5 Compliance Status

The Site associated with PJ-SMA-10 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 160-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-006(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

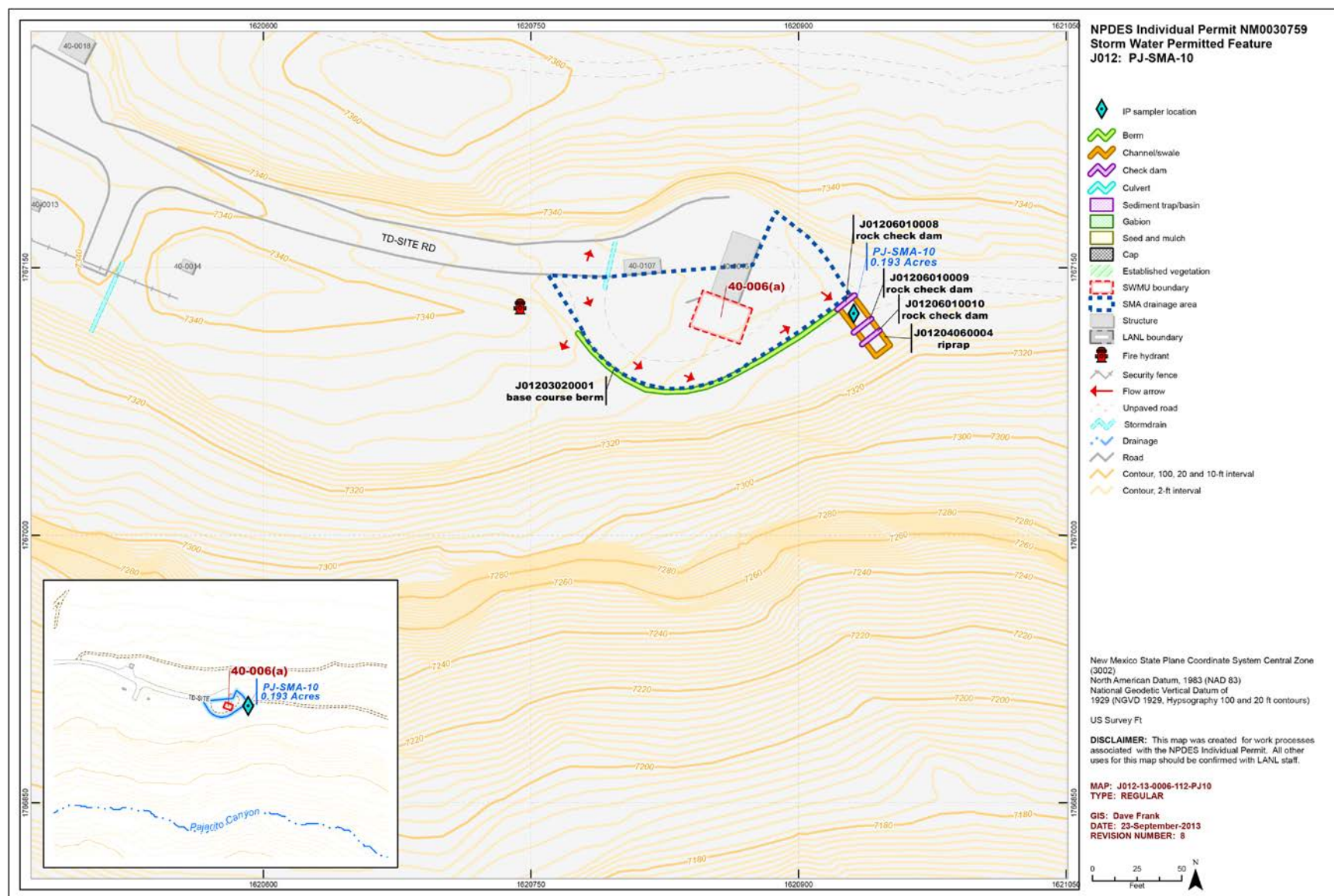


Figure 160-1 PJ-SMA-10 location map

161.0 PJ-SMA-11: SWMU 40-003(a)

161.1 Site Descriptions

One historical industrial activity area is associated with J013, PJ-SMA-11: Site 40-003(a).

SWMU 40-003(a) consists of two former detonation areas located at TA-40. The first area was located 450 ft east of structure 40-15. The detonation area is roughly circular and approximately 30 ft in diameter. Use of the area began in the early 1950s, and detonations were remotely controlled from structure 40-15. In 1958, several instances occurred where intact detonators and pieces of HE were discharged during detonations. Efforts to recover all the scattered detonators and HE were unsuccessful. Detonation activities at this first location ceased in the early 1960s when a second open detonation area was developed at a location farther to the east. This second area is approximately 1300 ft east of structure 40-15, within a natural amphitheater at the end of an unnamed dirt road. At the second area, scrap explosive materials were detonated and controlled remotely from structure 40-15. The detonation area is approximately 90 ft (east-west) by 110 ft (north-south). After each detonation, scattered debris was picked up and transported to an appropriate waste disposal site. Rock rubble and crushed tuff that sloughed from the amphitheater wall was pushed to the south, creating an area of fill that extended nearly to the edge of Pajarito Canyon. The second detonation area was later operated under RCRA interim status. All detonation operations ceased in 1985. The interim status open detonation area underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995.

A Consent Order investigation has not been performed at SWMU 40-003(a), and no decision-level soil sampling data are available for this Site. Confirmation samples were collected during the RCRA closure but were not analyzed for copper or gross-alpha radioactivity.

The project map (Figure 161-1) 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>.

161.2 Control Measures

Potential run-on contributions to this monitored area originate from an access road and bare areas on the northern portion of the SWMU. Sandy areas are present at the head of this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 161-1).

Table 161-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01301010020	Seed and Wood Mulch			X		B
J01302040018	Established Vegetation		X	X		B
J01303010003	Earthen Berm		X		X	CB
J01303010004	Earthen Berm	X			X	CB
J01303060010	Straw Wattles		X		X	CB
J01303060012	Straw Wattles		X		X	CB
J01303060013	Straw Wattles		X		X	CB
J01303060016	Straw Wattles		X		X	B
J01303060017	Straw Wattles		X		X	B
J01303060019	Straw Wattles	X	X		X	B
J01303060021	Straw Wattles		X		X	B
J01306010005	Rock Check Dam		X		X	CB
J01306010006	Rock Check Dam		X		X	CB
J01306010007	Rock Check Dam		X		X	CB
J01306010008	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

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

161.3 Storm Water Monitoring

SWMU 40-003(a) is monitored within PJ-SMA-11. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 161-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentrations of 42.9 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 65.4 pCi/L (ATAL is 15 pCi/L).

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

SWMU 40-003(a):

- Copper and alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 161-2. 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 161-2.

Monitoring location PJ-SMA-11 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

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

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

161.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-11 during the 2013 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 161-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30908	5-7-2013
Storm Rain Event	BMP-33420	7-23-2013
Storm Rain Event	BMP-35504	9-19-2013
Annual Erosion Evaluation	COMP-36847	11-18-2013
TAL Exceedance	COMP-37071	11-18-2013

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

Table 161-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37092	Prior to any soil disturbance at Site 40-003(A), must have site walk-down with ExSO Davin Aragon. Repair wattle J01303060012 by either retrenching or backfilling undercut.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37093	Prior to any soil disturbance at Site 40-003(A), must have site walk-down with ExSO Davin Aragon. Repair wattles Asset ID J01303060013 by retrenching or backfilling undercut	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37094	Prior to any soil disturbance at Site 40-003(A), must have site walk-down with ExSO Davin Aragon. Install new straw wattle directly upgradient of existing wattle -0014. Wattle -0014 will be retired when work is completed.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable

161.5 Compliance Status

The Site associated with PJ-SMA-11 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 161-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 40-003(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

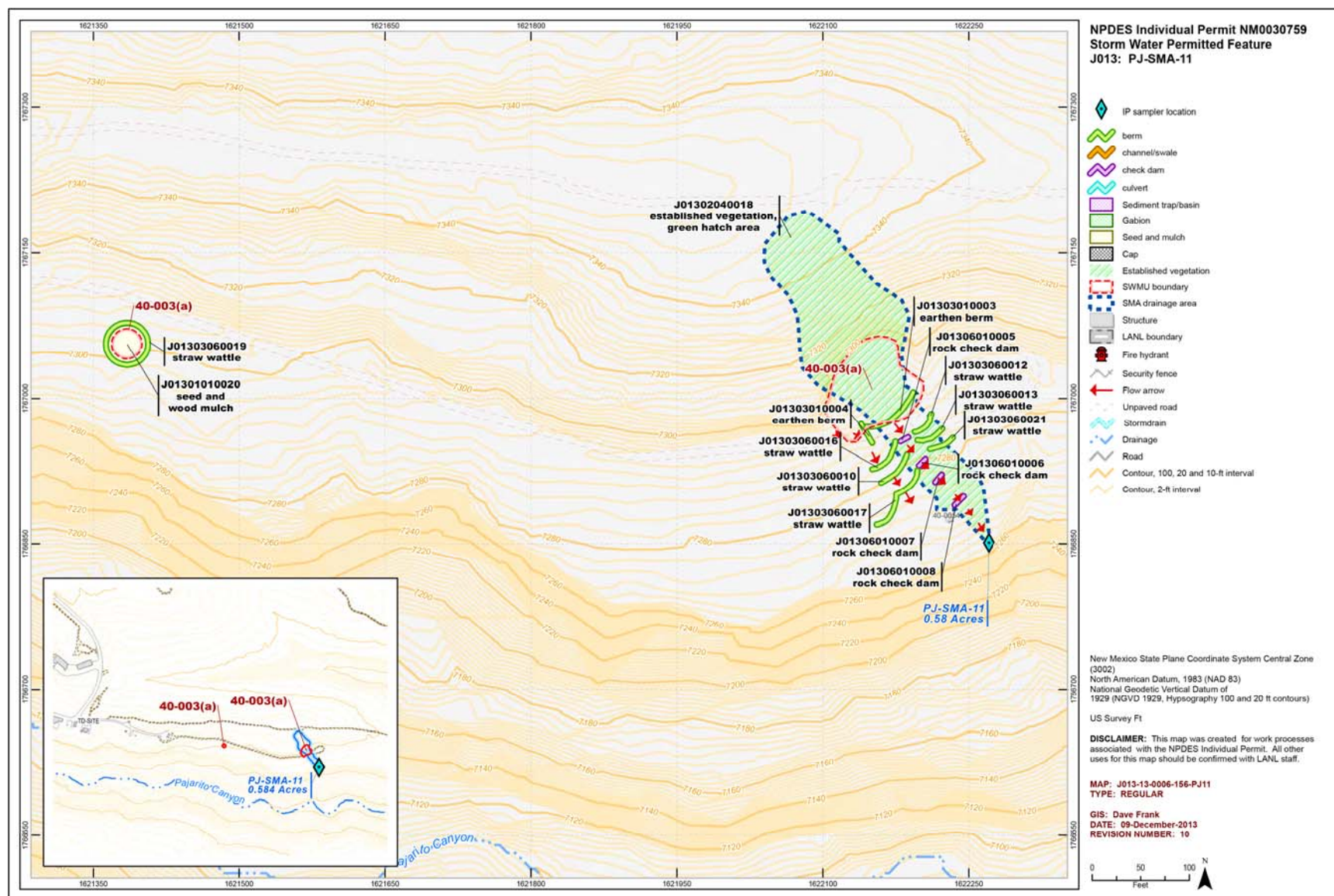


Figure 161-1 PJ-SMA-11 location map

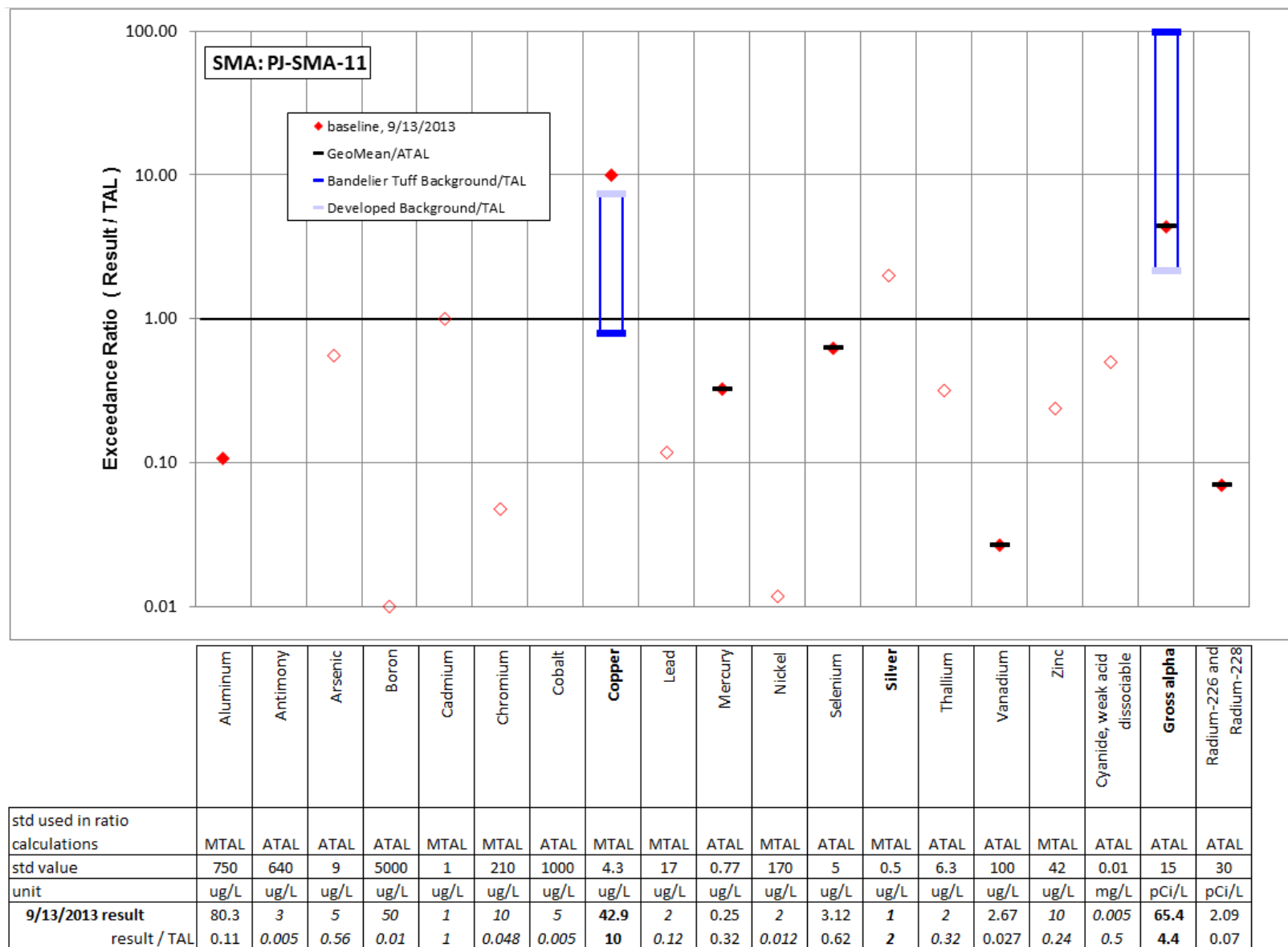


Figure 161-2 Inorganic analytical results summary plot for PJ-SMA-11

162.0 PJ-SMA-11.1: AOC 40-003(b)

162.1 Site Descriptions

One historical industrial activity area is associated with J014, PJ-SMA-11.1: Site 40-003(b).

AOC 40-003(b) is a former burn site located at TA-40 approximately 1400 ft east of building 40-15, next to the open detonation area [SWMU 40-003(a)]. The burn site consists of three small burning areas (burn cage locations) and a burn pit. Materials burned consisted of explosives-contaminated combustibles, including rags, paper, wood, and glassware. From 1960 to 1985, a wire burn cage (4 ft wide × 4 ft long × 5 ft high) with a steel-plate floor was used at three different locations. The burn cage was used to contain burning materials and to prevent wastes from being windblown before and during burning activities. Kerosene was poured over the stacked waste, and burning was initiated using explosive detonators fired remotely. The burn cage locations operated as a hazardous waste thermal treatment unit RCRA interim status until operations ceased in 1985.

The burn pit was located between the two northern locations of the burn cage and measured approximately 12 ft wide × 50 ft long × 12 ft deep. Burn pit operations began in 1961 and ceased sometime before 1977.

The burn cage locations underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995. Aerial photographs showed that the entire area, including the burn pit, was backfilled and covered by 1976. The burn pit was omitted from the RCRA closure because its period of use occurred before 1980 and therefore before RCRA regulation.

A Consent Order investigation has not been performed at AOC 40-003(b), and no decision-level soil sampling data are available for this Site.

The project map (Figure 162-1) 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>.

162.2 Control Measures

There is no concentrated run-on from developed areas at this SMA. Any runoff from this SMA originates from bare areas located in the northern reaches of the SMA. This overland flow has resulted in concentrated flow channels. Installed controls are to further stabilize bare areas in the upper reach of the SMA and to fortify sediment retention associated with runoff controls. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 162-1).

Table 162-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01402040015	Established Vegetation		X	X		B
J01403010003	Earthen Berm	X			X	CB
J01403060016	Straw Wattles		X		X	B
J01406010004	Rock Check Dam		X		X	CB
J01406010005	Rock Check Dam		X		X	CB
J01406010006	Rock Check Dam		X		X	CB
J01406010007	Rock Check Dam		X		X	CB
J01406010008	Rock Check Dam		X		X	CB
J01406010009	Rock Check Dam		X		X	CB
J01406010010	Rock Check Dam		X		X	CB
J01406010011	Rock Check Dam		X		X	CB
J01406010012	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

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

162.3 Storm Water Monitoring

AOC 40-003(b) is monitored within PJ-SMA-11.1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 162-2). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 1040 µg/L (MTAL is 750 µg/L),
- Copper concentrations of 20.9 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 89.4 pCi/L (ATAL is 15 pCi/L).

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

AOC 40-003(b):

- Confirmation samples were collected during the RCRA closure but were not analyzed for aluminum, copper, or gross-alpha radioactivity. Based on site history, however, the Site is an unlikely source of the TAL exceedances.

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

“Bandelier Tuff Background” in Figure 162-2. 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 162-2.

Monitoring location PJ-SMA-11.1 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum are found at low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- **Aluminum**—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is between these two values.
- **Copper**—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is between these two values.
- **Gross alpha**—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

162.4 Inspections and Maintenance

RG-TA-06 recorded five storm events at PJ-SMA-11.1 during the 2013 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 162-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30909	5-7-2013
Storm Rain Event	BMP-33421	7-23-2013
Storm Rain Event	BMP-35505	9-19-2013
Annual Erosion Evaluation	COMP-36848	11-18-2013
TAL Exceedance	COMP-37072	11-18-2013

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

Table 162-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37105	Remove debris and needle cast from rock check dam J01406010007.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37106	Install new line of straw wattles directly upgradient of existing wattles -0014. Wattles -0014 will be retired when work is completed.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.

162.5 Compliance Status

The Site associated with PJ-SMA-11.1 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 162-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 40-003(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

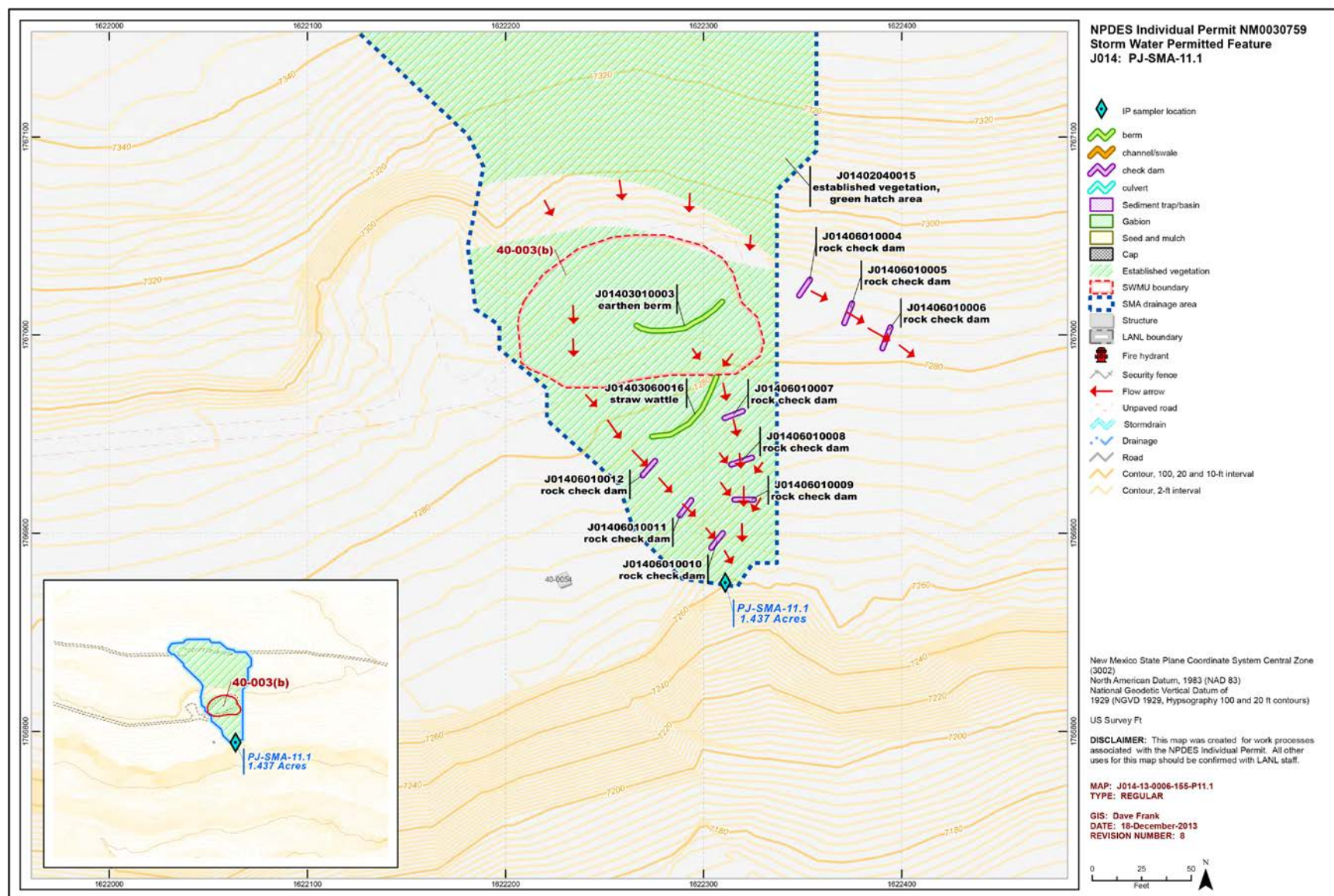


Figure 162-1 PJ-SMA-11.1 location map

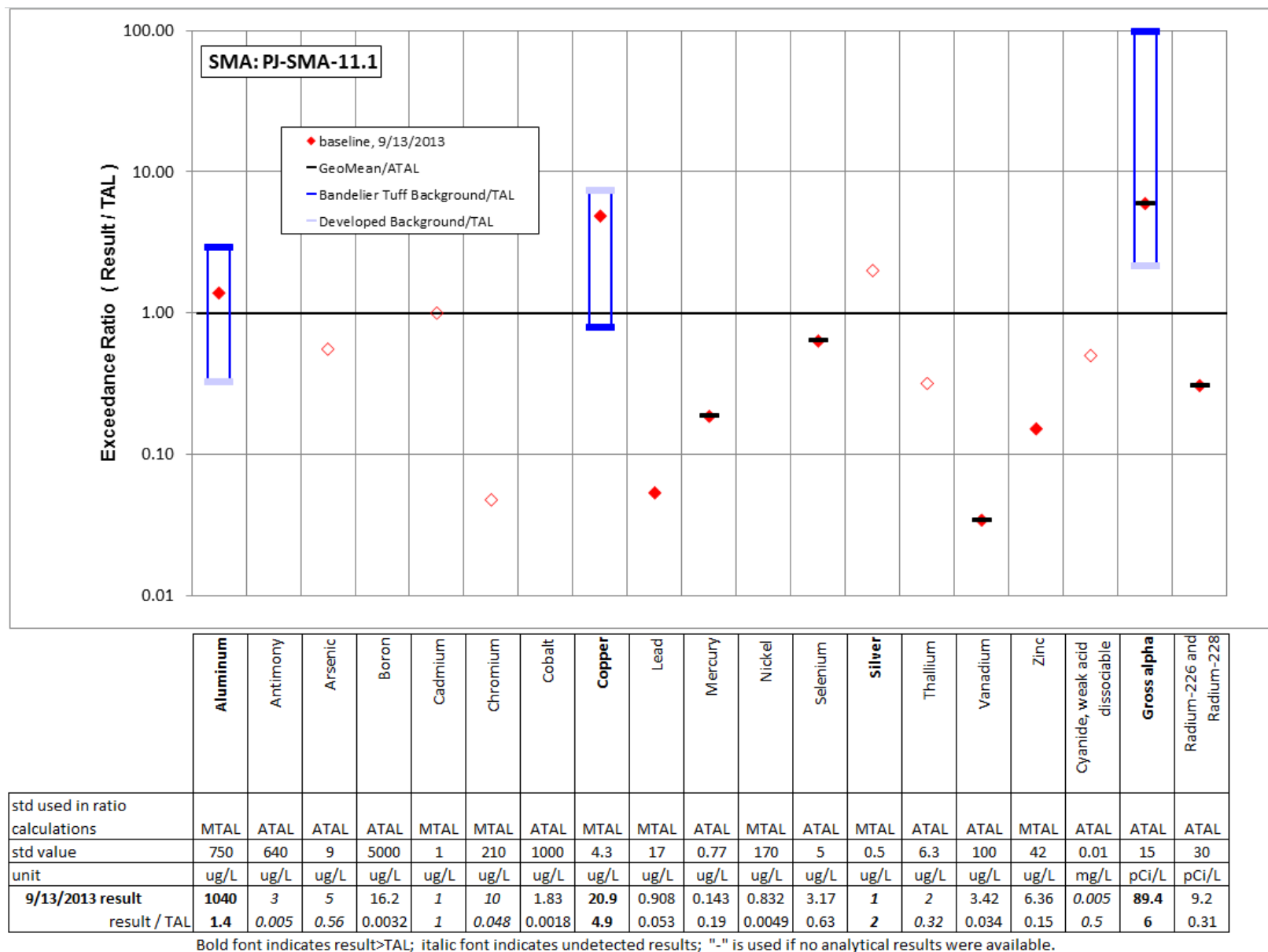


Figure 162-2 Inorganic analytical results summary plot for PJ-SMA-11.1

163.0 PJ-SMA-13: SWMU 18-002(a)

163.1 Site Descriptions

One historical industrial activity area is associated with J015, PJ-SMA-13: Site 18-002(a).

SWMU 18-002(a) consists of an inactive HE firing site at TA-18 in Pajarito Canyon south of the present location of building 18-0023 (Kiva 1). The firing site was used from 1944 to 1945 and consisted of two structures: former structure 18-0003, a firing chamber 2 ft wide × 2 ft long × 2.2 ft deep constructed from 1-in.-thick steel, and former structure 18-0002, an aboveground armored bunker, commonly called a “battleship,” used to protect shot instrumentation. The firing chamber was open on the top and set flush with the ground west of the bunker, which was designated as storage for HE in the historical TA-18 structure log. Structure 18-0003 was removed in 1945, and structure 18-0002 is no longer in use.

SWMU 18-002(a) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 18-002(a).

The project map (Figure 163-1) 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>.

163.2 Control Measures

There is minor run-on contribution from paved areas at this SMA. Run-on is also generated in the natural area southeast of the fence. Installed controls are designed to fortify sediment retention in the runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 163-1).

Table 163-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01501010004	Seed and Wood Mulch			X		CB
J01502040005	Established Vegetation		X	X		B
J01503010002	Earthen Berm	X			X	CB
J01503010003	Earthen Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

163.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-13. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

163.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-13 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 163-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30794	5-2-2013
Storm Rain Event	BMP-33262	7-22-2013
Storm Rain Event	BMP-34177	8-5-2013
Storm Rain Event	BMP-35590	9-25-2013
Annual Erosion Evaluation	COMP-36733	12-5-2013

No maintenance activities were conducted at PJ-SMA-13 in 2013.

163.5 Compliance Status

The Site associated with PJ-SMA-13 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 163-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 18-002(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



PJ-SMA-13, Seed and Wood Mulch, J01501010004 (photo ID 12971-1)

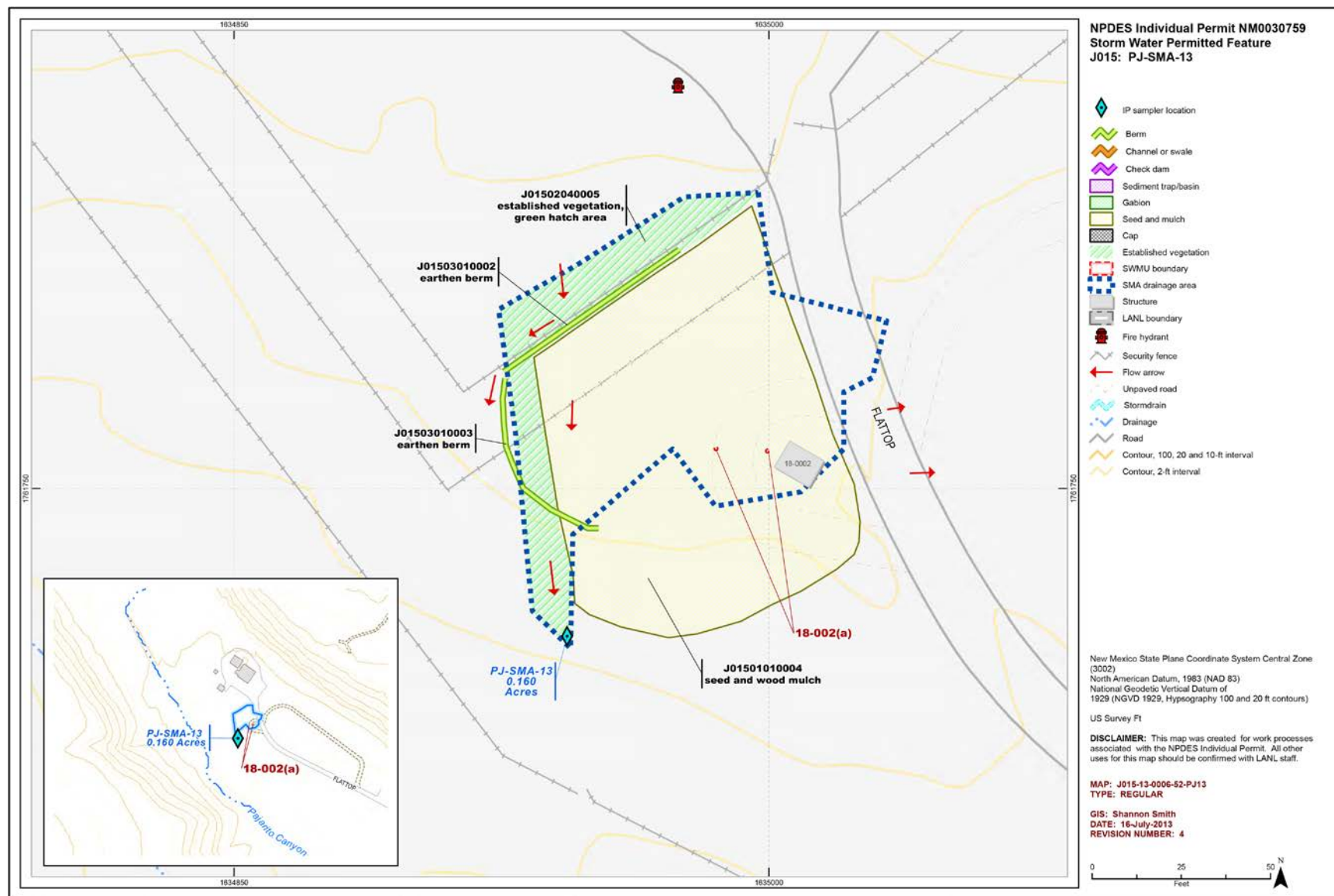


Figure 163-1 PJ-SMA-13 location map

164.0 PJ-SMA-13.7: AOC 18-010(b)

164.1 Site Descriptions

One historical industrial activity area is associated with J016, PJ-SMA-13.7: Site 18-010(b).

AOC 18-010(b) consists of an active outfall that receives storm water from a drainage ditch running southward along the west side of the paved area west of the former main laboratory and office building at TA-18 (former building 18-30). The outfall discharges to a flat, grassy area at the fence southwest of former building 18-30. This discharge point is approximately 25 ft north of the stream channel in Pajarito Canyon. The storm water discharged to this area from AOC 18-010(b) generally infiltrates the ground a short distance from the outfall, although heavy flow may reach the stream channel. The date this outfall became operational is not known, but building 18-30 was constructed in 1951. The RFI work plan describes a 1988 photograph that showed spillage from a former refueling platform at structure 18-110 into the drainage ditch. Building 18-30 and most of the other TA-18 structures were demolished in 2010–2011.

Consent Order investigations have not been performed at AOC 18-010(b), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994.

The project map (Figure 164-1) 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>.

164.2 Control Measures

The SMA is impacted by paved areas north and west of building 18-0030 as well as from roof drains associated with the building. Flow is routed to the channel just east of the fence. The channel feeds a culvert inlet/outlet that discharges at the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 164-1).

Enhanced controls were installed and certified on July 9, 2013, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>

Table 164-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01602040011	Established Vegetation		X	X		B
J01605020008	Sediment Basin		X		X	EC
J01605020009	Sediment Basin		X		X	EC
J01606010007	Rock Check Dam	X			X	CB
J01607010002	Gabions		X	X		CB
J01608030010	Concrete/Asphalt Cap		X			EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

164.3 Storm Water Monitoring

AOC 18-010(b) is monitored within PJ-SMA-13.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 164-2). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 52.6 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 18-010(b):

- Alpha-emitting radionuclides, including isotopes of uranium and plutonium, are known to be associated with industrial materials historically managed at TA-18; these materials were handled only inside structures and were not exposed to storm water. Shallow soil samples collected during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides but were analyzed for total uranium, which has alpha-emitting isotopes. Total uranium was detected above BV in seven of eight shallow RFI soil and sediment samples with a maximum concentration 5.7 times the maximum value in the background data set. Data collected during the 1994 RFI are screening-level data.

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 164-2. 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 164-2.



PJ-SMA-13.7, Gabions,
J01607010002 (photo ID 30474-3)

Monitoring location PJ-SMA-13.7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha background UTL for undisturbed 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.

The monitoring station for PJ-SMA-13.7 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

164.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-13.7 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 164-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Enhanced Control Measure Verification	BMP-30474	1-25-2013
Annual Erosion Evaluation	COMP-30795	5-2-2013
2 nd Enhanced Control Measure Verification	BMP-32376	5-28-2013
Storm Rain Event	BMP-33263	7-22-2013
Storm Rain Event	BMP-34178	8-5-2013
Storm Rain Event	BMP-35591	9-25-2013
Annual Erosion Evaluation	COMP-36734	12-5-2013

No maintenance activities were conducted at PJ-SMA-13.7 in 2013.

164.5 Compliance Status

The Site associated with PJ-SMA-13.7 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 164-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 18-010(b)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, July 9, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (DP-SMA-0.3, LA-SMA-5.91, PJ-SMA-13.7, S-SMA-2, STRM-SMA-1.5)"

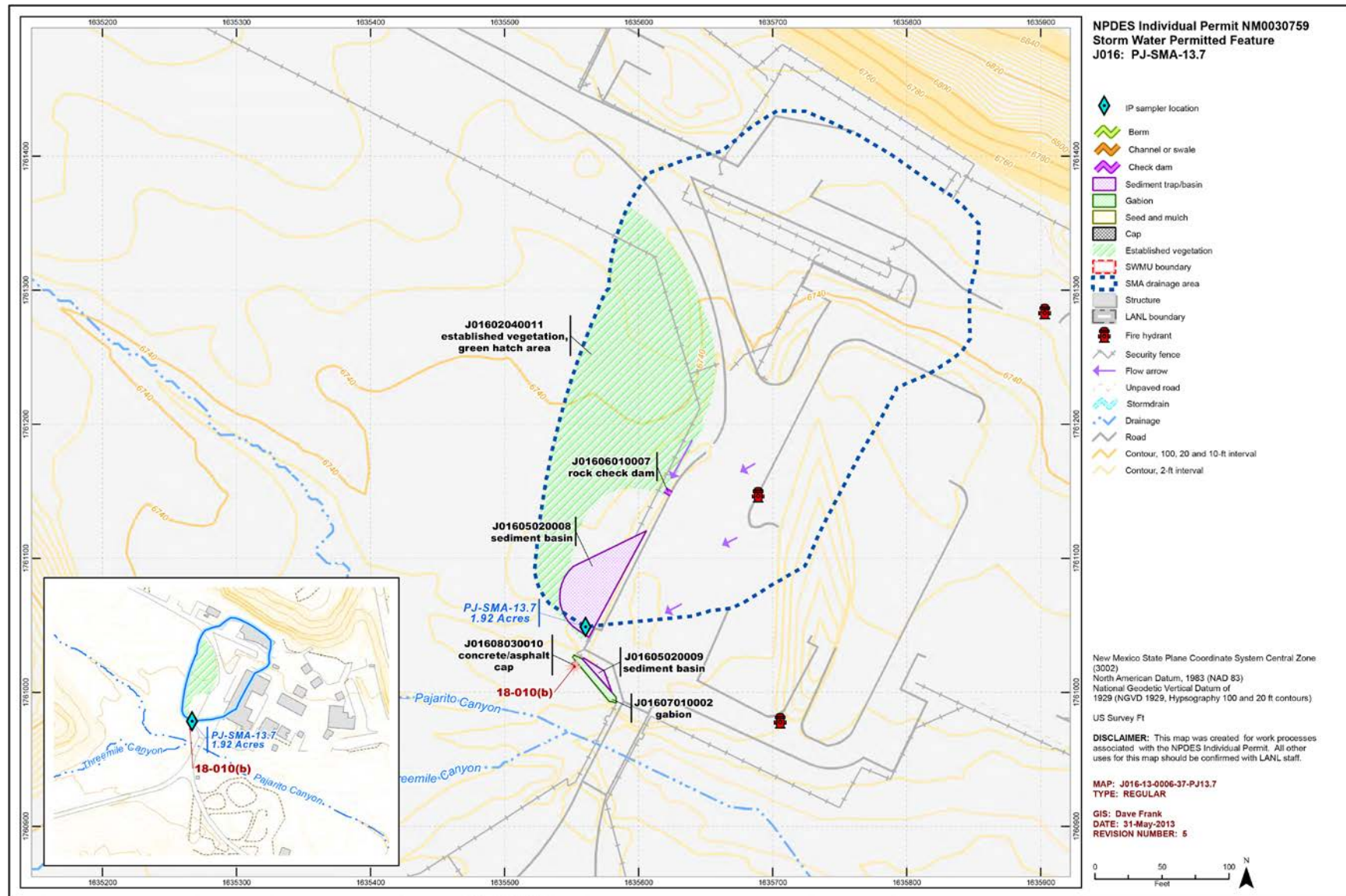


Figure 164-1 PJ-SMA-13.7 location map

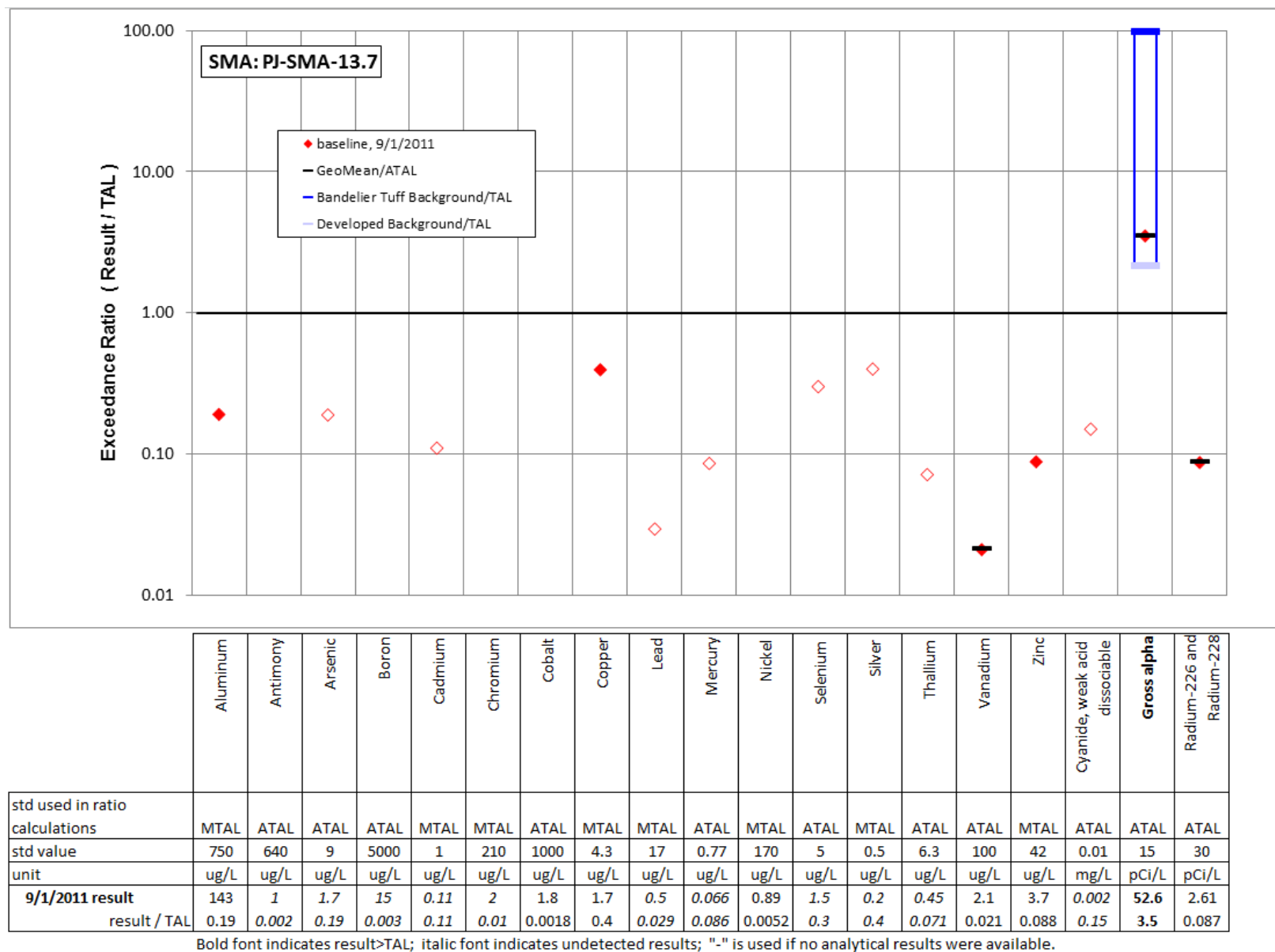


Figure 164-2 Inorganic analytical results summary plot for PJ-SMA-13.7

165.0 PJ-SMA-14: SWMU 54-004

165.1 Site Descriptions

One historical industrial activity area is associated with J017, PJ-SMA-14: Site 54-004.

SWMU 54-004 (MDA H) is an inactive 0.3-acre landfill on Mesita del Buey in TA-54 consisting of nine inactive shafts used to dispose of Laboratory-generated classified waste such as weapon-component mockup shapes, detonators, papers, and tritium-contaminated items. Material disposed of at MDA H contained residues of DU, fuel elements, residual plutonium, HE, liquids, or gases, and the density of waste materials varied from 5 lb/ft³ to over 400 lb/ft³ in the shafts. Each shaft is 6 ft in diameter and 60 ft deep. Placement of all waste in the pit below the original land surface ensured the waste was contained within the disposal pit and prevented exposure to storm water runoff during the operational life of each pit. The shafts were capped when waste came to within 6 ft of the surface. Shafts 1 through 8 are capped with 3 ft of crushed tuff followed by 3-ft-thick concrete caps; shaft 9 is capped only with a 6-ft-thick layer of concrete. The nine shafts at MDA H were used from 1960 to 1986. One shaft, shaft 9, received hazardous waste after July 26, 1982, and therefore is considered a RCRA-regulated landfill. The surface area of MDA H was covered with clean fill and reseeded.

Investigation sampling is complete for SWMU 54-004. A CME was conducted at MDA H in 2009 and 2010 to evaluate alternatives for preventing future exposure to buried waste. CME results were submitted to NMED in September 2011.

The project map (Figure 165-1) 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>.

165.2 Control Measures

There is a minor potential for run-on from the paved road north of the SMA. The SMA is slightly elevated on the southwestern side, reducing the potential for run-on from the area southwest of the SMA. Controls have been installed to manage runoff and reduce sediment migration. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 165-1).

Table 165-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01701010004	Seed and Wood Mulch			X		CB
J01703010005	Earthen Berm		X		X	B
J01703010006	Earthen Berm		X		X	B
J01703020002	Base Course Berm	X			X	CB
J01703020003	Base Course Berm		X		X	CB
J01708010001	Earth Cap			X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

165.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

165.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 165-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30796	5-2-2013
Storm Rain Event	BMP-33264	7-22-2013
Storm Rain Event	BMP-34179	8-5-2013
Storm Rain Event	BMP-35592	9-25-2013
Annual Erosion Evaluation	COMP-36735	11-13-2013

No maintenance activities were conducted at PJ-SMA-14 in 2013.

165.5 Compliance Status

The Site associated with PJ-SMA-14 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 165-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-004	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

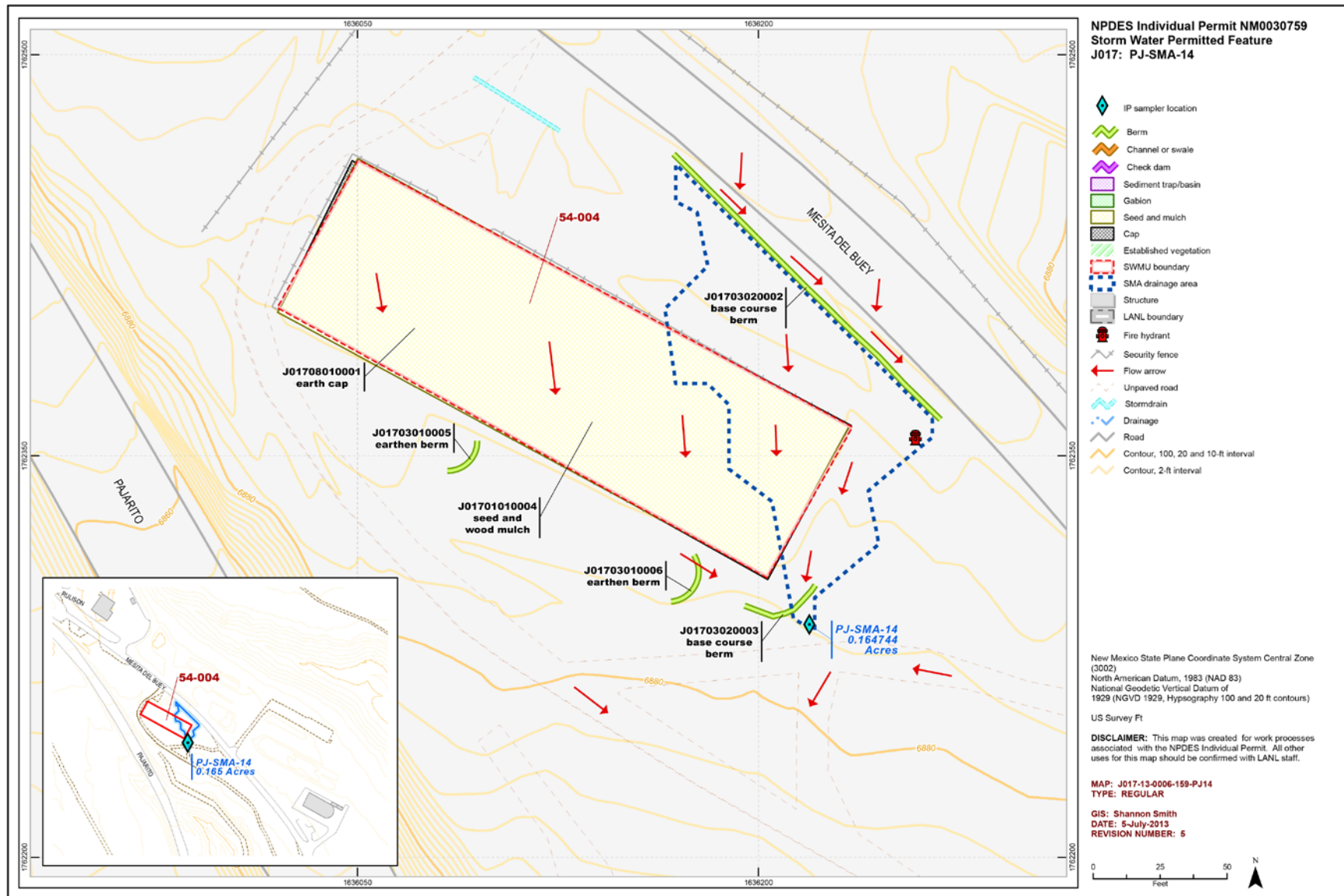


Figure 165-1 PJ-SMA-14 location map

166.0 PJ-SMA-14.2: SWMU 18-012(b)

166.1 Site Descriptions

One historical industrial activity area is associated with J018, PJ-SMA-14.2: Site 18-012(b).

SWMU 18-012(b) consists of a former outfall at TA-18 is an outfall that received discharge from several sources in buildings 18-30 and 18-31. The outfall, which was active from the time the buildings were constructed in 1950, is located south of building 18-31, approximately 20 ft north of the main drainage channel in Pajarito Canyon. The outfall received discharge from an associated sump [SWMU 18-001(c)], floor drains, sinks, storm water from the east-wing roof of building 18-31, and a welding quench tank in building 18-30. The outfall also received discharge from machine shop floor drains and storm water from the roof of building 18-31. Discharges from both buildings were transported to the outfall via a series of 4-in. polyethylene pipes connected to the sources within the buildings. All drains in both buildings were plugged in 1992 and 1993, with exception of the storm water roof drains. The outfall received only storm water from the east-wing roof of building 18-30 from 1993 to 2011. Buildings 18-30 and 18-31 underwent D&D in 2011 and 2012.

SWMU 18-012(b) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 18-012(b).

The project map (Figure 166-1) 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>.

166.2 Control Measures

There is no evidence of significant run-on from the paved areas. Established vegetation south of the paved areas effectively manages all minor run-on contributions. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 166-1).

Table 166-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01802040005	Established Vegetation		X	X		B
J01803060006	Straw Wattles	X			X	B
J01803120004	Rock Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

166.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

166.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14.2 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 166-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30797	5-2-2013
Storm Rain Event	BMP-33265	7-22-2013
Storm Rain Event	BMP-34180	8-5-2013
Storm Rain Event	BMP-35593	9-25-2013
Annual Erosion Evaluation	COMP-36736	12-4-2013

Table 166-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-32148	Install new straw wattle(s) above the PRS for run-on/sediment control. See attached map markup for location.	7-16-2013	75 day(s)	Maintenance conducted as soon as practicable.

166.5 Compliance Status

The Site associated with PJ-SMA-14.2 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 166-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 18-012(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



PJ-SMA-14.2, Rock Berm, J01803120004 (photo ID 7524-1)

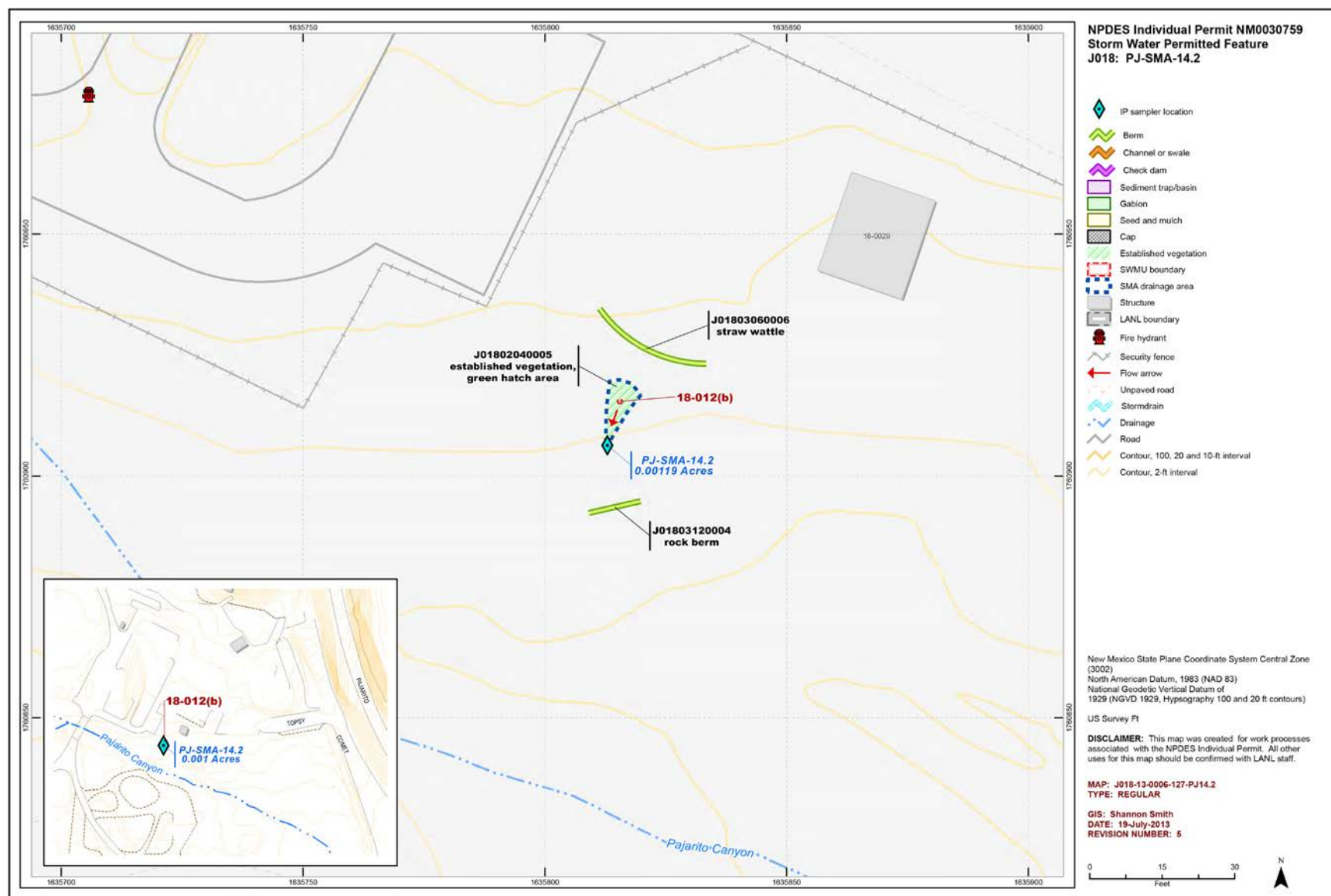


Figure 166-1 PJ-SMA-14.2 location map

167.0 PJ-SMA-14.3: SWMU 18-003(e)

167.1 Site Descriptions

One historical industrial activity area is associated with J019, PJ-SMA-14.3: Site 18-003(e).

SWMU 18-003(e) consists of an inactive septic system at TA-18 that includes two inlet lines, a cylindrical septic tank (structure 18-40), an outlet line, a drain field, and a former outfall. The septic tank is located approximately 50 ft southwest of building 18-37 and approximately 50 ft east of building 18-29 (a log cabin). The tank is constructed of reinforced concrete and measures 6 ft in diameter × 6 ft deep. The septic system received sanitary waste from building 18-31 (a utility building), building 18-37 (Guard Station 205), building 18-129 (a reactor subassembly building), building 18-189, and building 18-190. While it was in operation from 1951 to 1969, the septic system may have also received industrial waste from a sink in building 18-28 (a warehouse). Septic tanks associated with SWMUs 18-003(g and h) (structures 18-43 and 18-152, respectively) may have discharged to this septic system. Effluent discharged into a drain field that has four drainlines, each of which is approximately 40 ft long. The drainlines, which are 10 ft apart, merge at the distal end of the drain field, and continue an estimated 100 ft to the former outfall. In 1969, sanitary waste from the buildings was connected to the sewer system at the Site that routed effluent to the former TA-18 sanitary sewage lagoons. At that time, the septic tank was backfilled with sand.

SWMU 18-003(e) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 18-003(e).

The project map (Figure 167-1) 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>.

167.2 Control Measures

There is no indication of run-on to the outfall area from the paved area above. Run-on to the area is managed by engineered controls within the TA-18 administrative area, and the Permitted Feature is not impacted. A vegetative buffer strip serves to filter and mitigate runoff from this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 167-1).

Table 167-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J01902040003	Established Vegetation		X	X		B
J01903060005	Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

167.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

167.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14.3 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 167-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30798	5-2-2013
Storm Rain Event	BMP-33266	7-22-2013
Storm Rain Event	BMP-34181	8-5-2013
Storm Rain Event	BMP-35594	9-25-2013
Annual Erosion Evaluation	COMP-36737	12-4-2013

Table 167-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-32151	Install new wattle(s) upslope of sampler location as shown on attached map.	7-16-2013	75 day(s)	Maintenance conducted as soon as practicable.
BMP-36570	Install new straw wattle directly upgradient of existing straw wattle -0004. Wattle -0004 will be retired when work is completed.	11-6-2013	52 day(s)	Maintenance conducted as soon as practicable.

167.5 Compliance Status

The Site associated with PJ-SMA-14.3 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 167-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 18-003(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

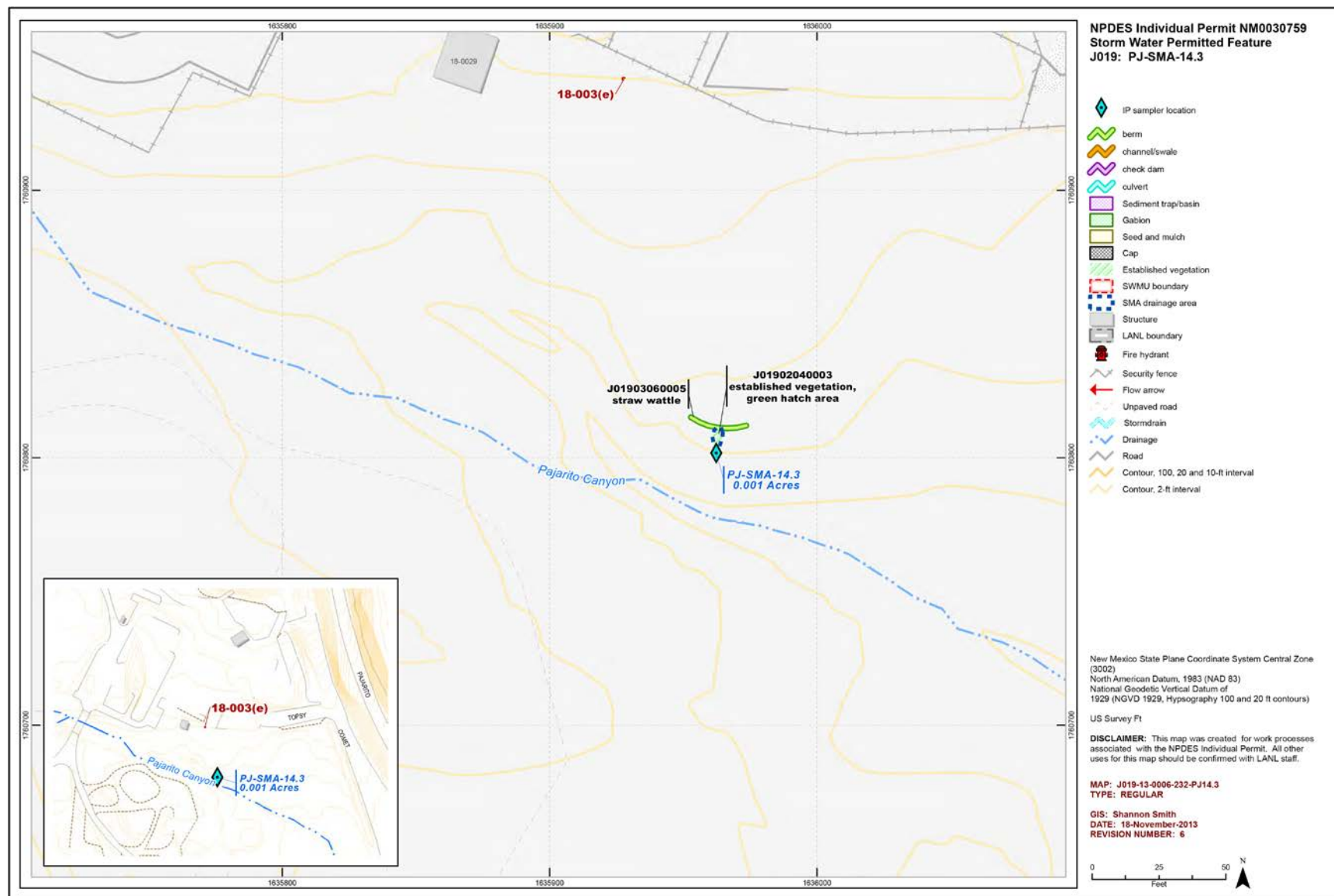


Figure 167-1 PJ-SMA-14.3 location map

168.0 PJ-SMA-14.4: AOC 18-010(d)

168.1 Site Descriptions

One historical industrial activity area is associated with J020, PJ-SMA-14.4: Site 18-010(d).

AOC 18-010(d) consists of an outfall at TA-18 that receives discharge in the form of sheet flow from a storm drainage collection area that drains the paved area northeast of a former guard station (building 18-37). The outfall discharges to a flat graveled and grassy area southeast of former building 18-37 and west of building 18-258. The discharge point is approximately 100 ft north of the stream channel in Pajarito Canyon. The date this outfall became operational is not known, but it is likely the outfall has been operational from the time building 18-37 was constructed in 1951. Building 18-37 underwent D&D in 2011 and 2012.

AOC 18-010(d) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for AOC 18-010(d).

The project map (Figure 168-1) 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>.

168.2 Control Measures

This SMA receives a large amount of run-on from the paved areas located north of the security fence. Existing controls address these contributions and help manage resultant runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 168-1).

Table 168-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02002040010	Established Vegetation		X	X		B
J02003010008	Earthen Berm	X			X	CB
J02003040006	Asphalt Berm	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

168.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

168.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14.4 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 168-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30799	5-2-2013
Storm Rain Event	BMP-33267	7-22-2013
Storm Rain Event	BMP-34182	8-5-2013
Storm Rain Event	BMP-35595	9-18-2013
Annual Erosion Evaluation	COMP-36738	12-4-2013

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

Table 168-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33981	Modify earthen berm J02003010008 by extending the berm on the west end to prevent potential flow from going around the berm.	11-19-2013	120 day(s)	Maintenance conducted as soon as practicable.

168.5 Compliance Status

The Site associated with PJ-SMA-14.4 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 168-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 18-010(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

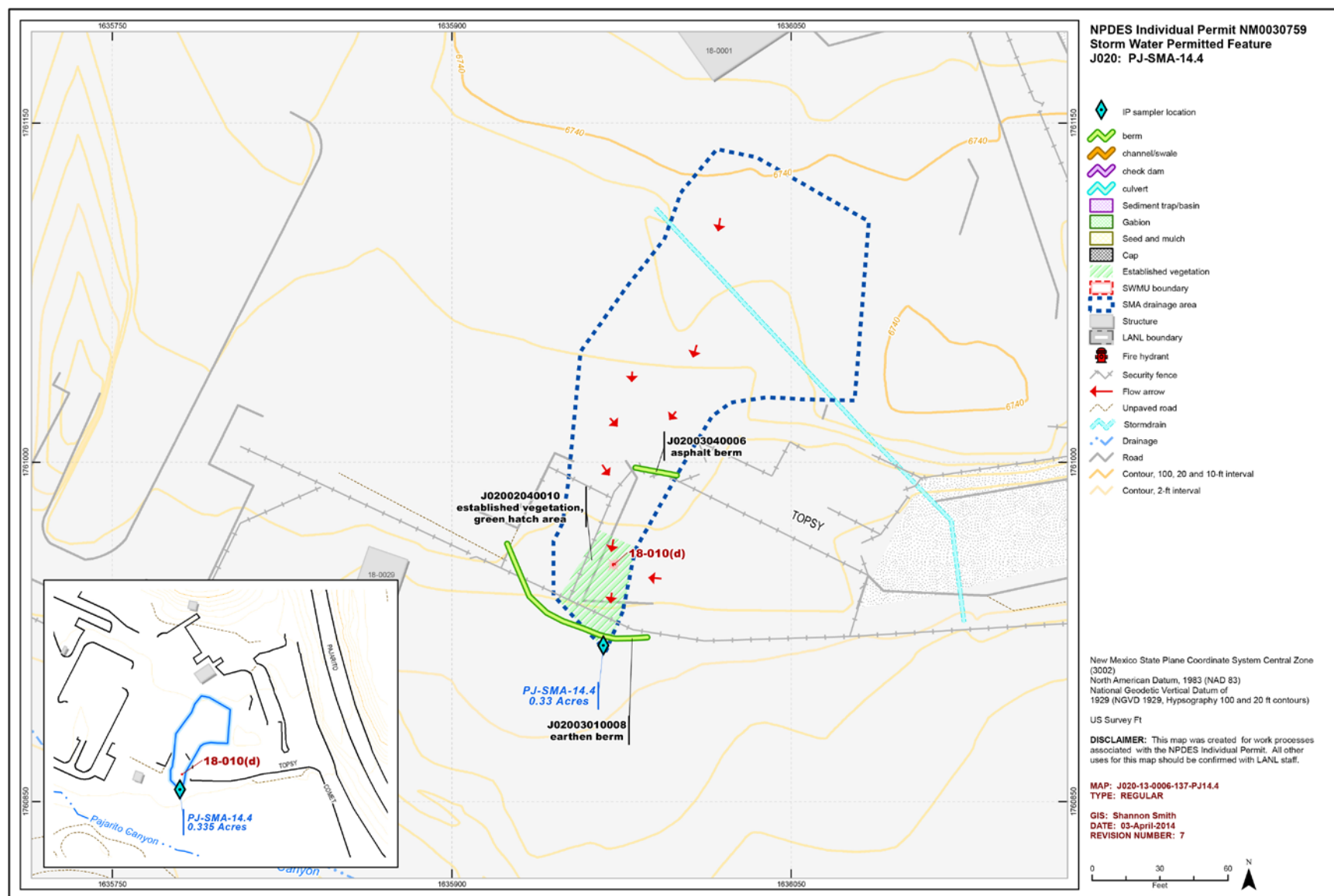


Figure 168-1 PJ-SMA-14.4 location map

169.0 PJ-SMA-14.6: AOC 18-010(e)

169.1 Site Descriptions

One historical industrial activity area is associated with J021, PJ-SMA-14.6: Site 18-010(e).

AOC 18-010(e) consists of an outfall at TA-18 that receives discharge from a storm sewer drainage that drains the paved area between buildings 18-28 and 18-147. Discharge enters a storm drain that runs southeast under the paved area west of building 18-129, to an area east of building 18-190, where the storm drain turns south. The storm drain reaches the outfall south of building 18-129, which discharges to a small grassy gully leading to the main stream channel in Pajarito Canyon. The outfall is located approximately 200 ft north of the stream channel. Buildings 18-28 and 18-147 underwent D&D in 2011 and 2012.

AOC 18-010(e) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for AOC 18-010(e).

The project map (Figure 169-1) 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>.

169.2 Control Measures

Run-on to this SMA is heavily influenced by engineered storm water controls within the administrative area at TA-18. Existing controls are managing flow above the culvert inlet within the administrative area. Runoff from the area discharges to a vegetated buffer strip. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 169-1).

Table 169-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02102040008	Established Vegetation		X	X		B
J02103010005	Earthen Berm		X		X	B
J02104060007	Rip Rap	X		X		B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

169.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PJ-SMA-14.6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

169.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14.6 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 169-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30800	5-2-2013
Storm Rain Event	BMP-33268	7-22-2013
Storm Rain Event	BMP-34183	8-5-2013
Storm Rain Event	BMP-35596	9-18-2013
Annual Erosion Evaluation	COMP-36739	12-4-2013

No maintenance activities were conducted at PJ-SMA-14.6 in 2013.

169.5 Compliance Status

The Site associated with PJ-SMA-14.6 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 169-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 18-010(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

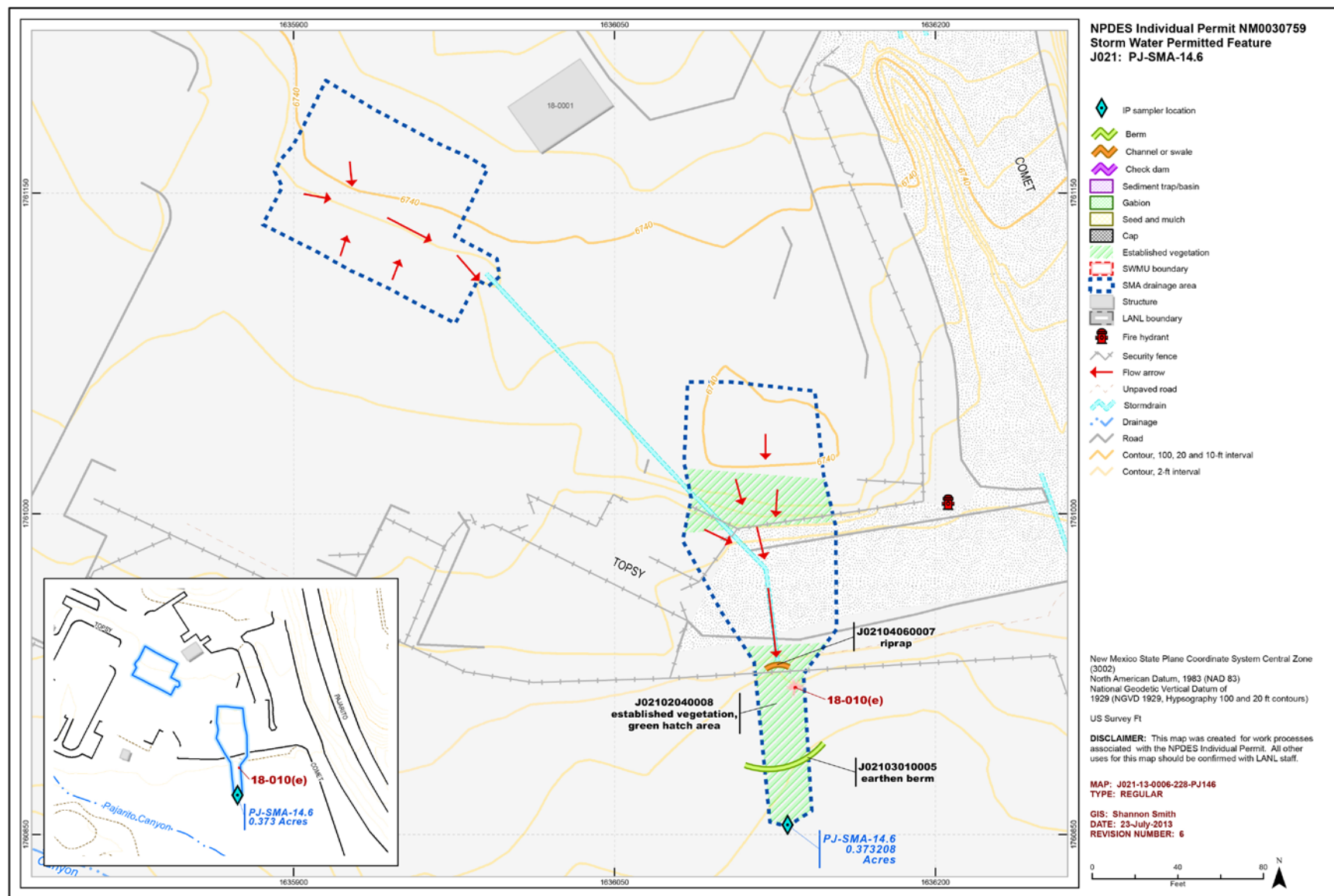


Figure 169-1 PJ-SMA-14.6 location map

170.0 PJ-SMA-14.8: SWMU 18-012(a)

170.1 Site Descriptions

One historical industrial activity area is associated with J022, PJ-SMA-14.8: Site 18-012(a).

SWMU 18-012(a) consists of a former outfall at TA-18 for a combined industrial drain and storm sewer drain for former building 18-116 (Kiva 3). Drainlines that discharged to this outfall were connected to building 18-116 roof drains, floor drains, and sinks. The outfall, found during 1992 field inspections using a dye-trace test, is located approximately 120 ft northeast of building 18-116 and approximately 150 ft from the stream channel in Pajarito Canyon. Building 18-116 was built in 1960 and used for uranium mockup tests for the Rover Program—a nuclear rocket propulsion program conducted from 1955 to 1972. The date this outfall became operational is not known, but it is likely that the outfall has been operational from the time building 18-116 was completed in 1960. Building 18-116 underwent D&D in 2011 and 2012.

SWMU 18-012(a) is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 18-012(a).

The project map (Figure 170-1) 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>.

170.2 Control Measures

A small paved area associated with CASA 3 may provide run-on contributions to the Permitted Feature. Existing controls address this potential contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 170-1).

Table 170-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02202040007	Established Vegetation		X	X		B
J02203020005	Base Course Berm	X			X	CB
J02203060008	Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

170.3 Storm Water Monitoring

SWMU 18-012(a) is monitored within PJ-SMA-14.8. Following the installation of baseline control measures, baseline storm water samples were collected on July 28, 2011, and August 18, 2011 (Figure 170-2). Analytical results from these samples yielded no TAL exceedances. Baseline confirmation is complete for PJ-SMA-14.8 and the associated SWMU 18-012(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for PJ-SMA-14.8 for the duration of the IP.

170.4 Inspections and Maintenance

RG245.5 recorded five storm events at PJ-SMA-14.8 during the 2013 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 170-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30801	5-2-2013
Storm Rain Event	BMP-33269	7-22-2013
Storm Rain Event	BMP-34184	8-5-2013
Storm Rain Event	BMP-35597	9-25-2013
Annual Erosion Evaluation	COMP-36740	12-5-2013

Table 170-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36573	Install new straw wattle directly upgradient of existing wattle -0006. Wattle -0006 will be retired when work is complete.	11-6-2013	42 day(s)	Maintenance conducted as soon as practicable.

170.5 Compliance Status

The Site associated with PJ-SMA-14.8 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 170-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 18-012(a)	Baseline Confirmation Complete	Baseline Confirmation Complete	No Comment



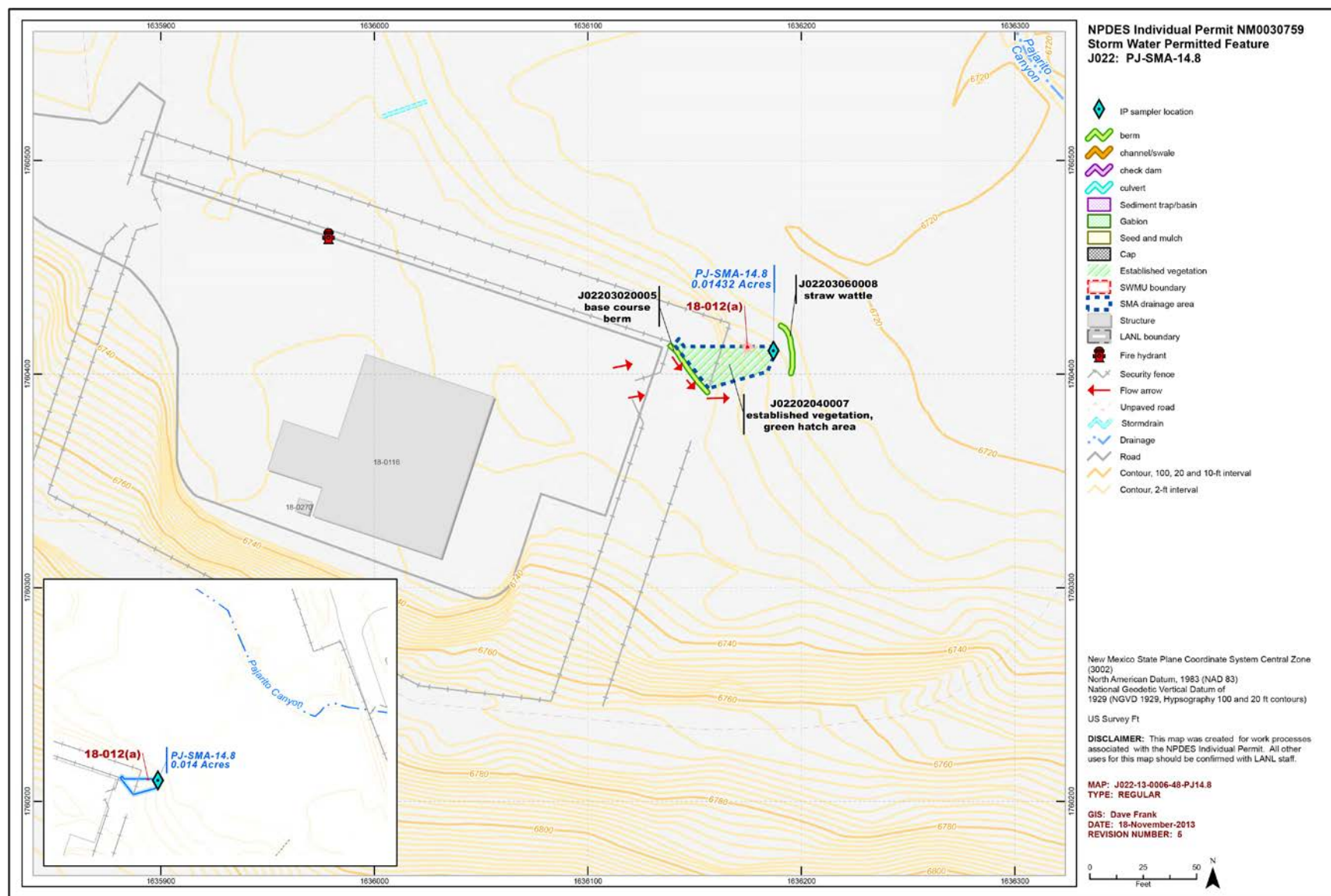


Figure 170-1 PJ-SMA-14.8 location map

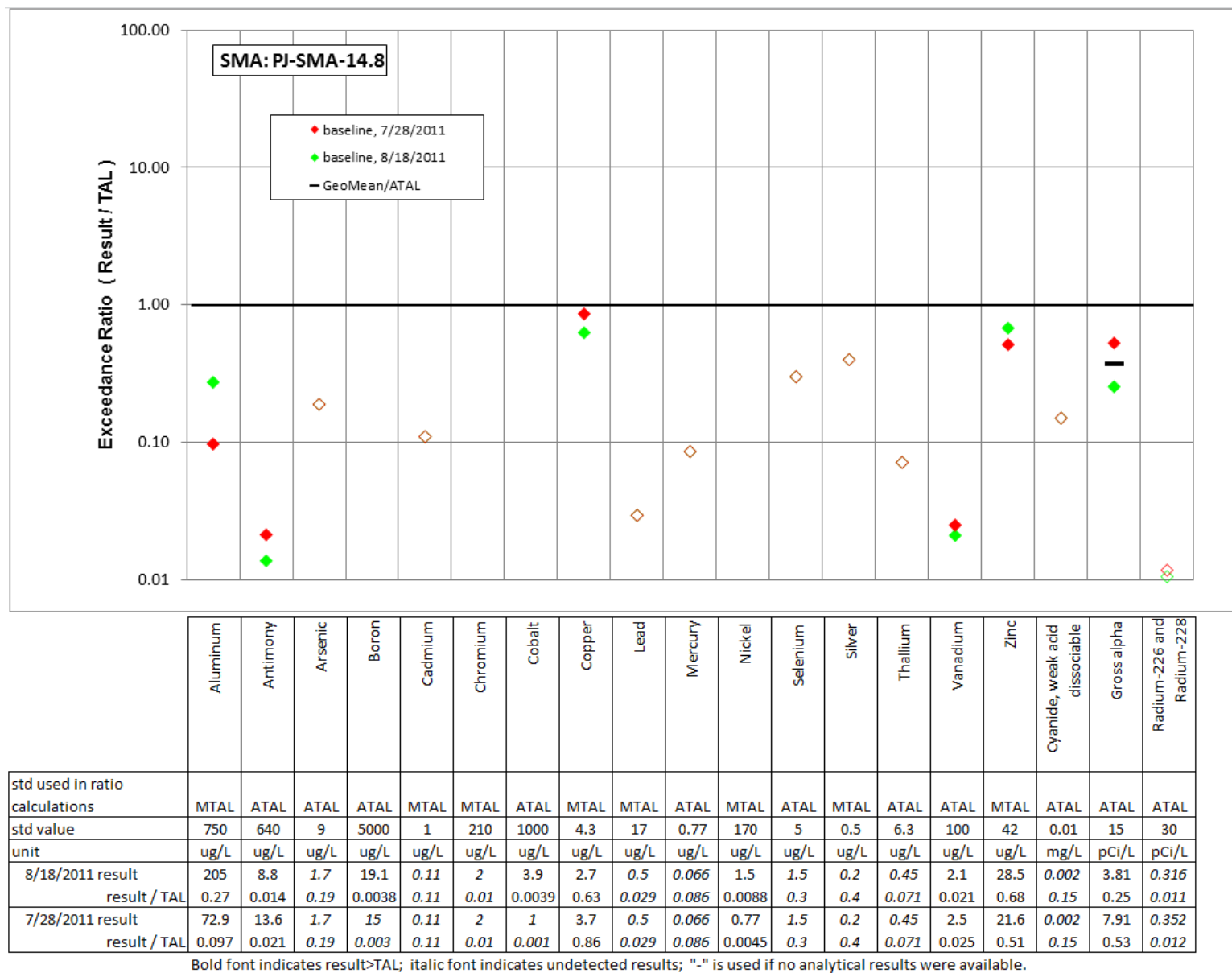


Figure 170-2 Inorganic analytical results summary plot for PJ-SMA-14.8

171.0 PJ-SMA-16: SWMU 27-002

171.1 Site Descriptions

One historical industrial activity area is associated with J023, PJ-SMA-16: Site 27-002.

SWMU 27-002 is an inactive firing site in Pajarito Canyon used between 1944 and 1947. The Site consists of five former firing pits situated on both sides of Pajarito Road, approximately 0.9 mi southeast of TA-18. Firing Pit 1 is located in the grassy area approximately 100 ft south of the TA-36 fence.

Firing Pits 2 and 3 are approximately 200 ft east of Firing Pit 1, between the fence and Pajarito Road. Firing Pit 4 has been impacted by the construction of Pajarito Road but is located on the north side of Pajarito Road. Firing Pit 5 is located on a small curve on the north side of Pajarito Road. The pits were used for explosives testing with materials such as beryllium, thorium, and uranium. A 1946 bullet sensitivity test at Firing Pit 1 caused a block of Composition B explosive to undergo a low-order explosion, scattering unexploded HE over a 250-yd radius.

SWMU 27-002 is included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. The investigation work plan for Lower Canyon Aggregate Area was approved in December 2010; the investigation report for the aggregate area is due to NMED by July 31, 2014. Decision-level data are not available for SWMU 27-002.

The project map (Figure 171-1) 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>.

171.2 Control Measures

The only potential run-on contributions to PJ-SMA-16 are associated with Pajarito Road. This run-on source is minimal in this flat and well-vegetated area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 171-1).

Table 171-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02302040004	Established Vegetation		X	X		B
J02303060003	Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

171.3 Storm Water Monitoring

SWMU 27-002 is monitored within PJ-SMA-16. Following the installation of baseline control measures, a baseline storm water samples were collected on July 30, 2011, and August 8, 2013 (Figures 171-2 and 171-3). Analytical results from these samples yielded no TAL exceedances. Baseline confirmation is complete for PJ-SMA-16 and the associated SWMU 27-002 because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for PJ-SMA-16 for the duration of the IP.

171.4 Inspections and Maintenance

RG-TA-54 recorded twelve storm events at PJ-SMA-16 during the 2013 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 171-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30802	5-2-2013
Storm Rain Event	BMP-32979	7-2-2013
Storm Rain Event	BMP-33146	7-15-2013
Storm Rain Event	BMP-34161	8-8-2013
Storm Rain Event	BMP-34779	8-22-2013
Storm Rain Event	BMP-35524	9-26-2013
Storm Rain Event	BMP-37129	11-13-2013
Annual Erosion Evaluation	COMP-36741	11-15-2013

No maintenance activities were conducted at PJ-SMA-16 in 2013.

171.5 Compliance Status

The Site associated with PJ-SMA-16 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 171-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 27-002	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment



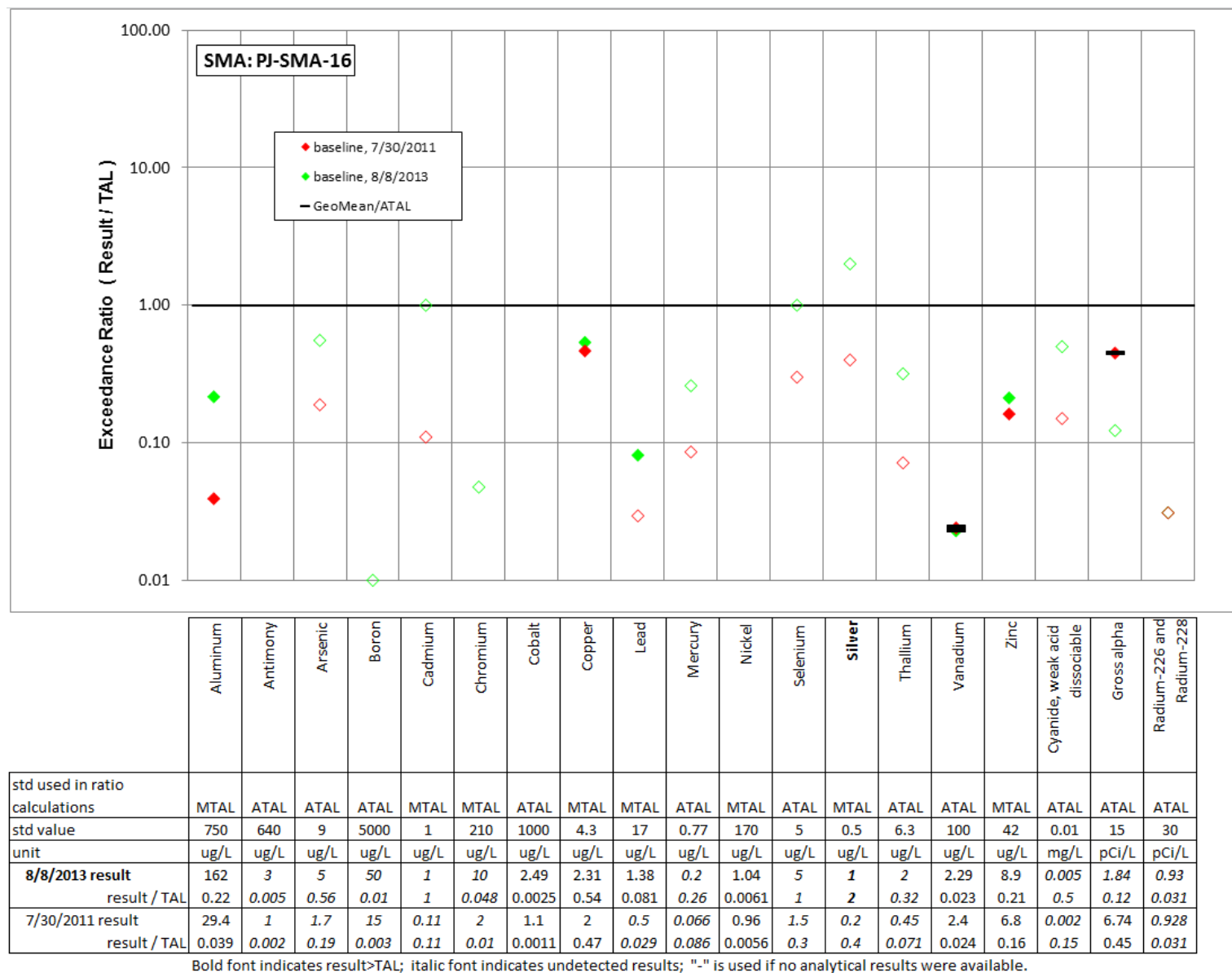


Figure 171-2 Inorganic analytical results summary plot for PJ-SMA-16

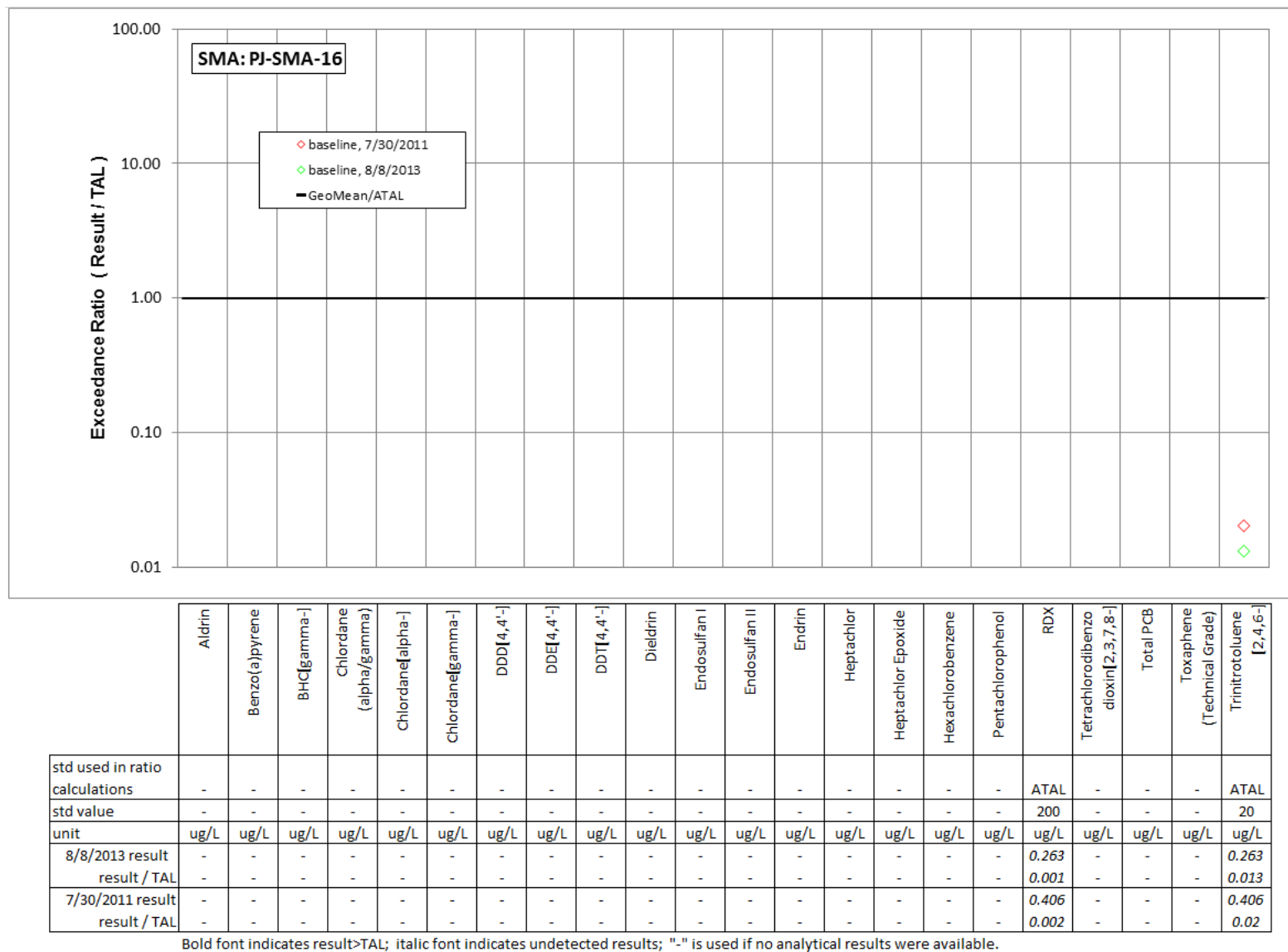


Figure 171-3 Organic analytical results summary plot for PJ-SMA-16

172.0 PJ-SMA-17: SWMU 54-018

172.1 Site Descriptions

One historical industrial activity area is associated with J024, PJ-SMA-17: Site 54-018.

SWMU 54-018, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of disposal pits 25 through 33 and 35 through 37. Pits 29 and 37, although no longer in use, are considered a regulated unit until RCRA closure is certified and approved by NMED. Pits 25 through 28 and 30 through 36 were operational between 1979 and 1980 and received radioactive, mixed, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, glove boxes, asbestos, and laboratory waste. The volumes ranged from 20,957 yd³ to 59,930 yd³. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses; several of the pits were subsequently covered with asphalt.

The portions of the three Sites within PJ-SMA-17 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

The project map (Figure 172-1) 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>.

172.2 Control Measures

The primary run-on source at this SMA originates on the paved road and from the roofs of area structures. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 172-1).

Table 172-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02402040008	Established Vegetation		X	X		B
J02404060006	Rip Rap		X	X		CB
J02404060007	Rip Rap		X	X		CB
J02405010005	Sediment Trap		X		X	CB
J02406010004	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

172.3 Storm Water Monitoring

SWMU 54-018 is monitored within PJ-SMA-17. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 172-2 and 172-3). Analytical results from this sample yielded two TAL exceedances:

- Copper concentrations of 5.13 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 61.6 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 54-018:

Industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits. Therefore, these industrial materials are not exposed to any storm water runoff.

- Copper is known to be associated with industrial materials managed at this Site. Copper was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 172-2 and 172-3. 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 172-2 and 172-3.

Monitoring location PJ-SMA-17 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

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

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

172.4 Inspections and Maintenance

RG-TA-54 recorded 12 storm events at PJ-SMA-17 during the 2013 season. These rain events triggered 6 post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 172-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30803	5-16-2013
Storm Rain Event	BMP-32980	7-11-2013
Storm Rain Event	BMP-33430	7-24-2013
Storm Rain Event	BMP-34162	8-8-2013
Storm Rain Event	BMP-34780	8-22-2013
Storm Rain Event	BMP-35525	9-26-2013
Storm Rain Event	BMP-37130	11-13-2013
Annual Erosion Evaluation	COMP-36742	11-13-2013
TAL Exceedance	COMP-35297	9-18-2013

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

Table 172-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33776	Bag floatable debris (plastic lids, box, etc.) along fence perimeter as noted on rain inspection BMP-32980. Place bag(s) near entrance to building 54-0224. Notify TA-54 Access Control of bag(s) location and request removal.	7-24-2013	13 day(s)	Maintenance conducted in timely manner.

172.5 Compliance Status

The Sites associated with PJ-SMA-17 are High Priority Sites. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-17 is September 4, 2014.

Table 172-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-018	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-5-13

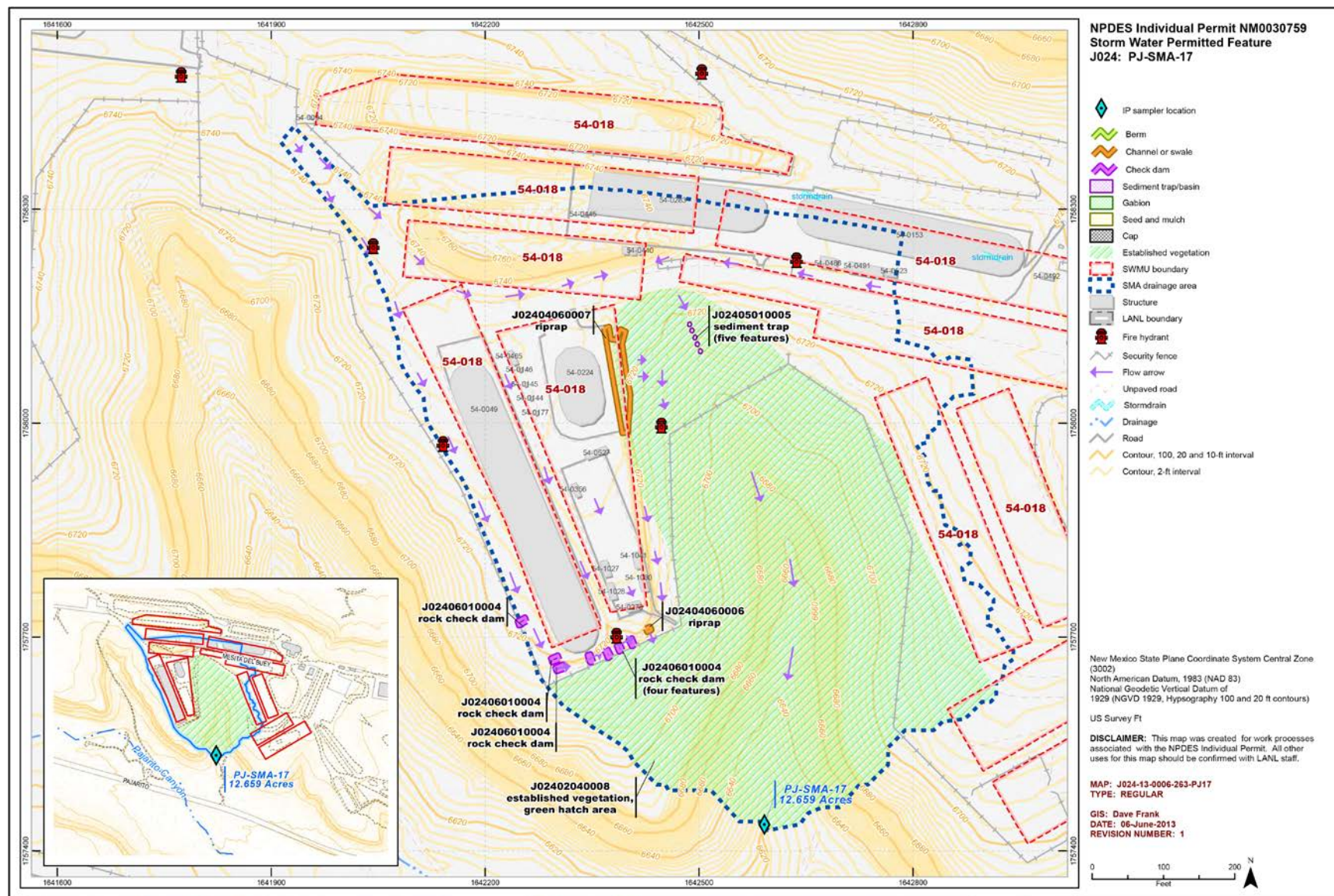


Figure 172-1 PJ-SMA-17 location map

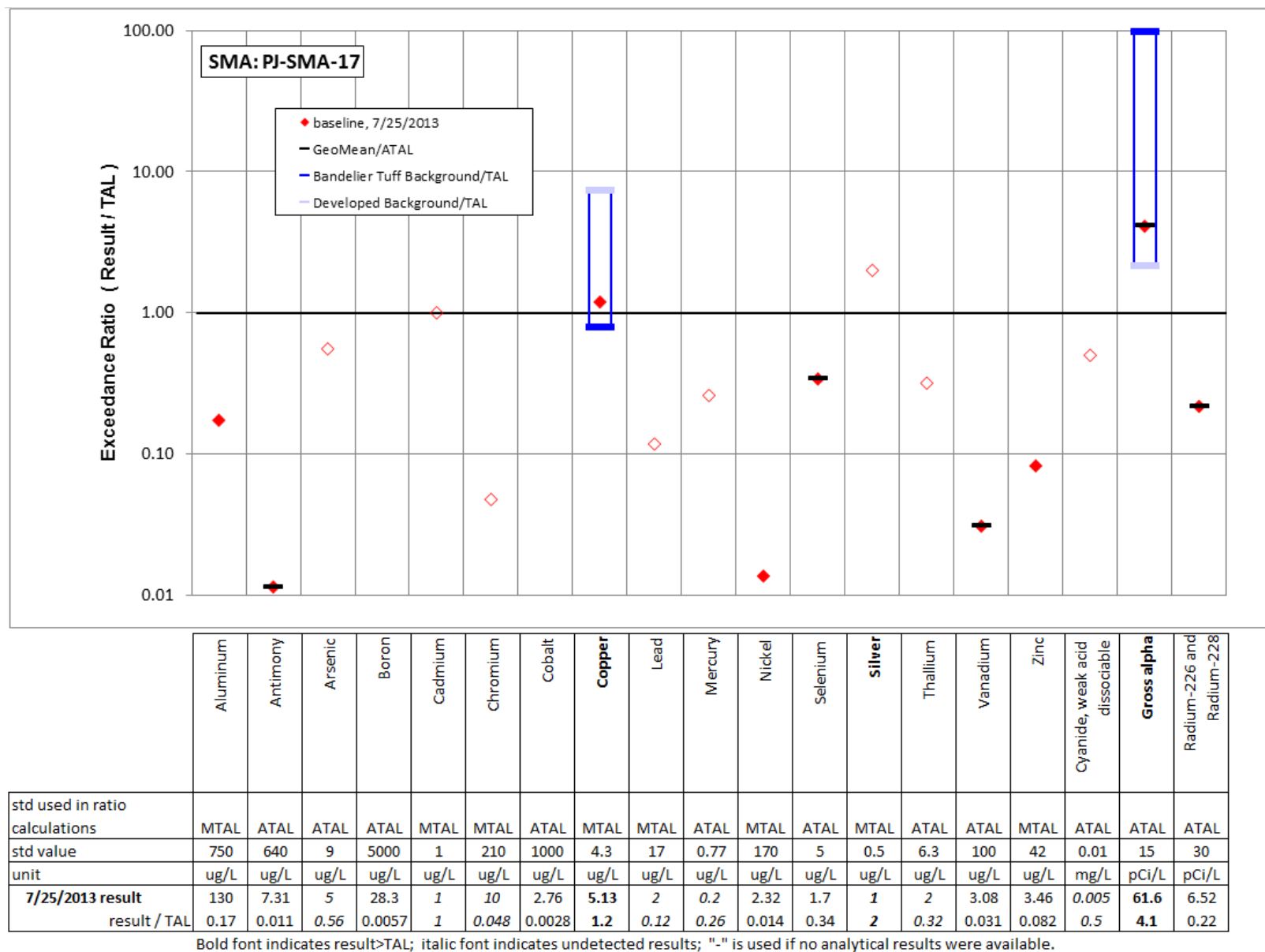


Figure 172-2 Inorganic analytical results summary plot for PJ-SMA-17

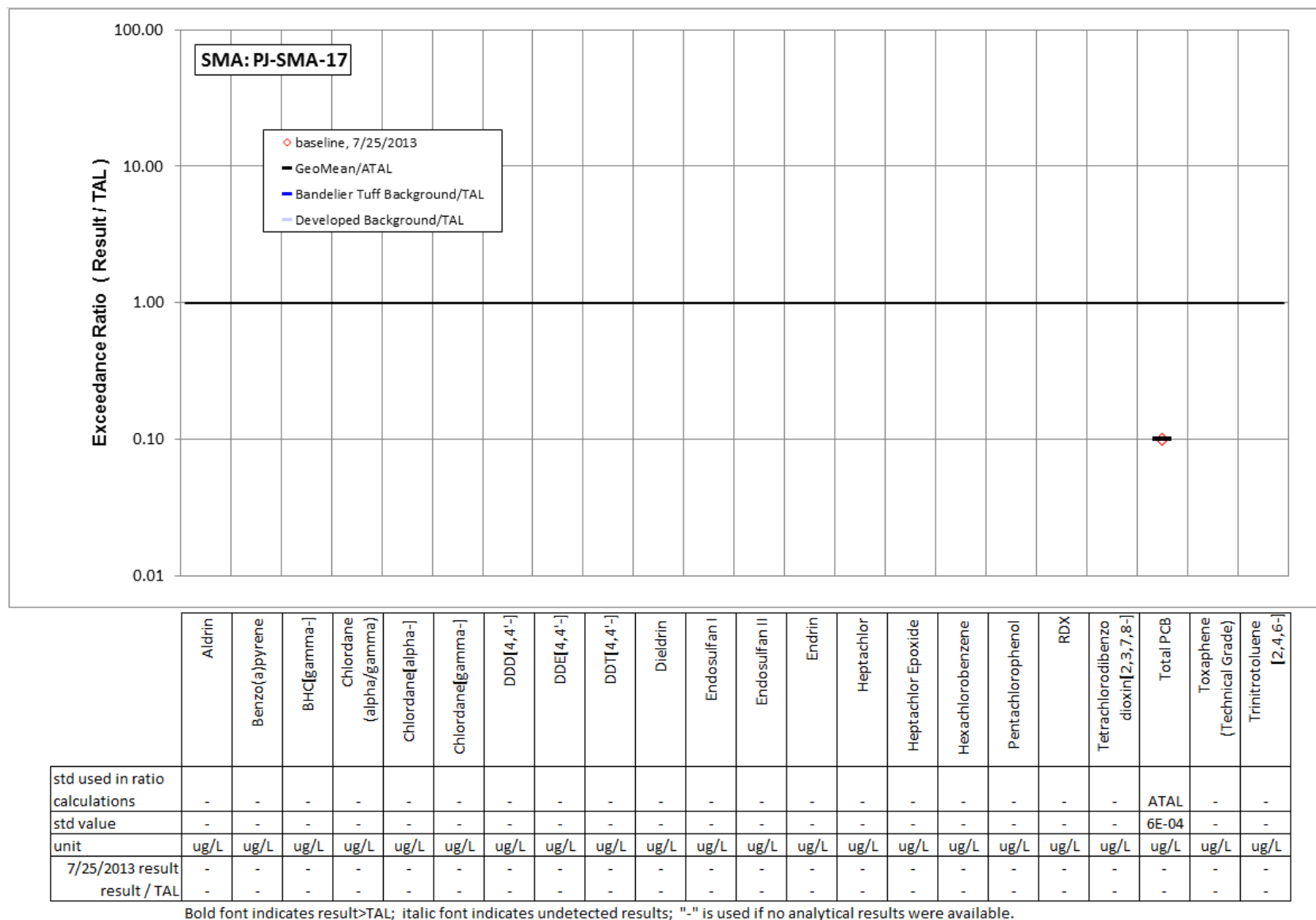


Figure 172-3 Organic analytical results summary plot for PJ-SMA-17

173.0 PJ-SMA-18: SWMUs 54-014(d) and 54-017

173.1 Site Descriptions

Two historical industrial activity areas are associated with J026, PJ-SMA-18: Sites 54-014(d), and 54-017.

SWMU 54-014(d), which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of retrievable TRU waste storage trenches A, B, C, and D, located in the south-central portion of TA-54 Area G. These trenches began receiving TRU waste and MLLW in 1974. Trenches A, B, and C vary in size from 219 ft to 262.5 ft long × 13 ft wide × 6 ft to 8 ft deep. Trench D is 60 ft long × 13 ft wide × 6 ft deep. The TRU waste placed in these trenches was packaged in 30-gal. containers inside concrete casks. When filled, the trenches were backfilled with 3.3 ft of crushed tuff, followed by 4 in. of topsoil. The surface was reseeded with native grasses. The TRU wastes in these trenches will be retrieved and processed for disposal.

The two Sites within PJ-SMA-18 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to both Sites. Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

SWMU 54-017, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd³ to 56,759 yd³. When filled, the pits were covered with consolidated crushed tuff and topsoil and reseeded with native grasses. All the SWMU 54-017 pits within PJ-SMA-18 currently have a minimum of 3 ft of soil cover over the buried wastes.

The portions of the three Sites within PJ-SMA-18 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant

discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

The project map (Figure 173-1) 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>.

173.2 Control Measures

The majority of the run-on at this SMA originates on the unpaved access roads. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 173-1).

Table 173-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02601060002	Erosion Control Blanket		X	X		CB
J02602040010	Established Vegetation		X	X		B
J02604010009	Earthen Channel/Swale	X		X		B
J02604060007	Rip Rap		X	X		CB
J02605010005	Sediment Trap		X		X	CB
J02606010004	Rock Check Dam		X		X	CB
J02606010006	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

173.3 Storm Water Monitoring

SWMUs 54-014(d) and 54-017 are monitored within PJ-SMA-18. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figures 173-2 and 173-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 23.6 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 54-014(d):

- Gross alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at these Sites. Shallow RFI samples were not analyzed for gross-alpha radioactivity. Industrial materials managed at these Sites, however, consist of wastes disposed of in subsurface pits and trenches. Therefore, these industrial materials are not exposed to storm water runoff.

SWMU 54-017:

- Gross-alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA. Industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 173-2 and 173-3. 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 173-2 and 173-3.

Monitoring location PJ-SMA-18 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

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

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

173.4 Inspections and Maintenance

RG-TA-54 recorded 12 storm events at PJ-SMA-18 during the 2013 season. These rain events triggered 6 post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 173-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30804	5-16-2013
Storm Rain Event	BMP-32982	7-11-2013
Storm Rain Event	BMP-33432	7-24-2013
Storm Rain Event	BMP-34164	8-8-2013
Storm Rain Event	BMP-34782	8-22-2013
Storm Rain Event	BMP-35527	9-26-2013
Storm Rain Event	BMP-37132	11-13-2013
Annual Erosion Evaluation	COMP-36743	11-13-2013
TAL Exceedance	COMP-35298	9-18-2013

No maintenance activities were conducted at PJ-SMA-18 in 2013.

173.5 Compliance Status

The Sites associated with PJ-SMA-18 are High Priority Sites. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-18 is September 3, 2014.

Table 173-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-014(d)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-3-13
SWMU 54-017	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-3-13

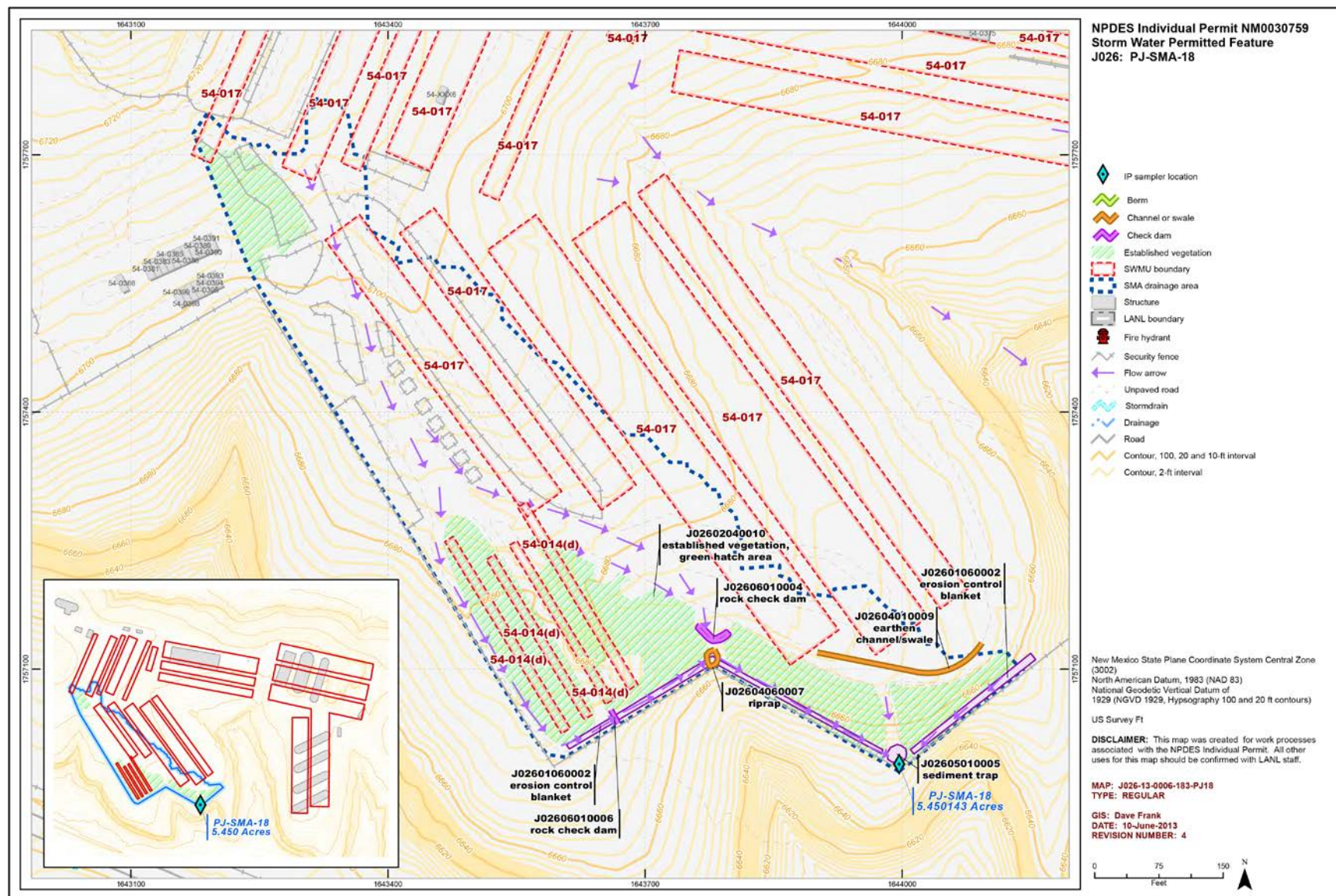


Figure 173-1 PJ-SMA-18 location map

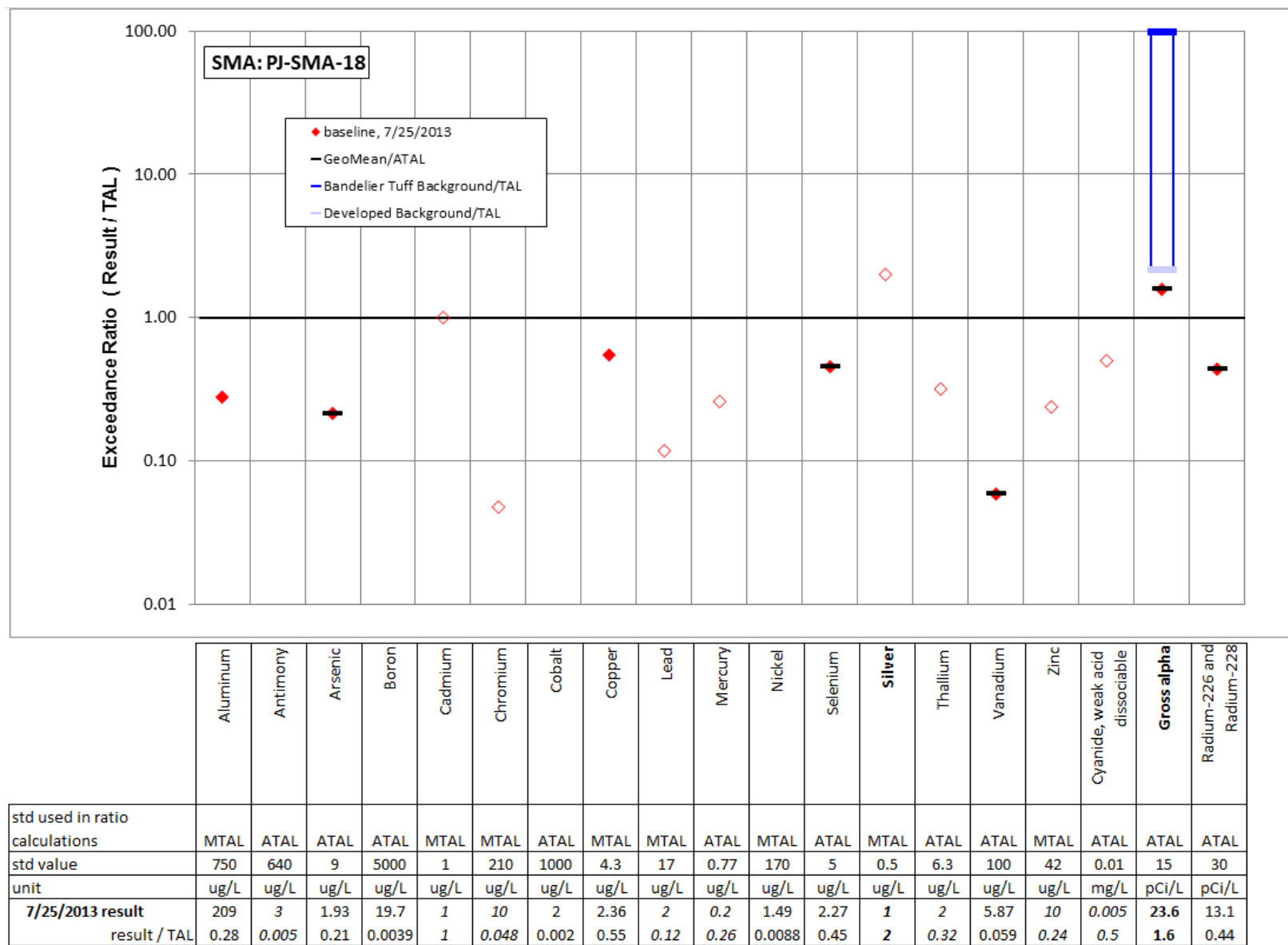


Figure 173-2 Inorganic analytical results summary plot for PJ-SMA-18

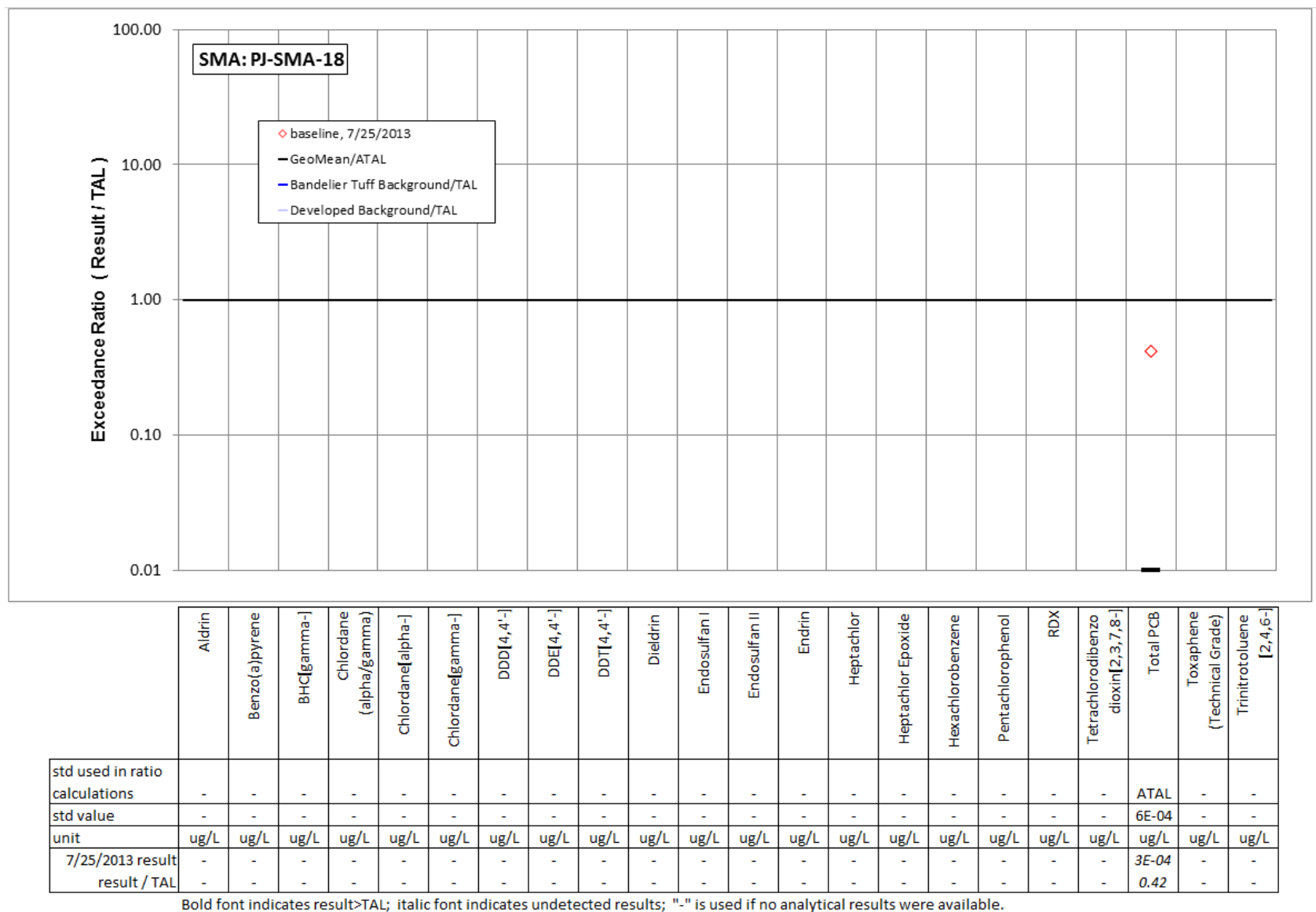


Figure 173-3 Organic analytical results summary plot for PJ-SMA-18

174.0 PJ-SMA-19: SWMUs 54-013(b), 54-017, and 54-020

174.1 Site Descriptions

Three historical industrial activity areas are associated with J025, PJ-SMA-19: Sites 54-013(b), 54-017, and 54-020.

SWMU 54-013(b), which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of a former truck monitoring/decontamination area. This Site was excavated in April 1971 specifically to be used as a decontamination (truck-washing) pit. The truck-washing and -decontamination pit was converted to Pit 19 in November 1975 when truck-washing activities ceased and the pit began receiving LLW for disposal as part of SWMU 54-017.

The portions of the three Sites within PJ-SMA-19 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in 2005, numerous RFIs were conducted at MDA G from 1993 to 2003. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined, and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A CME report was submitted to NMED under the Consent Order on September 9, 2011.

SWMU 54-017, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd³ to 56,759 yd³. When filled, the pits were covered with consolidated crushed tuff and topsoil and reseeded with native grasses. All the SWMU 54-017 pits within PJ-SMA-19 currently have a minimum of 3 ft of soil cover over the buried wastes.

The portions of the three Sites within PJ-SMA-19 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation

reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

SWMU 54-020, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of disposal shafts C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196. These shafts operated between 1970 and the early 1990s. Only shaft 124, although no longer in use, is considered active until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, and hazardous and mixed waste. The shafts range in size from 1 ft to 8 ft in diameter and 25 ft to 65 ft in depth and are located throughout the eastern portion of Area G. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

The portions of the three Sites within PJ-SMA-19 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in March 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

The project map (Figure 174-1) 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>.

174.2 Control Measures

Most of the run-on at this SMA originates in the paved areas and the structure roof drains. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 174-1).

Table 174-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02502040011	Established Vegetation		X	X		B
J02504020004	Concrete/Asphalt Channel/Swale	X		X		CB
J02504020006	Concrete/Asphalt Channel/Swale	X		X		CB
J02504060010	Rip Rap		X	X		CB
J02505020002	Sediment Basin		X		X	CB
J02506010005	Rock Check Dam		X		X	CB
J02506010008	Rock Check Dam		X		X	CB
J02506010009	Rock Check Dam		X		X	CB
J02507010001	Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

No exposure recommendation and certification are being planned for this SMA in 2014.

174.3 Storm Water Monitoring

SWMUs 54-013(b), 54-017, and 54-020 are monitored within PJ-SMA-19. Following the installation of baseline control measures, a baseline storm water sample was collected on August 8, 2013 (Figures 174-2 and 174-3). Analytical results from this sample yielded five TAL exceedances:

- Aluminum concentration of 761 µg/L (MTAL is 750 µg/L),
- Mercury concentration of 1.67 µg/L (ATAL is 0.77 µg/L),
- Gross-alpha activity of 51.2 pCi/L (ATAL is 15 pCi/L),
- Radium-226 and radium-228 activity of 43.7 pCi/L (ATAL is 30 pCi/L) and
- PCB concentration of 20 ng/L (ATAL is 0.6 ng/L).

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

SWMU 54-013(b):

Aluminum, mercury, PCBs, and gross-alpha-emitting radionuclides, including radium-226 and radium-228, are known to have been associated with industrial materials historically managed at this Site. However, industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- Aluminum was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- Mercury was detected slightly above the soil and sediment BVs in 2 of 36 shallow samples collected at MDA G with a maximum concentration 2.2 times the BVs.

- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

SWMU 54-017:

Aluminum, mercury, PCBs, and gross-alpha-emitting radionuclides, including radium-226 and radium-228, are known to have been associated with industrial materials historically managed at this Site. However, industrial materials managed at this Site consist of wastes that were disposed of in subsurface pits and shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- Aluminum was not detected above soil or sediment BVs in 140 shallow (i.e., less than 3 ft bgs) RFI samples collected at MDA G.
- Mercury was detected slightly above the soil and sediment BVs in 2 of 36 shallow samples collected at MDA G with a maximum concentration 2.2 times the BVs.
- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

SWMU 54-020:

Industrial materials managed at this Site consist of wastes that were disposed of in subsurface shafts. Therefore, these industrial materials are not exposed to any storm water runoff.

- The PCB mixture Aroclor-1260 was detected in 5 shallow RFI samples at a maximum concentration 18% of the residential SSL in soil samples.
- Shallow RFI samples were not analyzed for gross-alpha radioactivity, radium-226, or radium-228. Americium-241 and plutonium isotopes are not included in the definition of adjusted gross-alpha radioactivity because they are excluded from regulation under the CWA.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 174-2 and 174-3. 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 174-2 and 174-3.

Monitoring location PJ-SMA-19 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum and mercury are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- **Aluminum**—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2013 is between these two values.
- **Mercury**—The mercury UTLs from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on were not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to mercury BVs in storm water could be made.
- **Gross alpha**—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is greater than both of these values.
- **Radium**—The radium-226 and radium-228 activity UTLs for background storm water containing sediment derived from Bandelier Tuff is 52.7 pCi/L, and radium-226 and radium-228 background storm water UTL for storm water run-on from a developed urban landscape is 8.94 pCi/L. The 2013 radium-226 and radium-228 result is between these values.
- **PCBs**—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is between these values.

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

174.4 Inspections and Maintenance

RG-TA-54 recorded 12 storm events at PJ-SMA-19 during the 2013 season. These rain events triggered 6 post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 174-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30805	5-16-2013
Storm Rain Event	BMP-32981	7-11-2013
Storm Rain Event	BMP-33431	7-24-2013
Storm Rain Event	BMP-34163	8-8-2013
Storm Rain Event	BMP-34781	8-22-2013
Storm Rain Event	BMP-35526	9-26-2013
Storm Rain Event	BMP-37131	11-13-2013
Annual Erosion Evaluation	COMP-36744	11-13-2013
TAL Exceedance	COMP-36885	11-13-2013

No maintenance activities were conducted at PJ-SMA-19 in 2013.

174.5 Compliance Status

The Sites associated with PJ-SMA-19 are High Priority Sites. The High Priority Site deadline for the certification of corrective action is now 1 yr from the date of an observed TAL exceedance, which for PJ-SMA-19 is September 11, 2014.

Table 174-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-013(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-12-13
SWMU 54-017	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-12-13
SWMU 54-020	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 9-12-13

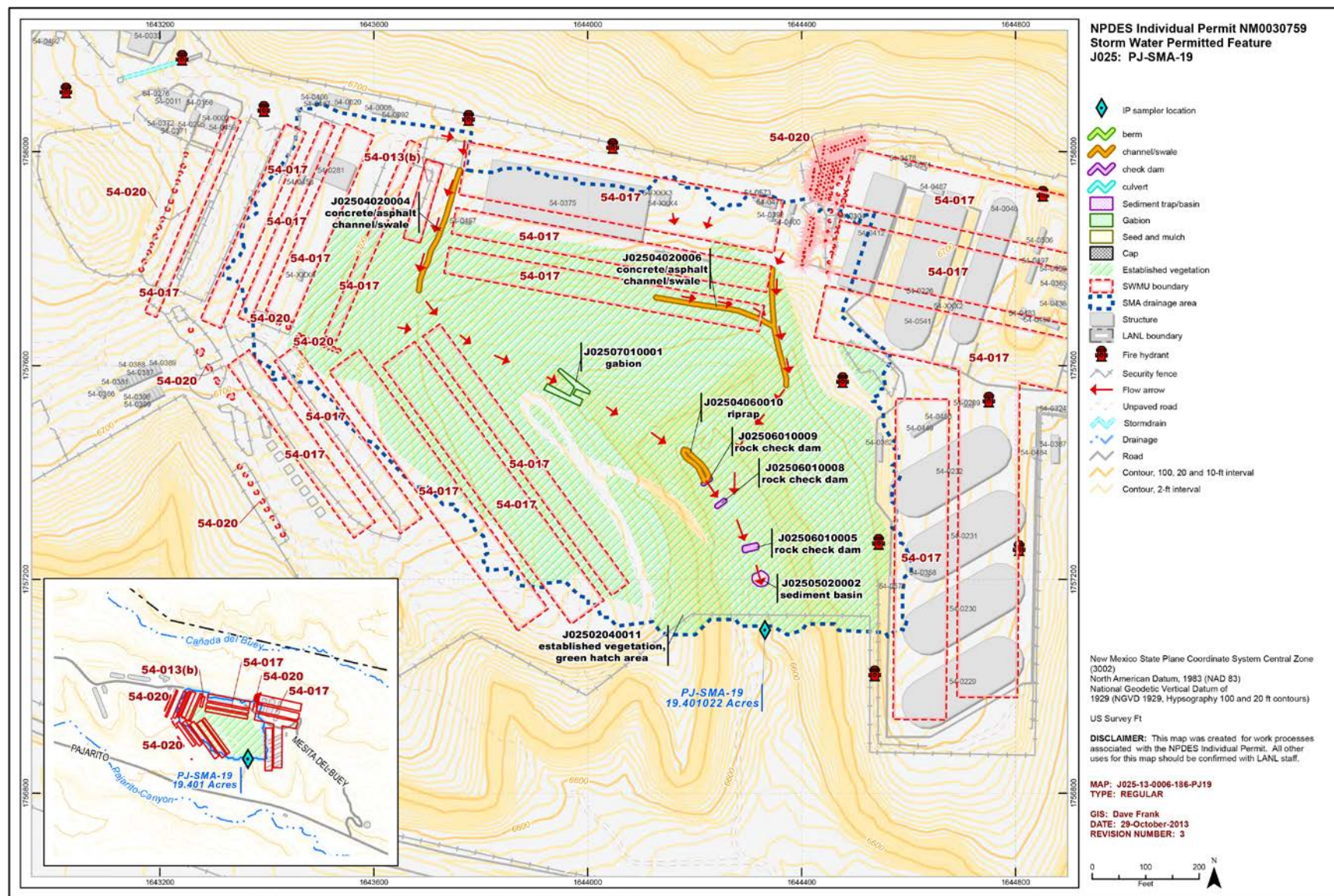


Figure 174-1 PJ-SMA-19 location map

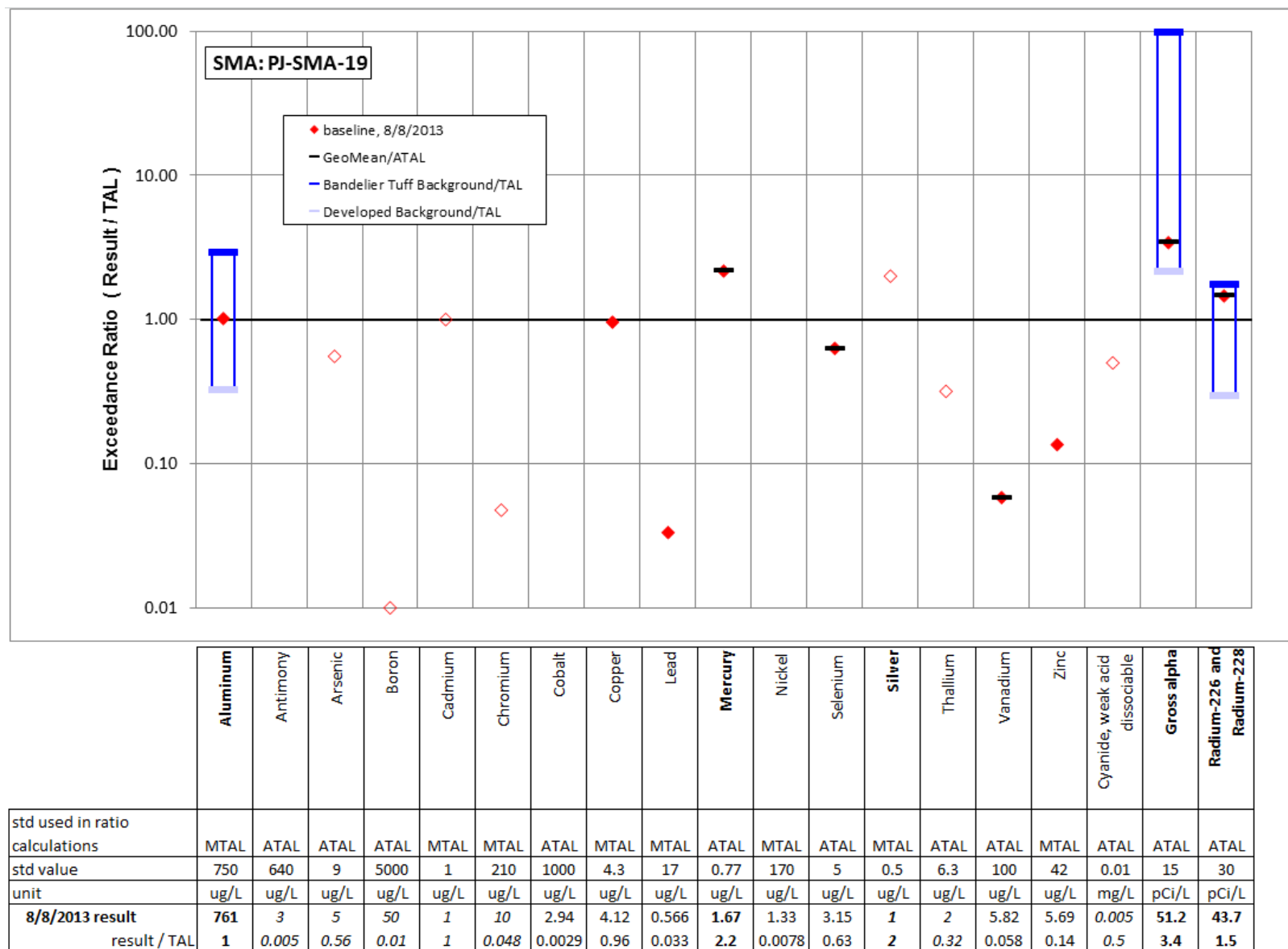


Figure 174-2 Inorganic analytical results summary plot for PJ-SMA-19

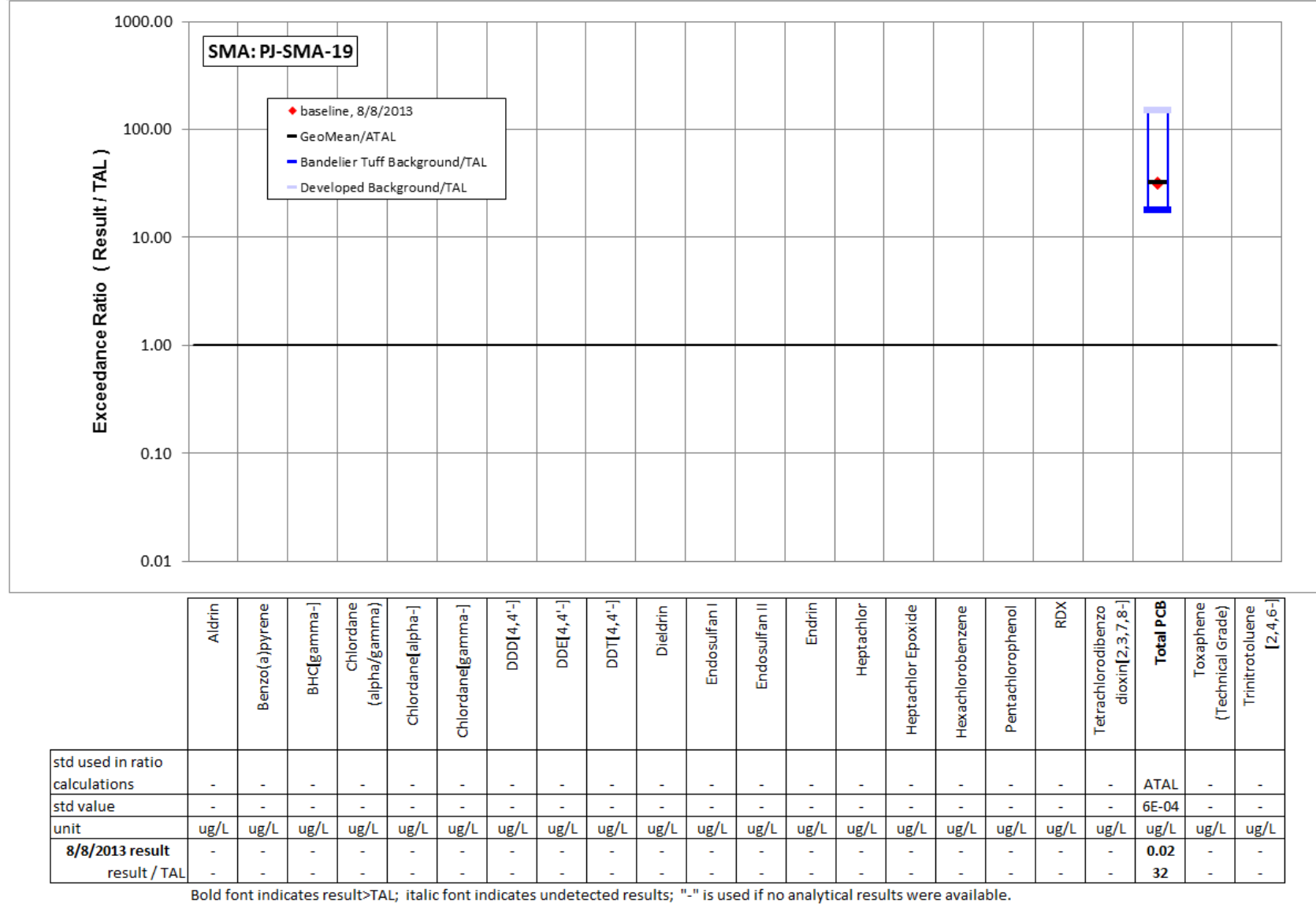


Figure 174-3 Organic analytical results summary plot for PJ-SMA-19

175.0 PJ-SMA-20: SWMU 54-017

175.1 Site Descriptions

One historical industrial activity area is associated with J027, PJ-SMA-20: Site 54-017.

SWMU 54-017, which is part of Consolidated Unit 54-013(b)-99 at MDA G, consists of inactive subsurface disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. These pits were operational between 1959 and 1980 and received radioactive, mixed, and TRU-contaminated wastes in the form of wing tanks, dry boxes, building debris, sludge drums, laboratory waste, contaminated soil, D&D waste, filter plenums, and uranium. Before 1971, waste was not segregated by disposal pit; the pits received both nonroutine and routine radioactive contaminated waste. Nonroutine contaminated waste included D&D debris from the demolition of TA-01 and Bayo Site, classified materials, TRU chips from the shops, and pieces of heavy equipment. Nonroutine contaminated waste was placed directly into the disposal pits; valves or other openings on large pieces of equipment were sealed before they were transported to TA-54 for disposal. Routine contaminated waste consisted of chemical laboratory waste packaged in cardboard boxes and 5-mil plastic bags, and 55-gal. drums of sludge from the waste treatment plants at TA-35, TA-45, and TA-50. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 yd³ to 56,759 yd³. When filled, the pits were covered with consolidated crushed tuff and topsoil and reseeded with native grasses. All the SWMU 54-017 pits within PJ-SMA-20 currently have a minimum of 3 ft of soil cover over the buried wastes and have been covered with asphalt.

The portions of the three Sites within PJ-SMA-20 are part of Consolidated Unit 54-013(b)-99 at MDA G and were investigated as a single Site. The same surface sampling data set applies to all three Sites. Before the Consent Order went into effect in 2005, numerous RFIs were conducted from 1993 to 2003 at MDA G. Most of the investigations at MDA G have been directed toward characterizing potential subsurface releases of contaminants from the waste inventory in the subsurface pits and shafts. These wastes and releases are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters. Potential surface contamination at the Site(s) that could be exposed to storm water was also characterized. Based on the sampling results presented in the investigation reports for MDA G, the lateral and vertical extent of detected chemicals and radionuclides are defined and the Site(s) poses no potential unacceptable risk/dose to human health based on current (i.e., industrial) land use. A revised CME report was submitted to NMED under the Consent Order on September 9, 2011.

The project map (Figure 175-1) 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>.

175.2 Control Measures

The primary source of run-on at this SMA results from flow from the roofs and the paved areas within the Project Area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 175-1).

Table 175-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02702040007	Established Vegetation		X	X		B
J02703090001	Curbing		X		X	CB
J02704060006	Rip Rap		X	X		CB
J02708030005	Concrete/Asphalt Cap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

175.3 Storm Water Monitoring

SWMU 54-017 is monitored within PJ-SMA-20. Following the installation of baseline control measures, a baseline storm water sample was collected on July 29, 2011 (Figures 175-2 and 175-3). On October 25, 2013, a document certifying the no exposure condition of SWMU 54-017 was completed and submitted to EPA. This Site is now certified as corrective action complete, and monitoring of storm water discharges has ceased at PJ-SMA-20. No further sampling is required for PJ-SMA-20 for the remainder of the IP.

175.4 Inspections and Maintenance

RG-TA-54 recorded 12 storm events at PJ-SMA-20 during the 2013 season. These rain events triggered 6 post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 175-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30807	5-16-2013
Storm Rain Event	BMP-32983	7-11-2013
Storm Rain Event	BMP-33433	7-24-2013
Storm Rain Event	BMP-34165	8-8-2013
Storm Rain Event	BMP-34783	8-22-2013
Storm Rain Event	BMP-35528	9-26-2013
Storm Rain Event	BMP-37133	11-13-2013
Annual Erosion Evaluation	COMP-36746	11-13-2013

No maintenance activities were conducted at PJ-SMA-20 in 2013.

175.5 Compliance Status

The Sites associated with PJ-SMA-20 are High Priority Sites. Corrective action at this SMA was certified within 3 yr of the effective date of the IP (i.e., November 2013).

Table 175-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 54-017	Corrective Action Initiated	Corrective Action Complete	LANL, October 25, 2013, "Submittal of Completion of Corrective Action For PJ-SMA-20, Site 54-017"

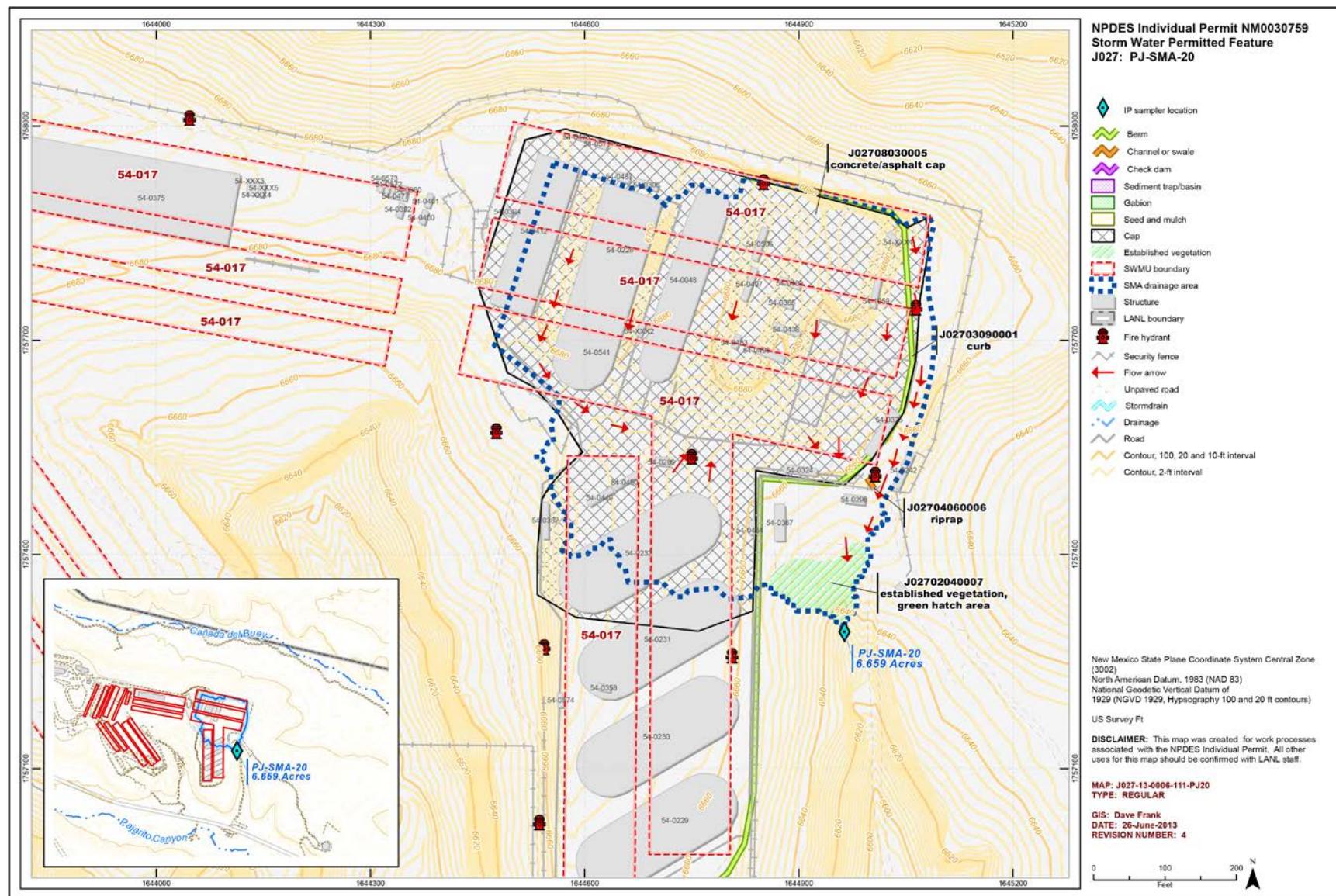


Figure 175-1 PJ-SMA-20 location map

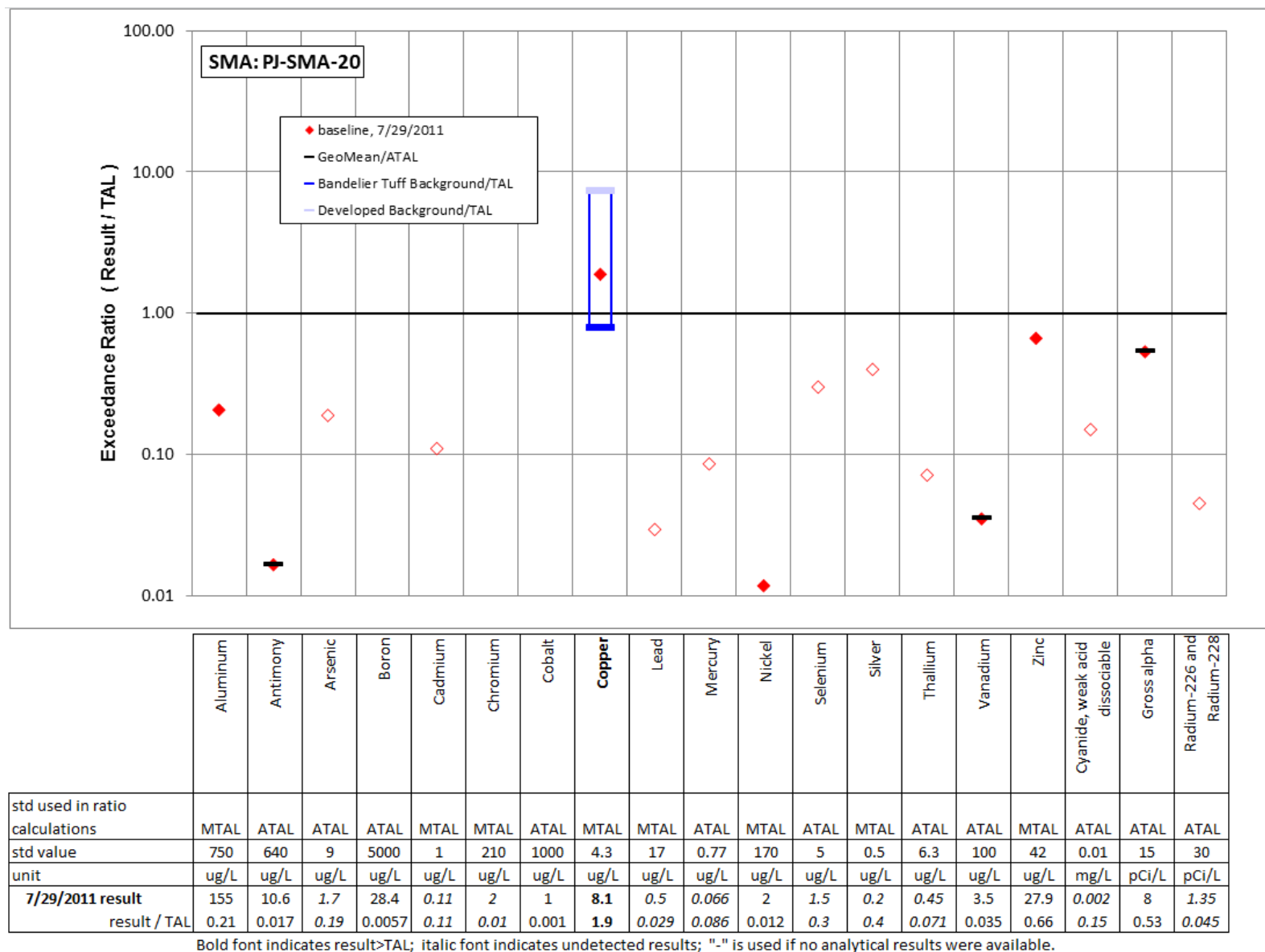


Figure 175-2 Inorganic analytical results summary plot for PJ-SMA-20

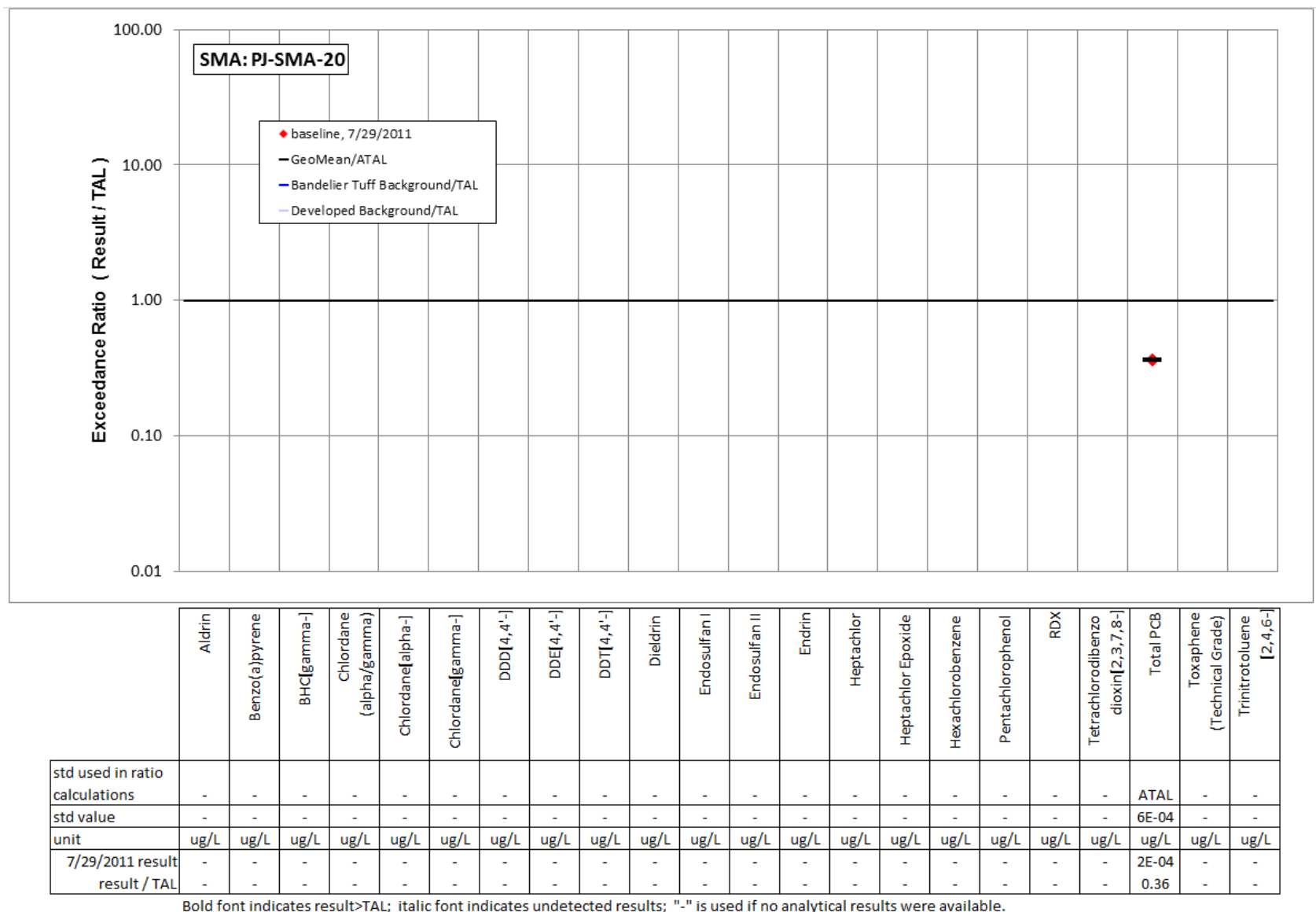


Figure 175-3 Organic analytical results summary plot for PJ-SMA-20

176.0 STRM-SMA-1.05: AOC 08-009(f)

176.1 Site Descriptions

One historical industrial activity area is associated with J028, STRM-SMA-1.05: Site 08-009(f).

AOC 08-009(f) consists of an inactive outfall located approximately 40 ft southeast of building 08-22 (the x-ray building). Fluorescent penetrants (mixtures of dyes and surfactants) were used in building 08-22 to detect cracks in parts being prepared for installation into a weapons assembly; copper was not a component in the fluorescent penetrants. Historically, fluorescent penetrants, developers, and emulsifiers were discharged to the outfall through drains and drainlines located within building 08-22. The valves to the sinks that discharged to the drains were disconnected in 1992, and the drains were rerouted to the building 08-22 sanitary sewer system. After 1992, secondary containers were used to collect the chemicals for disposal.

The project map (Figure 176-1) 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>.

176.2 Control Measures

Run-on from the paved access road is directed to the culvert inlet located next to the former outfall via the roadside conveyance located along the southern SMA boundary and the conveyance located west of building 08-0022. Roof run-on terminates at a ponding area in the vegetated area just west of building 08-0022 and does not impact the AOC. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 176-1).

Enhanced controls were installed and certified on June 4, 2013, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

Table 176-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02802040009	Established Vegetation		X	X		B
J02804060006	Rip Rap		X	X		CB
J02806010004	Rock Check Dam	X			X	CB
J02806010005	Rock Check Dam	X			X	CB
J02806010007	Rock Check Dam	X			X	B
J02808030008	Concrete/Asphalt Cap					EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

176.3 Storm Water Monitoring

AOC 08-009(f) is monitored within STRM-SMA-1.05. Following the installation of baseline control measures, two baseline storm water samples were collected on August 5, 2011, and August 26, 2011 (Figure 176-2). Analytical results from these samples yielded one TAL exceedance:

- Copper concentrations of 5.7 µg/L and 6.9 µg/L (MTAL is 4.3 µg/L).

Following the installation of enhanced control measures at STRM-SMA-1.05, corrective action storm water samples were collected on July 12, 2013, and August 1, 2013 (Figure 176-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Copper concentrations of 9.92 µg/L and 10.8 µg/L (MTAL is 4.3 µg/L).

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

AOC 08-009(f):

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was not detected above the soil BV in shallow (i.e., less than 3 ft bgs) RFI soil samples. The RFI data are screening level only.

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 176-2. 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 176-2.



STRM-SMA-1.05, Rock Check Dam, J02806010005 (photo ID 30475-4)

Monitoring location STRM-SMA-1.05 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 and 2013 are between these values.

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

176.4 Inspections and Maintenance

RG240 recorded six storm events at STRM-SMA-1.05 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 176-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Enhanced Control Measure Verifications	BMP-30475	4-2-2013
Annual Erosion Evaluation	COMP-30839	4-2-2013
Storm Rain Event	BMP-33640	5-8-2013
Storm Rain Event	BMP-34505	7-23-2013
Storm Rain Event	BMP-34972	8-15-2013
Storm Rain Event	BMP-35210	9-11-2013
Storm Rain Event	BMP-35770	9-25-2013
Annual Erosion Evaluation	COMP-36778	11-6-2013
TAL Exceedance	COMP-35302	9-5-2013

Table 176-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36950	Modify rip rap -0006 by adding angular rock to existing area of rip rap and extending the east end approx. 4 ft.	12-6-2013	72 day(s)	Maintenance conducted as soon as practicable.

176.5 Compliance Status

The Site associated with STRM-SMA-1.05 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 176-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 08-009(f)	Corrective Action Initiated	Corrective Action Initiated after 2 nd TAL exceedance	2 nd initiation on 9-10-13

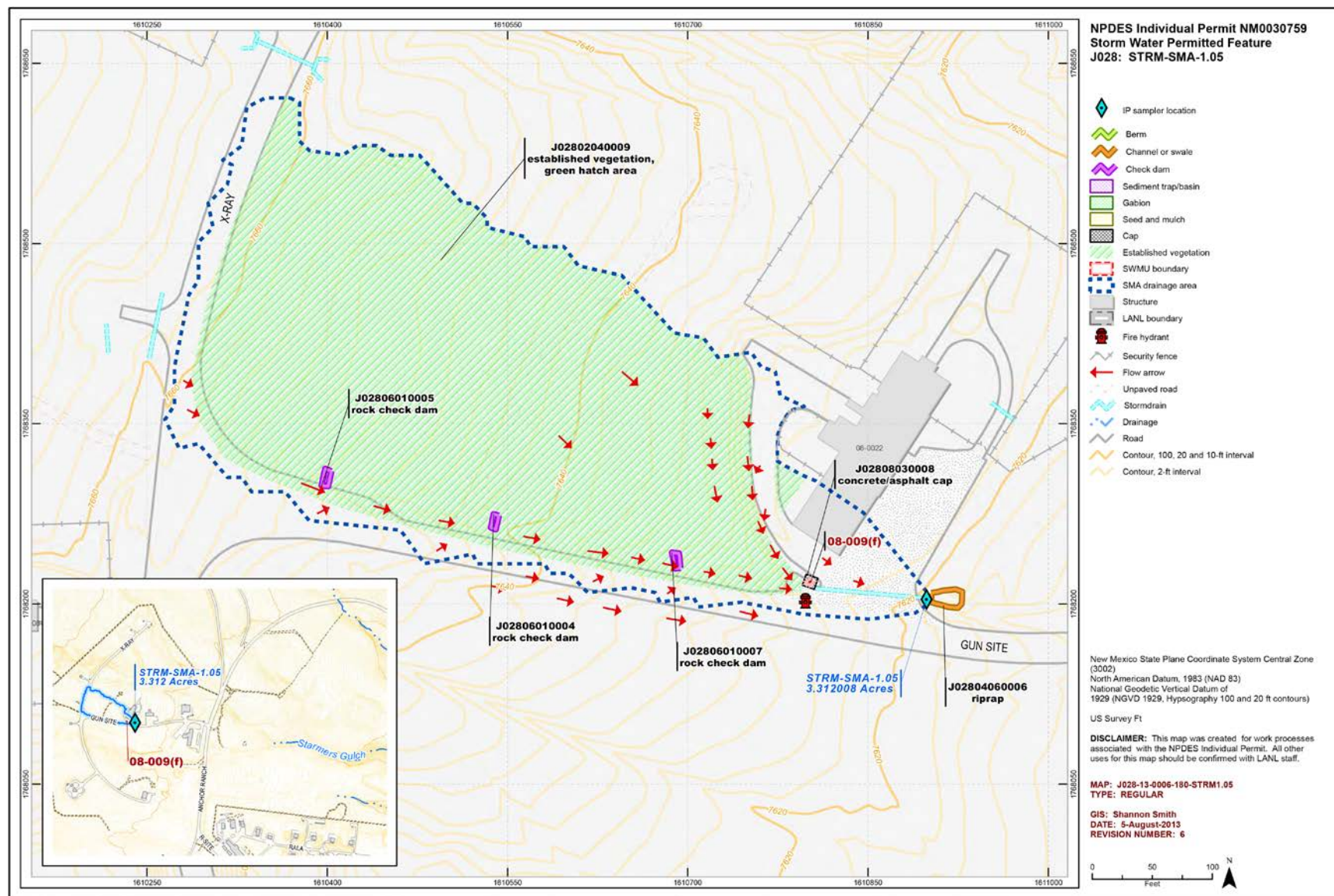
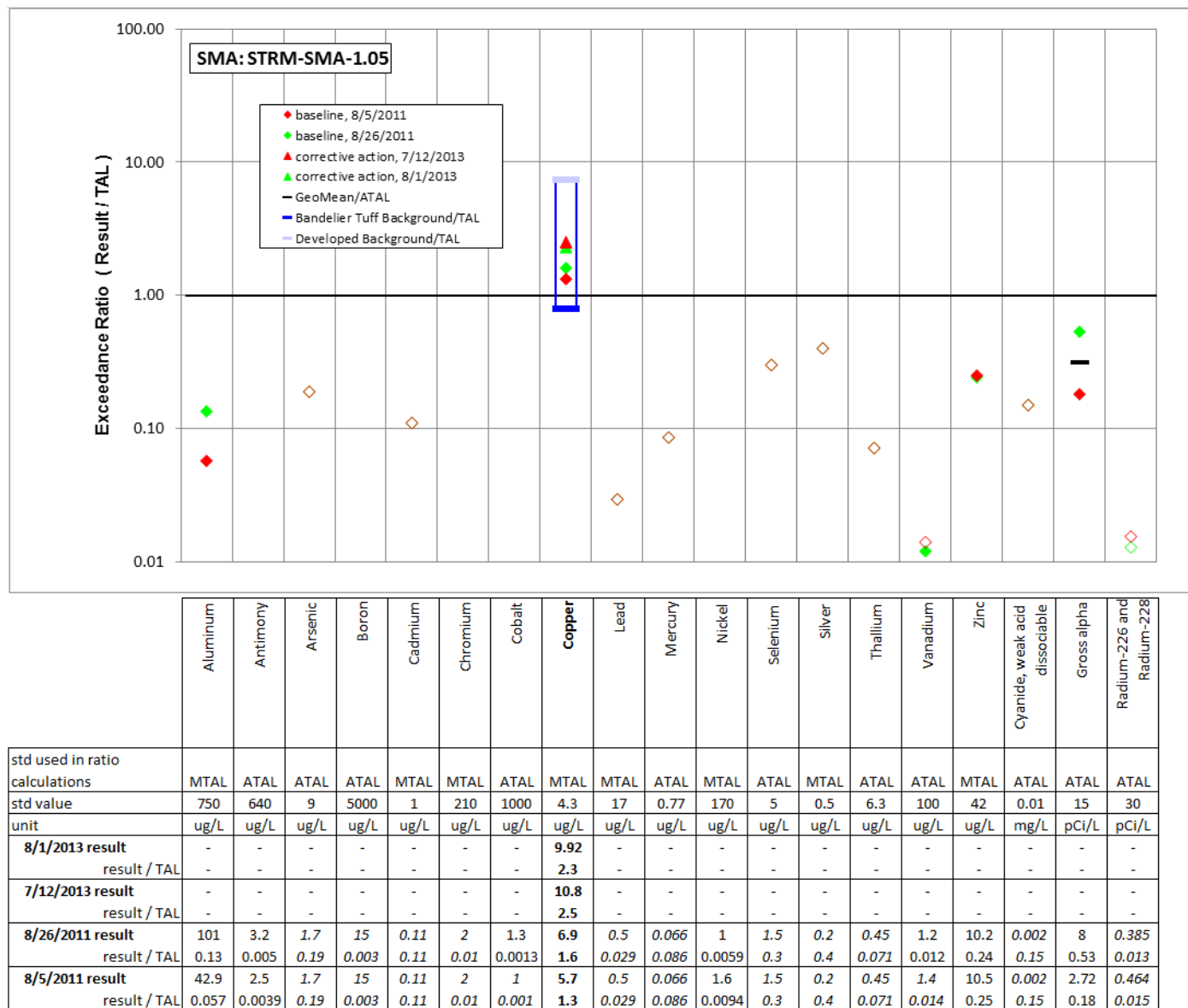


Figure 176-1 STRM-SMA-1.05 location map



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

Figure 176-2 Inorganic analytical results summary plot for STRM-SMA-1.05

177.0 STRM-SMA-1.5: SWMU 08-009(d)

177.1 Site Descriptions

One historical industrial activity area is associated with J029, STRM-SMA-1.5: Site 08-009(d).

SWMU 08-009(d) consists of the drains located in the photoprocessing and x-ray rooms of building 08-22 (x-ray building) at TA-08. Building 08-22 was constructed in 1950 and housed x-ray machines used to radiograph various items. The SWMU 08-009(d) drains were dedicated to receiving photoprocessing and photo development solutions containing silver salts, chromium, pentachlorophenol, and other chemicals used during the radiography process. Before they were plugged, the drains discharged effluent to a formerly NPDES-permitted outfall (EPA 06A074), located approximately 300 ft northeast of building 08-22. The outfall drained into Starmer Gulch, a tributary of Pajarito Canyon. The drains were plugged between 1995 and 1997. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order investigations have not been performed at SWMU 08-009(d), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994.

The project map (Figure 177-1) 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>.

177.2 Control Measures

The primary source of run-on to this SMA is a culvert system associated with the paved access road bisecting the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 177-1).

Enhanced controls were installed and certified on July 9, 2013, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>

Table 177-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J02902040018	Established Vegetation		X	X		B
J02903010009	Earthen Berm	X			X	B
J02903010010	Earthen Berm	X			X	B
J02903010011	Earthen Berm	X			X	B
J02903010013	Earthen Berm	X			X	EC
J02903010014	Earthen Berm		X		X	EC
J02903120015	Rock Berm		X		X	EC
J02904060016	Rip Rap		X	X		EC
J02908030017	Concrete/Asphalt Cap		X	X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

177.3 Storm Water Monitoring

SWMU 08-009(d) is monitored within STRM-SMA-1.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 11, 2012 (Figures 177-2 and 177-3). Analytical results from this sample yielded six TAL exceedances:

- Cadmium concentration of 1.26 µg/L (MTAL is 1 µg/L),
- Mercury concentration of 1.17 µg/L (ATAL is 0.77 µg/L),
- Silver concentration of 0.58 µg/L (MTAL is 0.5 µg/L),
- Cyanide concentration of 0.02 mg/L (ATAL is 0.01 mg/L),
- Gross-alpha activity of 1270 pCi/L (ATAL is 15 pCi/L), and
- Radium-226 and radium-228 activity of 38.5 pCi/L (ATAL is 30 pCi/L).

Following the installation of enhanced control measures at STRM-SMA-1.5, a corrective action storm water sample was collected on September 13, 2013 (Figures 177-2 and 177-3). Analytical results from this corrective action monitoring sample yielded two TAL exceedances:

- Silver concentration of 4.02 µg/L (MTAL is 0.5 µg/L), and
- Gross-alpha activity of 16.1 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in cadmium, mercury, and cyanide concentrations and radium-266 and radium-228 activity detected in storm water samples collected at STRM-SMA-1.5.

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 08-009(d):

- Cadmium is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for cadmium. Cadmium was detected above BV in 1 of 2 shallow soil samples but was not detected above the maximum soil background concentration. Data from the 1994 RFI are screening-level data.
- Mercury is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for mercury. Mercury was detected above BV in 1 of 2 shallow soil samples at a maximum concentration 1.9 times the maximum soil background concentration. Data from the 1994 RFI are screening-level data.
- Silver is known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were analyzed for silver. Silver was detected above BV in 4 of 4 shallow soil samples at a maximum concentration 177 times the soil BV. Data from the 1994 RFI are screening-level data.
- Cyanide is not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for cyanide because cyanide was not identified as a COPC.

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides were not identified as COPCs.
- Radium isotopes are not known to be associated with industrial materials historically managed at the Site. Shallow soil samples collected downgradient of the Site outfall during the 1994 RFI were not analyzed for radium-226 and radium-228 because radium was not identified as a COPC.

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 177-2 and 177-3. 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 177-2 and 177-3.

Monitoring location STRM-SMA-1.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Cadmium—The cadmium UTL from developed urban landscape storm water run-on is 0.36 µg/L; the cadmium background storm water UTL from locations containing sediment derived from Bandelier Tuff was not calculated because an insufficient number of detected values was available to permit calculation of the UTL value in the baseline metals background study. The cadmium result from 2012 is greater than the developed urban landscape storm water UTL value.
- Radium—The radium-226 and radium-228 activity UTLs for background storm water containing sediment derived from Bandelier Tuff is 52.7 pCi/L, and radium-226 and radium-228 background storm water UTL for storm water run-on from a developed urban landscape is 8.94 pCi/L. The 2012 radium-226 and radium-228 result is between these values.
- Gross alpha—The gross-alpha background storm water UTL from locations containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed urban landscape is 32.5 pCi/L. The 2012 gross-alpha result is between these two values, while the 2013 result is below both of them.
- Mercury—The mercury UTLs from developed urban landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water mercury UTLs could not be made.
- Silver—The silver UTLs from developed urban landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water silver UTLs could not be made.

- Cyanide—The weak acid dissociable cyanide UTLs from developed urban landscape storm water run-on and from locations containing sediment derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison to background storm water weak acid dissociable cyanide UTLs could not be made.

All the analytical results for these samples are reported in the 2012 and 2013 Annual Reports.

The monitoring station for STRM-SMA-1.5 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

177.4 Inspections and Maintenance

RG240 recorded six storm events at STRM-SMA-1.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 177-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-31212	3-25-2013
Construction	COMP-31379	4-1-2013
Construction	COMP-31458	4-8-2013
Construction	COMP-31426	4-15-2013
Annual Erosion Evaluation	COMP-30840	4-17-2013
Enhanced Control Measure Verifications	BMP-31460	4-25-2013
Construction	COMP-31145	4-25-2013
Storm Rain Event	BMP-33641	5-8-2013
Storm Rain Event	BMP-34506	7-23-2013
Storm Rain Event	BMP-34973	8-15-2013
Storm Rain Event	BMP-35211	8-23-2013
Storm Rain Event	BMP-35771	9-11-2013
Annual Erosion Evaluation	COMP-36779	9-25-2013
TAL Exceedance	COMP-37078	11-6-2013

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

Table 177-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36596	Remove needle cast from rock berm Asset ID J02903120015	11-8-2013	58day(s)	Maintenance conducted as soon as practicable.
BMP-36597	Repair spillway on earthen berm J02903010014 by moving displaced angular rock back into place on spillway. Add additional angular rock as needed.	12-6-2013	86 day(s)	Maintenance conducted as soon as practicable.
BMP-36598	Repair spillway on earthen berm J02903010013 by moving displaced angular rock back into place on spillway. Add angular rock as needed	12-6-2013	86 day(s)	Maintenance conducted as soon as practicable.

177.5 Compliance Status

The Site associated with STRM-SMA-1.5 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 177-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 08-009(d)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, July 9, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (DP-SMA-0.3, LA-SMA-5.91, PJ-SMA-13.7, S-SMA-2, STRM-SMA-1.5)"

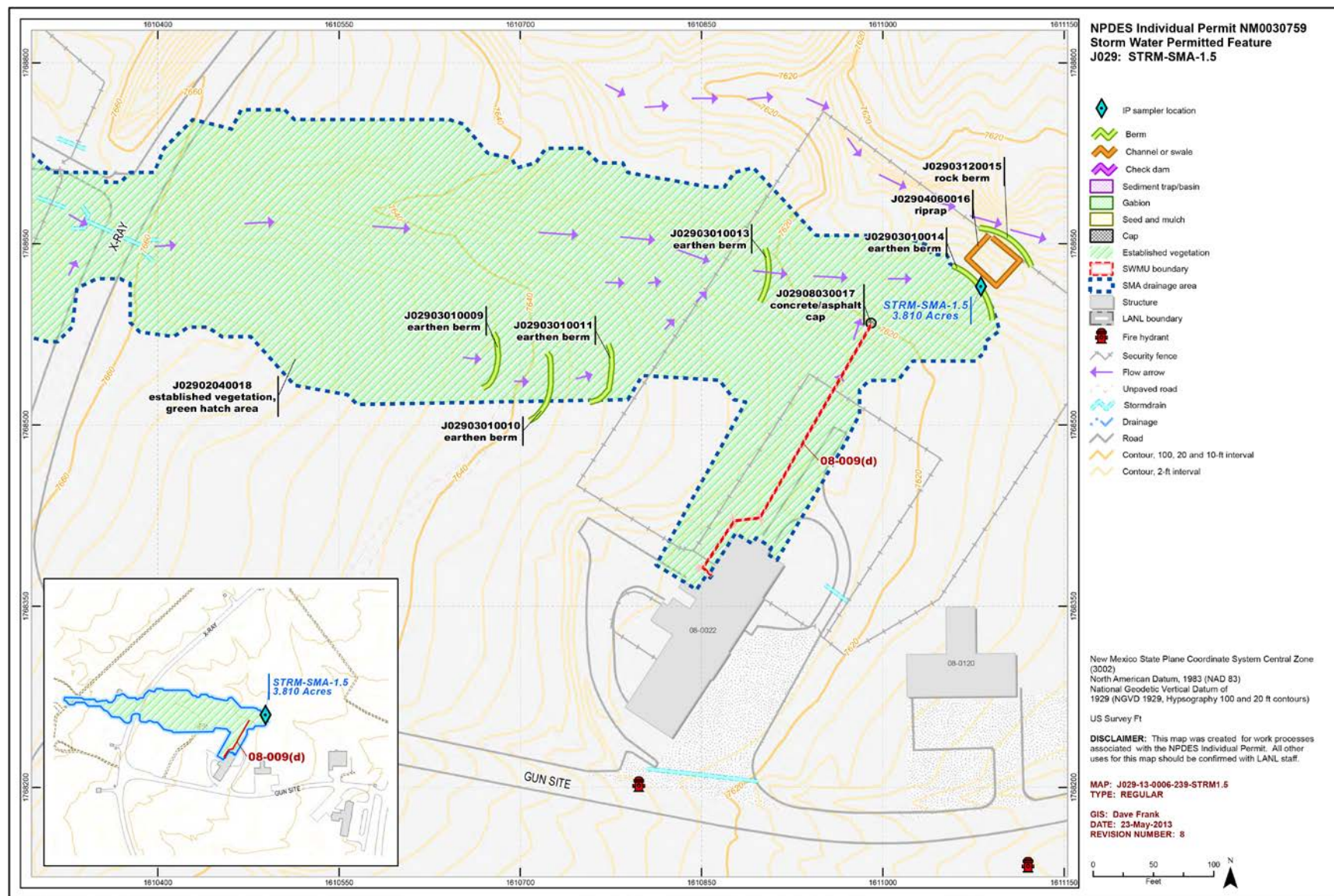


Figure 177-1 STRM-SMA-1.5 location map

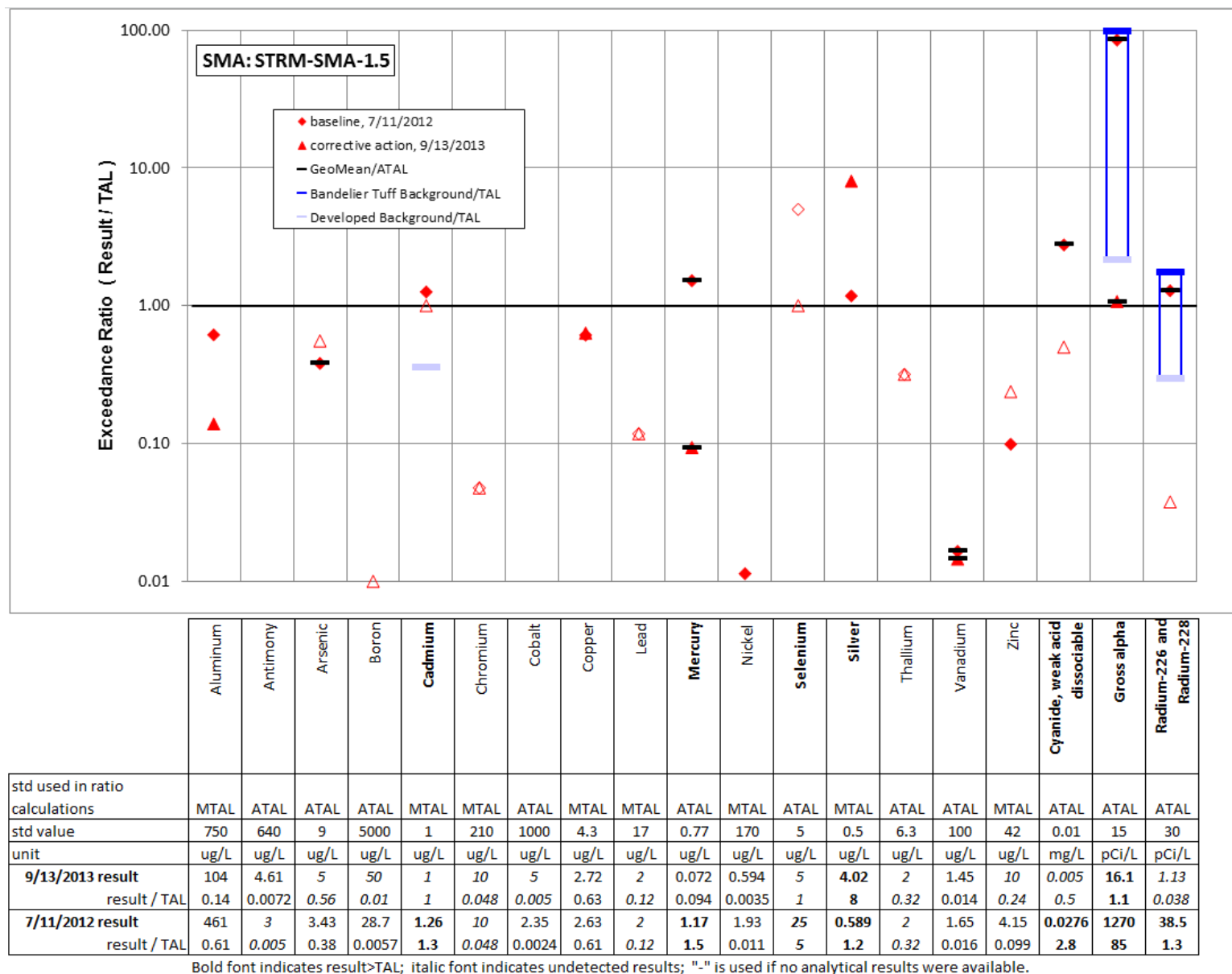


Figure 177-2 Inorganic analytical results summary plot for STRM-SMA-1.5

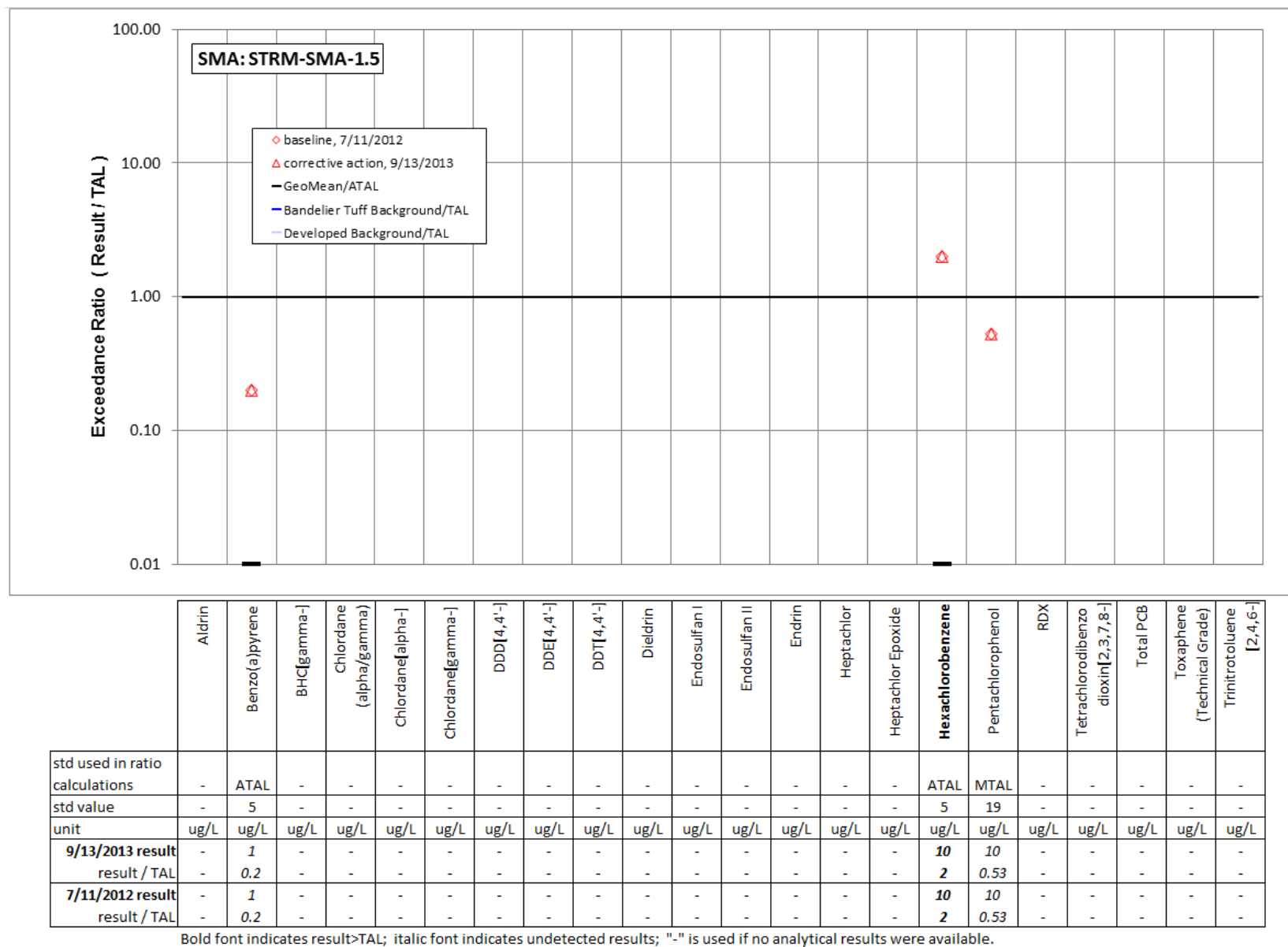


Figure 177-3 Organic analytical results summary plot for STRM-SMA-1.5

178.0 STRM-SMA-4.2: SWMU 09-008(b)

178.1 Site Descriptions

One historical industrial activity area is associated with J030, STRM-SMA-4.2: Site 09-008(b).

SWMU 09-008(b) is the decommissioned oxidation pond (structure 09-212) located next to the western boundary of TA-09, approximately 200 ft east of Anchor Ranch Road. Installed in 1969, the pond measures 15 ft wide × 65 ft long × 6 ft deep, is lined with clay covered with emulsified asphalt water proofing, and is surrounded by an 8-ft-high chainlink fence. An overflow pipe, located at the southeast corner of the pond, discharged to a drainage channel that flows into Starmer Canyon. The pond treated sanitary waste received from the SWMU 09-005(d) septic tank (structure 09-211), which received effluent from buildings 08-20, 08-21, 08-22, 08-23, and 08-24. These buildings had various uses including radiography of nuclear fuel elements, photoprocessing, photo development, and x-ray operations. A strontium-90 spill occurred in building 08-24 in 1954; it is not known if any of the strontium-90 reached the pond. The pond was decommissioned and abandoned in place in 1988.

Consent Order investigations have not been performed at SWMU 09-008(b), and no decision-level data are available for this Site. Screening-level data are available from an RFI performed in 1994.

The project map (Figure 178-1) 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>.

178.2 Control Measures

The run-on diversion channel located to the north of the SMA serves to divert run-on away from the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 178-1).

Enhanced controls were installed and certified 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 178-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J03001010005	Seed and Wood Mulch			X		EC
J03002040006	Established Vegetation		X	X		B
J03003010003	Earthen Berm		X		X	CB
J03003010004	Earthen Berm		X		X	EC
J03004010002	Earthen Channel/Swale	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

178.3 Storm Water Monitoring

SWMU 09-008(b) is monitored within STRM-SMA-4.2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011, and September 9, 2011 (Figure 178-2). Analytical results from this sample yielded one TAL exceedance:

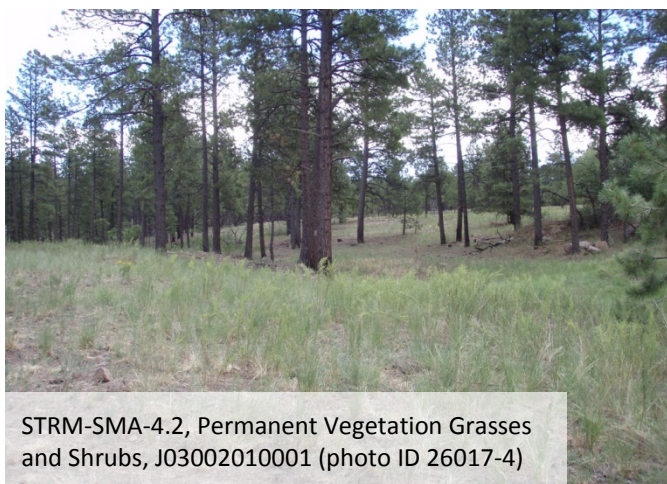
- Aluminum concentration of 2330 µg/L (MTAL is 750 µg/L), and

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 09-008(b):

- Aluminum is not known to be associated with industrial materials historically managed at the Site. Shallow sediment samples collected within the pond and in the drainage below the outfall during the 1994 RFI were not analyzed for metals.

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 178-2. 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 178-2.



STRM-SMA-4.2, Permanent Vegetation Grasses and Shrubs, J03002010001 (photo ID 26017-4)

STRM-SMA-4.2 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 undisturbed background locations on Bandelier Tuff were compared with aluminum MTAL exceedances. Aluminum is associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for storm water containing sediment derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is greater than this value.

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

178.4 Inspections and Maintenance

RG240 recorded six storm events at STRM-SMA-4.2 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 178-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30841	4-23-2013
Storm Rain Event	BMP-33642	7-23-2013
Storm Rain Event	BMP-34507	8-15-2013
Storm Rain Event	BMP-34974	8-23-2013
Storm Rain Event	BMP-35212	9-17-2013
Annual Erosion Evaluation	COMP-36780	10-30-2013

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

Table 178-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34962	Repair seed and mulch J03001010005 by applying more seed and mulch to bare areas.	8-21-2013	6 day(s)	Maintenance conducted in timely manner.

178.5 Compliance Status

The Site associated with STRM-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 178-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-008(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-17-2012

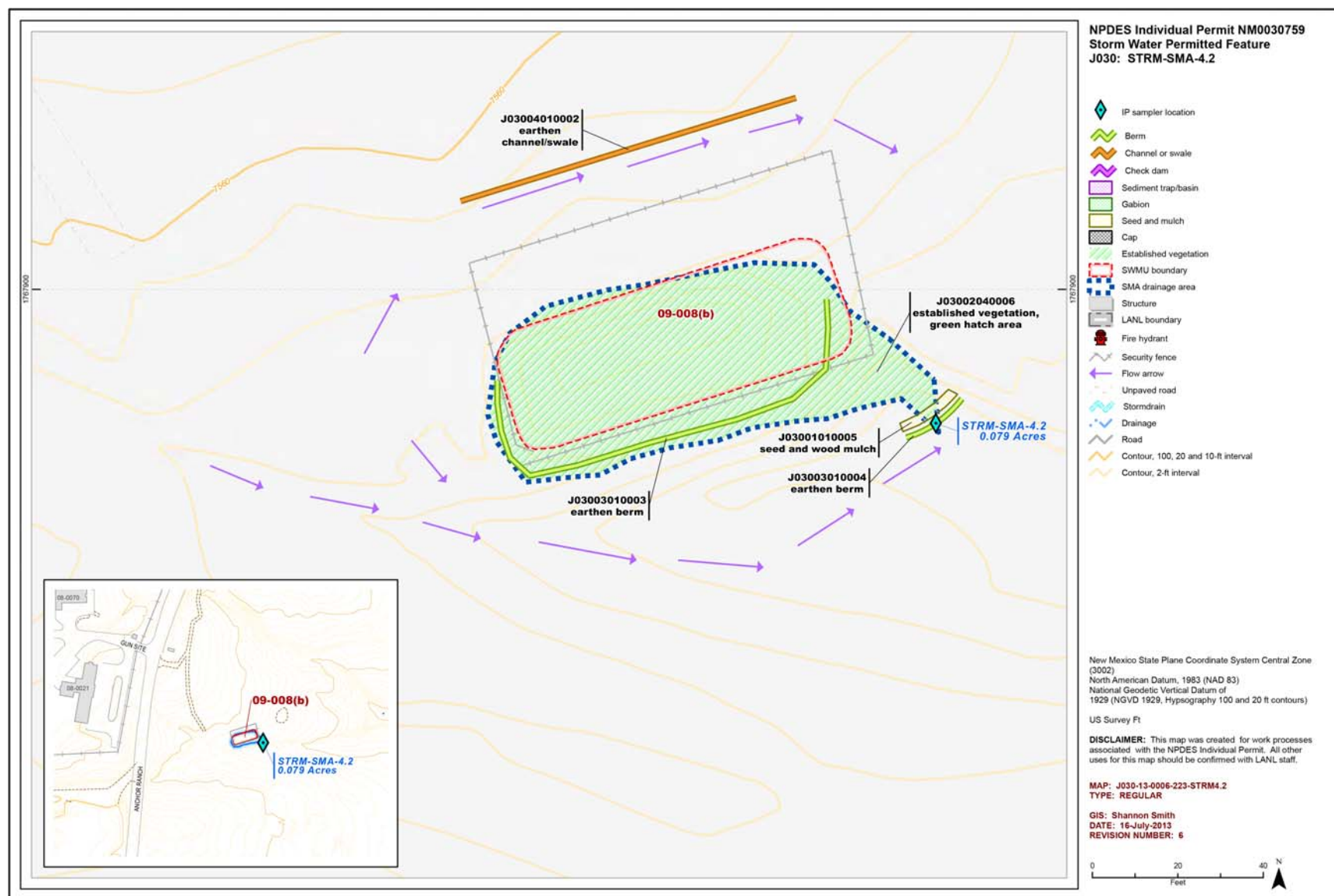


Figure 178-1 STRM-SMA-4.2 location map

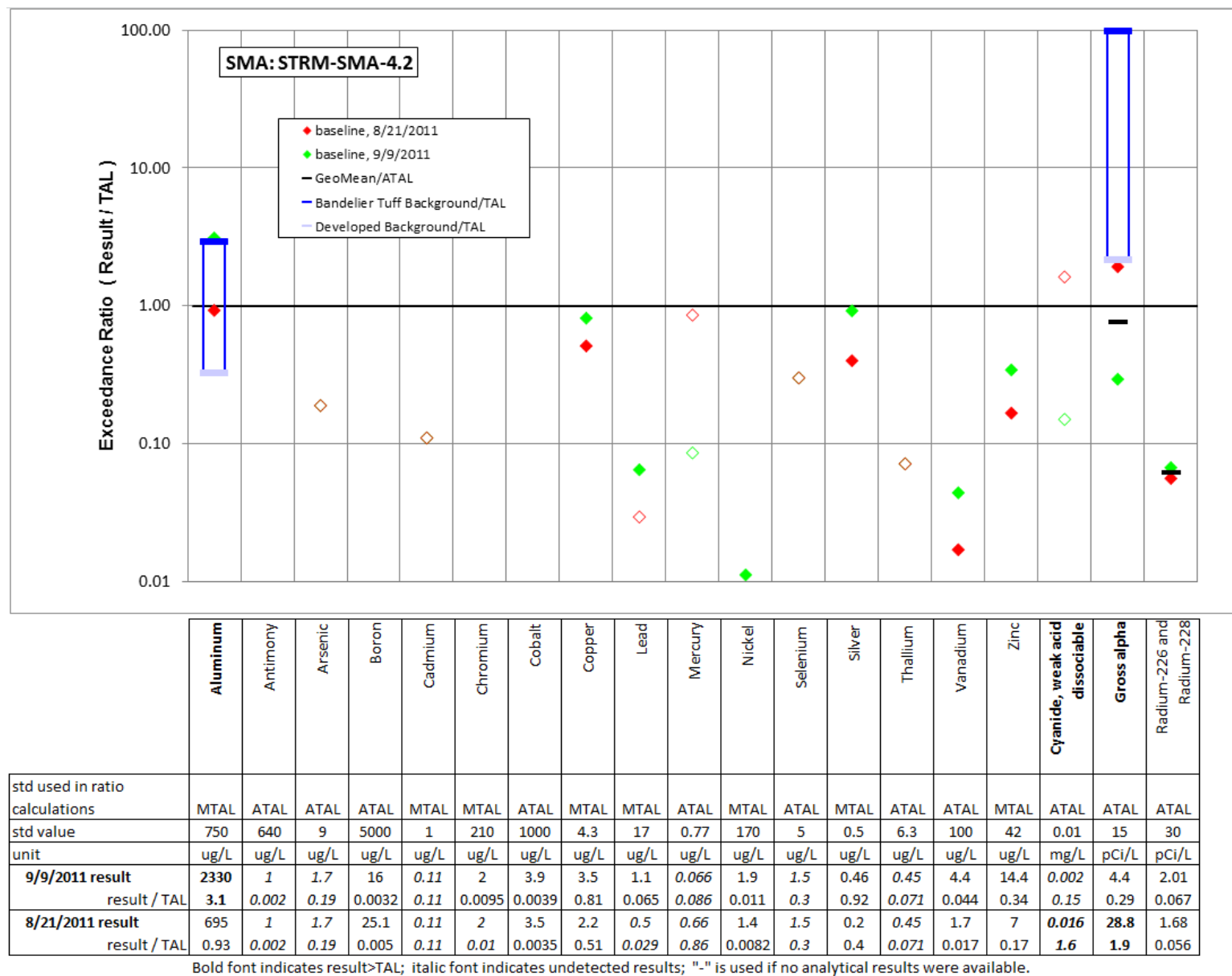


Figure 178-2 Inorganic analytical results summary plot for STRM-SMA-4.2

179.0 STRM-SMA-5.05: SWMU 09-013

179.1 Site Descriptions

One historical industrial activity area is associated with J031, STRM-SMA-5.05: Site 09-013.

SWMU 09-013 is MDA M, which consists of two surface disposal areas at TA-09, a main area and a smaller satellite area. The main area occupies about 3.2 acres and is located approximately 1600 ft southwest of building 22-120. The 150-ft-wide × 260-ft-long satellite area is located approximately 750 ft northwest of the main area. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA 08 and TA 09 facilities (1949–1965) and other sites (1960–1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earth berm that eroded through by surface-water runoff. MDA M has been inactive since 1965. All debris and contaminated soil were removed from MDA M during an expedited cleanup conducted in 1995–1996.

A Consent Order investigation has not been performed at SWMU 09-013, and no decision-level soil sampling data are available for this Site. Sampling was performed at the Site during a 1994 RFI and the 1995–1996 expedited cleanup.

The project map (Figure 179-1) 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>.

179.2 Control Measures

Potential run-on to the SMA is sheet flow and run-on generated by the unpaved access road. These run-on contributions are minimal and run-on is managed effectively by the existing controls. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 179-1).

Enhanced controls were installed and certified 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 179-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
J03102040013	Established Vegetation		X	X		B
J03103010009	Earthen Berm	X			X	EC
J03103010010	Earthen Berm		X		X	EC
J03103010012	Earthen Berm	X			X	B
J03103020004	Base Course Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

179.3 Storm Water Monitoring

SWMU 09-013 is monitored within STRM-SMA-5.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figures 179-2 and 179-3). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 1170 µg/L (MTAL is 750 µg/L),
- Gross-alpha activity of 24.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 7 ng/L (ATAL is 0.6 ng/L).

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

SWMU 09-013:

- Samples collected in 1996 were not analyzed for aluminum because it was not identified as a COPC.
- Uranium-235 was not detected but the detection limits were up to 8.5 times BVs in samples collected from SWMU 09-013 following the 1996 expedited site cleanup. Radium-226 was not detected but the detection limits were up to 2.3 times BVs in samples collected from SWMU 09-013 following the 1996 expedited site cleanup.
- Based on descriptions of the wastes present at MDA M, PCBs are not known to have been associated with industrial materials historically managed at this Site. PCBs were detected in RFI samples with Aroclor-1254 being detected above the 1 mg/kg SAL in two samples, both collected within the main (i.e., southern) area. The maximum concentration of Aroclor-1254 is 2.3 times the residential SSL. The PCB hotspots identified during the RFI were removed during the expedited cleanup, and confirmation samples were collected from grids. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow (i.e., 0 to 3 ft bgs) expedited cleanup confirmation samples. Aroclor-1248 was detected in 5 of 11 shallow samples collected within the main area and was not detected in 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1254 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 3% of the residential SSL. Aroclor-1260 was detected in 4 of 11 shallow samples collected within the main area and 1 of 2 shallow samples from the satellite area. The maximum concentration was 1% of the residential SSL. The RFI and expedited cleanup data are screening level only.



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 179-2 and 179-3. 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 179-2 and 179-3.

STRM-SMA-5.05 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 sediment derived from Bandelier Tuff were compared with aluminum and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Aluminum is associated with minerals in the Bandelier Tuff as well.

- The aluminum UTL for storm water containing sediment derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- The gross-alpha UTL for storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.
- The PCB UTL for storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L; the result from 2011 is less than this value.

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

179.4 Inspections and Maintenance

RG240 recorded six storm events at STRM-SMA-5.05 during the 2013 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 179-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30842	4-23-2013
Storm Rain Event	BMP-33643	7-23-2013
Storm Rain Event	BMP-34508	8-14-2013
Storm Rain Event	BMP-34975	8-23-2013
Storm Rain Event	BMP-35213	9-17-2013
Annual Erosion Evaluation	COMP-36781	10-30-2013

No maintenance activities were conducted at STRM-SMA-5.05 in 2013.

179.5 Compliance Status

The Sites associated with STRM-SMA-5.05 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 179-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 09-013	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 06-27-2012

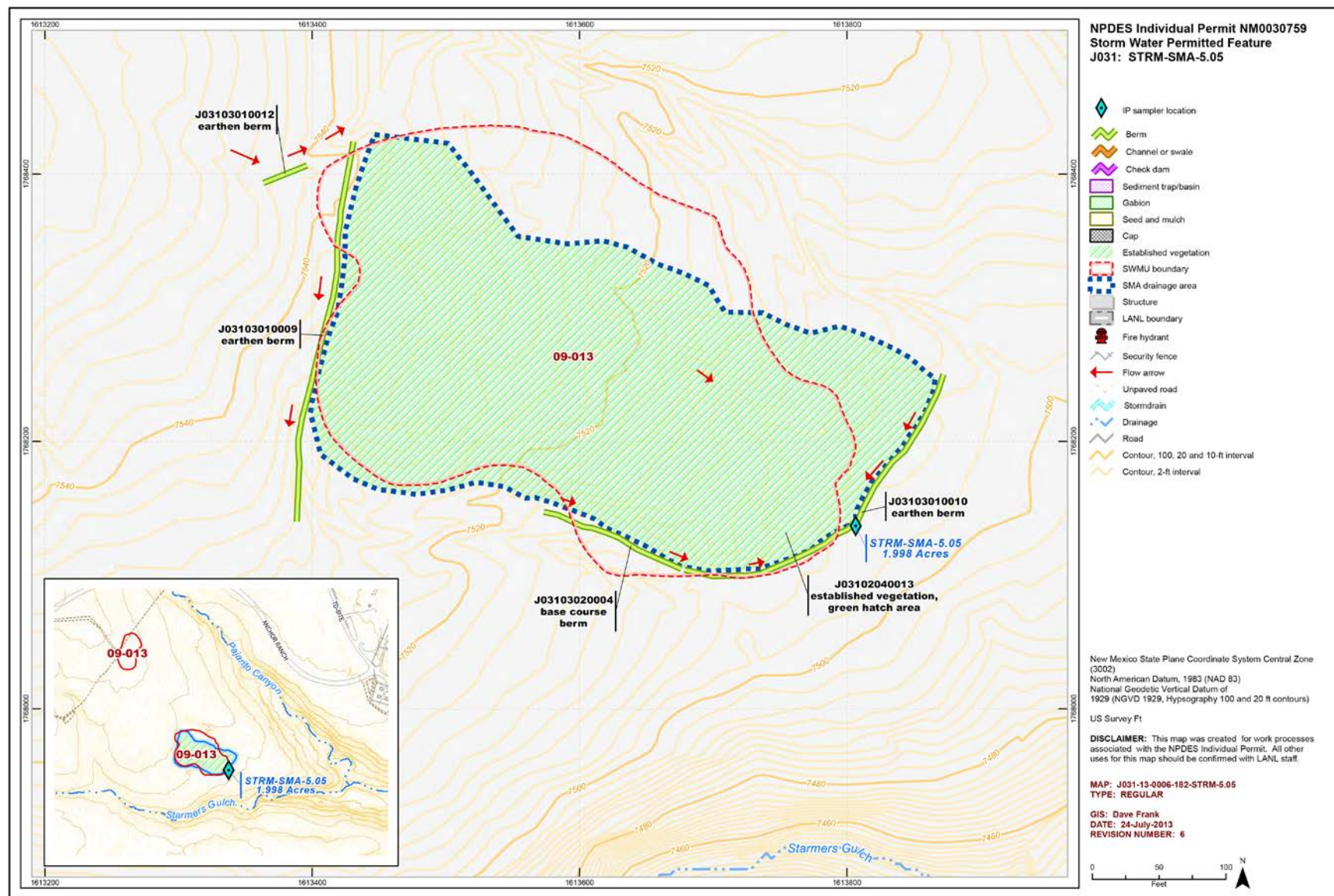


Figure 179-1 STRM-SMA-5.05 location map

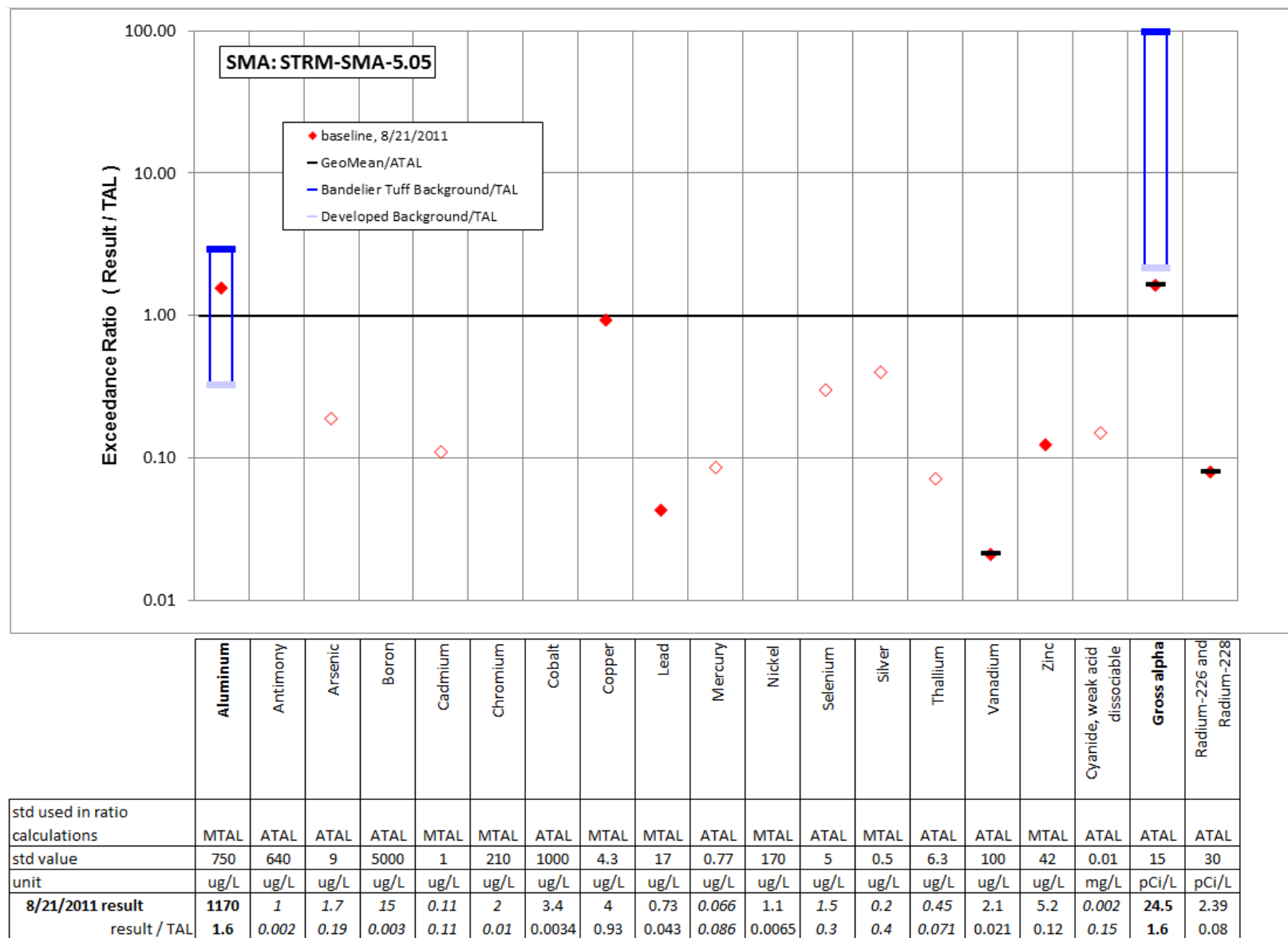


Figure 179-2 Inorganic analytical results summary plot for STRM-SMA-5.05

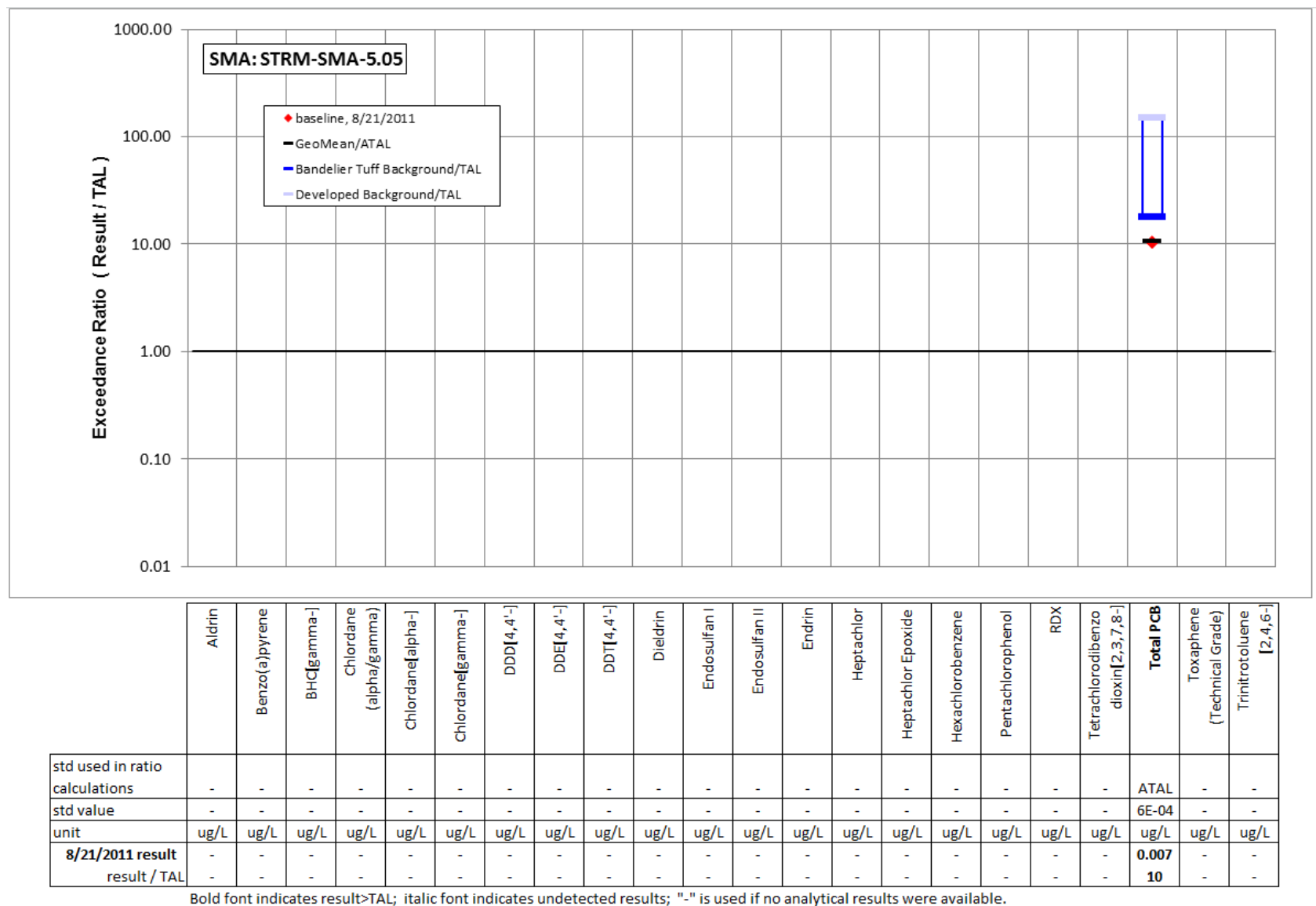


Figure 179-3 Organic analytical results summary plot for STRM-SMA-5.05

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
V3.405	7/25/2013	PJ-SMA-13.7	Retire Control - Damaged and/or Replaced - Control ID: J01602010001	T	CCN - 30494
V3.406	7/25/2013	PJ-SMA-13.7	New Control - Routine/Replacement - Control ID: J01602040011	T	CCN - 30494
V3.407	7/25/2013	PJ-SMA-13.7	Retire Control - Lifecycle Expired - Control ID: J01606010004	T	CCN - 30494
V3.408	7/25/2013	PJ-SMA-13.7	Retire Control - Lifecycle Expired - Control ID: J01606010005	T	CCN - 30494
V3.409	7/25/2013	PJ-SMA-13.7	Retire Control - Lifecycle Expired - Control ID: J01606010006	T	CCN - 30494
V3.410	7/25/2013	PJ-SMA-13.7	New Control - Corrective Action - Control ID: J01605020008	T	CCN - 30494
V3.411	7/25/2013	PJ-SMA-13.7	New Control - Corrective Action - Control ID: J01605020009	T	CCN - 30494
V3.412	7/25/2013	PJ-SMA-13.7	SMA Boundary Modification	T	CCN - 30494
V3.413	7/25/2013	PJ-SMA-13.7	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 30494
V3.414	2/4/2013	PJ-SMA-13.7	Map Revision - (R4)	T	CCN - 30494
V3.415	5/31/2013	PJ-SMA-13.7	Map Revision - (R5)	T	CCN - 30494
V3.416	2/15/2013	2M-SMA-1.67	Errata - Installation date of seed and wood mulch E00801010006 was corrected to 11-2-12. No map update necessary.	E	CCN - 30555
V3.417	5/14/2013	PJ-SMA-5.1	Site Boundary Modification	T	CCN - 31220
V3.418	5/14/2013	PJ-SMA-5.1	Site Boundary Modification	T	CCN - 31220
V3.419	5/14/2013	PJ-SMA-5.1	Map Revision - (R7)	T	CCN - 31220
V3.420	7/19/2013	STRM-SMA-1.05	New Control - Corrective Action - Control ID: J02808030008	T	CCN - 31227
V3.421	7/19/2013	STRM-SMA-1.05	Map Revision - (R5)	T	CCN - 31227
V3.422	7/19/2013	2M-SMA-1.42	Retire Control - Damaged and/or Replaced - Control ID: E00202010001	T	CCN - 31763
V3.423	7/19/2013	2M-SMA-1.42	Retire Control - Damaged and/or Replaced - Control ID: E00202020002	T	CCN - 31763
V3.424	7/19/2013	2M-SMA-1.42	New Control - Routine/Replacement - Control ID: E00202040015	T	CCN - 31763
V3.425	7/19/2013	2M-SMA-1.42	Map Revision - (R8)	T	CCN - 31763
V3.426	7/29/2013	2M-SMA-1.5	Retire Control - Damaged and/or Replaced - Control ID: E00602010001	T	CCN - 31767

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
V3.427	7/29/2013	2M-SMA-1.5	Retire Control - Damaged and/or Replaced - Control ID: E00602030003	T	CCN - 31767
V3.428	7/29/2013	2M-SMA-1.5	New Control - Routine/Replacement - Control ID: E00602040005	T	CCN - 31767
V3.429	7/29/2013	2M-SMA-1.5	Map Revision - (R6)	T	CCN - 31767
V3.430	7/29/2013	2M-SMA-1.45	Retire Control - Damaged and/or Replaced - Control ID: E00502010001	T	CCN - 31766
V3.431	7/29/2013	2M-SMA-1.45	New Control - Routine/Replacement - Control ID: E00502040018	T	CCN - 31766
V3.432	7/29/2013	2M-SMA-1.45	Map Revision - (R9)	T	CCN - 31766
V3.433	7/31/2013	2M-SMA-1.44	Retire Control - Damaged and/or Replaced - Control ID: E00402010001	T	CCN - 31765
V3.434	7/31/2013	2M-SMA-1.44	Retire Control - Damaged and/or Replaced - Control ID: E00402020002	T	CCN - 31765
V3.435	7/31/2013	2M-SMA-1.44	New Control - Routine/Replacement - Control ID: E00402040008	T	CCN - 31765
V3.436	7/31/2013	2M-SMA-1.44	Map Revision - (R7)	T	CCN - 31765
V3.437	7/31/2013	2M-SMA-1.43	Retire Control - Damaged and/or Replaced - Control ID: E00302010001	T	CCN - 31764
V3.438	7/31/2013	2M-SMA-1.43	Retire Control - Damaged and/or Replaced - Control ID: E00302030002	T	CCN - 31764
V3.439	7/31/2013	2M-SMA-1.43	New Control - Routine/Replacement - Control ID: E00302040005	T	CCN - 31764
V3.440	7/31/2013	2M-SMA-1.43	Map Revision - (R5)	T	CCN - 31764
V3.441	7/31/2013	2M-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: E00102010005	T	CCN - 31760
V3.442	7/31/2013	2M-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: E00102020006	T	CCN - 31760
V3.443	7/31/2013	2M-SMA-1	New Control - Routine/Replacement - Control ID: E00102040026	T	CCN - 31760
V3.444	7/31/2013	2M-SMA-1	Map Revision - (R7)	T	CCN - 31760
V3.445	7/19/2013	PJ-SMA-14.8	Retire Control - Damaged and/or Replaced - Control ID: J02202010001	T	CCN - 31769
V3.446	7/19/2013	PJ-SMA-14.8	Retire Control - Damaged and/or Replaced - Control ID: J02202030004	T	CCN - 31769
V3.447	7/19/2013	PJ-SMA-14.8	New Control - Routine/Replacement - Control ID: J02202040007	T	CCN - 31769
V3.448	7/19/2013	PJ-SMA-14.8	Map Revision - (R4)	T	CCN - 31769
V3.449	7/19/2013	PJ-SMA-14	Map Revision - (R5)	T	CCN - 31776
V3.450	7/24/2013	PJ-SMA-14.6	Retire Control - Damaged and/or Replaced - Control ID: J02102010001	T	CCN - 31777
V3.451	7/24/2013	PJ-SMA-14.6	Retire Control - Lifecycle Expired - Control ID: J02101060006	T	CCN - 31777

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
V3.452	7/24/2013	PJ-SMA-14.6	New Control - Routine/Replacement - Control ID: J02102040008	T	CCN - 31777
V3.453	7/24/2013	PJ-SMA-14.6	Map Revision - (R6)	T	CCN - 31777
V3.454	7/19/2013	PJ-SMA-13	Retire Control - Damaged and/or Replaced - Control ID: J01502010001	T	CCN - 31778
V3.455	7/19/2013	PJ-SMA-13	New Control - Routine/Replacement - Control ID: J01502040005	T	CCN - 31778
V3.456	7/19/2013	PJ-SMA-13	Map Revision - (R4)	T	CCN - 31778
V3.457	7/19/2013	PJ-SMA-16	Retire Control - Damaged and/or Replaced - Control ID: J02302010001	T	CCN - 31783
V3.458	7/19/2013	PJ-SMA-16	New Control - Routine/Replacement - Control ID: J02302040004	T	CCN - 31783
V3.459	7/19/2013	PJ-SMA-16	Map Revision - (R3)	T	CCN - 31783
V3.460	7/24/2013	PJ-SMA-14.4	Retire Control - Damaged and/or Replaced - Control ID: J02002010001	T	CCN - 31786
V3.461	7/24/2013	PJ-SMA-14.4	Retire Control - Lifecycle Expired - Control ID: J02002030002	T	CCN - 31786
V3.462	7/24/2013	PJ-SMA-14.4	Retire Control - Lifecycle Expired - Control ID: J02001010009	T	CCN - 31786
V3.463	7/24/2013	PJ-SMA-14.4	New Control - Routine/Replacement - Control ID: J02002040010	T	CCN - 31786
V3.464	7/24/2013	PJ-SMA-14.4	Map Revision - (R6)	T	CCN - 31786
V3.465	7/25/2013	STRM-SMA-1.5	Retire Control - Lifecycle Expired - Control ID: J02901010007	T	CCN - 31633
V3.466	7/25/2013	STRM-SMA-1.5	Retire Control - Lifecycle Expired - Control ID: J02903060003	T	CCN - 31633
V3.467	7/25/2013	STRM-SMA-1.5	Retire Control - Lifecycle Expired - Control ID: J02903060004	T	CCN - 31633
V3.468	7/25/2013	STRM-SMA-1.5	Retire Control - Lifecycle Expired - Control ID: J02903060008	T	CCN - 31633
V3.469	7/25/2013	STRM-SMA-1.5	Retire Control - Lifecycle Expired - Control ID: J02903060012	T	CCN - 31633
V3.470	7/25/2013	STRM-SMA-1.5	New Control - Corrective Action - Control ID: J02903010013	T	CCN - 31633
V3.471	7/25/2013	STRM-SMA-1.5	New Control - Corrective Action - Control ID: J02903010014	T	CCN - 31633
V3.472	7/25/2013	STRM-SMA-1.5	New Control - Corrective Action - Control ID: J02903120015	T	CCN - 31633
V3.473	7/25/2013	STRM-SMA-1.5	New Control - Corrective Action - Control ID: J02904060016	T	CCN - 31633
V3.474	7/25/2013	STRM-SMA-1.5	New Control - Corrective Action - Control ID: J02908030017	T	CCN - 31633
V3.475	7/25/2013	STRM-SMA-1.5	SMA Boundary Modification	T	CCN - 31633
V3.476	7/25/2013	STRM-SMA-1.5	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 31633

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V3.477	7/25/2013	STRM-SMA-1.5	Map Revision - (R7)	T	CCN - 31633
V3.478	7/24/2013	2M-SMA-1.8	Retire Control - Damaged and/or Replaced - Control ID: E01002020002	T	CCN - 31841
V3.479	7/24/2013	2M-SMA-1.8	New Control - Routine/Replacement - Control ID: E01002040010	T	CCN - 31841
V3.480	7/24/2013	2M-SMA-1.8	Map Revision - (R6)	T	CCN - 31841
V3.481	5/24/2013	2M-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: E01202010005	T	CCN - 31842
V3.482	5/24/2013	2M-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: E01202020004	T	CCN - 31842
V3.483	5/24/2013	2M-SMA-2	New Control - Routine/Replacement - Control ID: E01202040015	T	CCN - 31842
V3.484	5/24/2013	2M-SMA-2	Map Revision - (R7)	T	CCN - 31842
V3.485	7/19/2013	PJ-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: J00102010003	T	CCN - 31850
V3.486	7/19/2013	PJ-SMA-1.05	New Control - Routine/Replacement - Control ID: J00102040019	T	CCN - 31850
V3.487	7/19/2013	PJ-SMA-1.05	Map Revision - (R9)	T	CCN - 31850
V3.488	7/29/2013	PJ-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: J00502010006	T	CCN - 31851
V3.489	7/29/2013	PJ-SMA-5	New Control - Routine/Replacement - Control ID: J00502040015	T	CCN - 31851
V3.490	7/29/2013	PJ-SMA-5	Map Revision - (R8)	T	CCN - 31851
V3.491	7/19/2013	STRM-SMA-4.2	Retire Control - Damaged and/or Replaced - Control ID: J03002010001	T	CCN - 31859
V3.492	7/19/2013	STRM-SMA-4.2	New Control - Routine/Replacement - Control ID: J03002040006	T	CCN - 31859
V3.493	7/19/2013	STRM-SMA-4.2	Map Revision - (R6)	T	CCN - 31859
V3.494	8/7/2013	STRM-SMA-5.05	Retire Control - Damaged and/or Replaced - Control ID: J03102010003	T	CCN - 31860
V3.495	8/7/2013	STRM-SMA-5.05	Retire Control - Lifecycle Expired - Control ID: J03101040011	T	CCN - 31860
V3.496	8/7/2013	STRM-SMA-5.05	New Control - Routine/Replacement - Control ID: J03102040013	T	CCN - 31860
V3.497	8/7/2013	STRM-SMA-5.05	Map Revision - (R6)	T	CCN - 31860
V3.498	8/30/2013	PJ-SMA-5.1	Retire Control - Damaged and/or Replaced - Control ID: J00602010001	T	CCN - 31852
V3.499	8/30/2013	PJ-SMA-5.1	New Control - Routine/Replacement - Control ID: J00602040010	T	CCN - 31852
V3.500	8/30/2013	PJ-SMA-5.1	Map Revision - (R8)	T	CCN - 31852
V3.501	8/16/2013	3M-SMA-2.6	Retire Control - Damaged and/or Replaced - Control ID: H00502010001	T	CCN - 31870

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V3.502	8/16/2013	3M-SMA-2.6	Retire Control - Damaged and/or Replaced - Control ID: H00502020002	T	CCN - 31870
V3.503	8/16/2013	3M-SMA-2.6	Retire Control - Damaged and/or Replaced - Control ID: H00502030004	T	CCN - 31870
V3.504	8/16/2013	3M-SMA-2.6	New Control - Routine/Replacement - Control ID: H00502040007	T	CCN - 31870
V3.505	8/16/2013	3M-SMA-2.6	Map Revision - (R4)	T	CCN - 31870
V3.506	5/29/2013	PJ-SMA-11.1	Retire Control - Damaged and/or Replaced - Control ID: J01402010002	T	CCN - 31993
V3.507	5/29/2013	PJ-SMA-11.1	New Control - Routine/Replacement - Control ID: J01402040015	T	CCN - 31993
V3.508	5/29/2013	PJ-SMA-11.1	Map Revision - (R7)	T	CCN - 31993
V3.509	7/19/2013	PJ-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: J00902010003	T	CCN - 31997
V3.510	7/19/2013	PJ-SMA-8	New Control - Routine/Replacement - Control ID: J00902040010	T	CCN - 31997
V3.511	7/19/2013	PJ-SMA-8	Map Revision - (R6)	T	CCN - 31997
V3.512	7/19/2013	2M-SMA-2.5	Retire Control - Damaged and/or Replaced - Control ID: E01502010001	T	CCN - 31990
V3.513	7/19/2013	2M-SMA-2.5	New Control - Routine/Replacement - Control ID: E01502040006	T	CCN - 31990
V3.514	7/19/2013	2M-SMA-2.5	Map Revision - (R5)	T	CCN - 31990
V3.515	7/19/2013	PJ-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: J00802010001	T	CCN - 31995
V3.516	7/19/2013	PJ-SMA-7	New Control - Routine/Replacement - Control ID: J00802040006	T	CCN - 31995
V3.517	7/19/2013	PJ-SMA-7	Retire Control - Lifecycle Expired - Control ID: J00801060005	T	CCN - 31995
V3.518	7/19/2013	PJ-SMA-7	Map Revision - (R6)	T	CCN - 31995
V3.519	7/19/2013	PJ-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: J00702010001	T	CCN - 31994
V3.520	7/19/2013	PJ-SMA-6	New Control - Routine/Replacement - Control ID: J00702040018	T	CCN - 31994
V3.521	7/19/2013	PJ-SMA-6	Map Revision - (R8)	T	CCN - 31994
V3.522	7/19/2013	2M-SMA-1.65	Retire Control - Damaged and/or Replaced - Control ID: E00702010001	T	CCN - 31982
V3.523	7/19/2013	2M-SMA-1.65	New Control - Routine/Replacement - Control ID: E00702040011	T	CCN - 31982
V3.524	7/19/2013	2M-SMA-1.65	Map Revision - (R6)	T	CCN - 31982
V3.525	7/29/2013	PJ-SMA-11	Retire Control - Damaged and/or Replaced - Control ID: J01302010002	T	CCN - 31992
V3.526	7/29/2013	PJ-SMA-11	New Control - Routine/Replacement - Control ID: J01302040018	T	CCN - 31992

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V3.527	7/29/2013	PJ-SMA-11	Map Revision - (R8)	T	CCN - 31992
V3.528	7/31/2013	2M-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: E01402010004	T	CCN - 31983
V3.529	7/31/2013	2M-SMA-3	New Control - Routine/Replacement - Control ID: E01402040013	T	CCN - 31983
V3.530	7/31/2013	2M-SMA-3	Retire Control - Lifecycle Expired - Control ID: E01403060008	T	CCN - 31983
V3.531	7/31/2013	2M-SMA-3	Retire Control - Lifecycle Expired - Control ID: E01403060009	T	CCN - 31983
V3.532	7/31/2013	2M-SMA-3	New Control - Augment Existing - Control ID: E01403060014	T	CCN - 31983
V3.533	7/31/2013	2M-SMA-3	New Control - Augment Existing - Control ID: E01403060015	T	CCN - 31983
V3.534	7/31/2013	2M-SMA-3	Map Revision - (R9)	T	CCN - 31983
V3.535	7/31/2013	2M-SMA-3	New Control - Augment Existing - Control ID: E01403060017	T	CCN - 31983
V3.536	7/31/2013	2M-SMA-3	New Control - Augment Existing - Control ID: E01403060018	T	CCN - 31983
V3.537	7/19/2013	PJ-SMA-4.05	Retire Control - Damaged and/or Replaced - Control ID: J00402010002	T	CCN - 32016
V3.538	7/19/2013	PJ-SMA-4.05	New Control - Routine/Replacement - Control ID: J00402040008	T	CCN - 32016
V3.539	7/19/2013	PJ-SMA-4.05	Map Revision - (R4)	T	CCN - 32016
V3.540	5/29/2013	3M-SMA-0.5	Retire Control - Damaged and/or Replaced - Control ID: H00302010003	T	CCN - 32017
V3.541	5/29/2013	3M-SMA-0.5	New Control - Routine/Replacement - Control ID: H00302040017	T	CCN - 32017
V3.542	5/29/2013	3M-SMA-0.5	Retire Control - Lifecycle Expired - Control ID: H00301030015	T	CCN - 32017
V3.543	5/29/2013	3M-SMA-0.5	Map Revision - (R6)	T	CCN - 32017
V3.544	7/19/2013	3M-SMA-2.6	Retire Control - Damaged and/or Replaced - Control ID: H00402010001	T	CCN - 32018
V3.545	7/19/2013	3M-SMA-0.6	Retire Control - Damaged and/or Replaced - Control ID: H00402020026	T	CCN - 32018
V3.546	7/19/2013	3M-SMA-0.6	New Control - Routine/Replacement - Control ID: H00402040029	T	CCN - 32018
V3.547	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00401010025	T	CCN - 32018
V3.548	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00401030028	T	CCN - 32018
V3.549	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060004	T	CCN - 32018
V3.550	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060007	T	CCN - 32018
V3.551	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060009	T	CCN - 32018

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V3.552	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060013	T	CCN - 32018
V3.553	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060020	T	CCN - 32018
V3.554	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060023	T	CCN - 32018
V3.555	7/19/2013	3M-SMA-0.6	Retire Control - Lifecycle Expired - Control ID: H00403060024	T	CCN - 32018
V3.556	7/19/2013	3M-SMA-0.6	Map Revision - (R5)	T	CCN - 32018
V3.557	7/19/2013	PJ-SMA-3.05	Retire Control - Damaged and/or Replaced - Control ID: J00302010001	T	CCN - 32019
V3.558	7/19/2013	PJ-SMA-3.05	New Control - Routine/Replacement - Control ID: J00302040012	T	CCN - 32019
V3.559	7/19/2013	PJ-SMA-3.05	Retire Control - Lifecycle Expired - Control ID: J00306010009	T	CCN - 32019
V3.560	7/19/2013	PJ-SMA-3.05	Map Revision - (R5)	T	CCN - 32019
V3.561	8/7/2013	STRM-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: J02802010002	T	CCN - 32027
V3.562	8/7/2013	STRM-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: J02802030003	T	CCN - 32027
V3.563	8/7/2013	STRM-SMA-1.05	New Control - Routine/Replacement - Control ID: J02802040009	T	CCN - 32027
V3.564	8/7/2013	STRM-SMA-1.05	Map Revision - (R6)	T	CCN - 32027
V3.565	5/29/2013	STRM-SMA-1.5	Retire Control - Damaged and/or Replaced - Control ID: J02902010001	T	CCN - 32028
V3.566	5/29/2013	STRM-SMA-1.5	Retire Control - Damaged and/or Replaced - Control ID: J02902020002	T	CCN - 32028
V3.567	5/29/2013	STRM-SMA-1.5	New Control - Routine/Replacement - Control ID: J02902040018	T	CCN - 32028
V3.568	5/29/2013	STRM-SMA-1.5	Map Revision - (R8)	T	CCN - 32028
V3.569	6/18/2013	PJ-SMA-18	Retire Control - Damaged and/or Replaced - Control ID: J02602010001	T	CCN - 32155
V3.570	6/18/2013	PJ-SMA-18	New Control - Routine/Replacement - Control ID: J02602040010	T	CCN - 32155
V3.571	6/18/2013	PJ-SMA-18	Map Revision - (R4)	T	CCN - 32155
V3.572	7/19/2013	PJ-SMA-17	Retire Control - Damaged and/or Replaced - Control ID: J02402010003	T	CCN - 32158
V3.573	7/19/2013	PJ-SMA-17	New Control - Routine/Replacement - Control ID: J02402040008	T	CCN - 32158
V3.574	7/19/2013	PJ-SMA-17	Map Revision - (R1)	T	CCN - 32158
V3.575	5/24/2013	PJ-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: J00202010003	T	CCN - 32020
V3.576	5/24/2013	PJ-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: J00202020004	T	CCN - 32020

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V3.577	5/24/2013	PJ-SMA-2	New Control - Routine/Replacement - Control ID: J00202040022	T	CCN - 32020
V3.578	5/24/2013	PJ-SMA-2	Retire Control - Lifecycle Expired - Control ID: J00203060016	T	CCN - 32020
V3.579	5/24/2013	PJ-SMA-2	Retire Control - Lifecycle Expired - Control ID: J00203060017	T	CCN - 32020
V3.580	5/24/2013	PJ-SMA-2	Retire Control - Lifecycle Expired - Control ID: J00206010018	T	CCN - 32020
V3.581	5/24/2013	PJ-SMA-2	Map Revision - (R7)	T	CCN - 32020
V3.582	8/16/2013	PJ-SMA-19	Retire Control - Damaged and/or Replaced - Control ID: J02502010003	T	CCN - 32153
V3.583	8/16/2013	PJ-SMA-19	New Control - Routine/Replacement - Control ID: J02502040011	T	CCN - 32153
V3.584	8/16/2013	PJ-SMA-19	Map Revision - (R2)	T	CCN - 32153
V3.585	6/18/2013	2M-SMA-1.67	Retire Control - Damaged and/or Replaced - Control ID: E00802020002	T	CCN - 31839
V3.586	6/18/2013	2M-SMA-1.67	Retire Control - Damaged and/or Replaced - Control ID: E00802010001	T	CCN - 31839
V3.587	6/18/2013	2M-SMA-1.67	New Control - Routine/Replacement - Control ID: E00802040016	T	CCN - 31839
V3.588	6/18/2013	2M-SMA-1.67	Map Revision - (R6)	T	CCN - 31839
V3.589	6/18/2013	2M-SMA-1.7	Retire Control - Damaged and/or Replaced - Control ID: E00902020004	T	CCN - 31840
V3.590	6/18/2013	2M-SMA-1.7	New Control - Routine/Replacement - Control ID: E00902040009	T	CCN - 31840
V3.591	6/18/2013	2M-SMA-1.7	Map Revision - (R7)	T	CCN - 31840
V3.592	7/19/2013	PJ-SMA-9	Retire Control - Damaged and/or Replaced - Control ID: J01002010003	T	CCN - 31998
V3.593	7/19/2013	PJ-SMA-9	New Control - Routine/Replacement - Control ID: J01002040010	T	CCN - 31998
V3.594	7/19/2013	PJ-SMA-9	Map Revision - (R3)	T	CCN - 31998
V3.595	7/19/2013	3M-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: H00602010004	T	CCN - 32296
V3.596	7/19/2013	3M-SMA-4	New Control - Routine/Replacement - Control ID: H00602040010	T	CCN - 32296
V3.597	7/19/2013	3M-SMA-4	Map Revision - (R4)	T	CCN - 32296
V3.598	7/19/2013	PJ-SMA-20	Retire Control - Damaged and/or Replaced - Control ID: J02702010004	T	CCN - 32152
V3.599	7/19/2013	PJ-SMA-20	New Control - Routine/Replacement - Control ID: J02702040007	T	CCN - 32152
V3.600	7/19/2013	PJ-SMA-20	Map Revision - (R4)	T	CCN - 32152
V3.601	7/19/2013	PJ-SMA-14.2	Retire Control - Damaged and/or Replaced - Control ID: J01802010001	T	CCN - 32149

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Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V3.602	7/19/2013	PJ-SMA-14.2	Retire Control - Damaged and/or Replaced - Control ID: J01802030002	T	CCN - 32149
V3.603	7/19/2013	PJ-SMA-14.2	New Control - Routine/Replacement - Control ID: J01802040005	T	CCN - 32149
V3.604	7/19/2013	PJ-SMA-14.2	New Control - Augment Existing - Control ID: J01803060006	T	CCN - 32149
V3.605	7/19/2013	PJ-SMA-14.2	Map Revision - (R5)	T	CCN - 32149
V3.606	7/19/2013	PJ-SMA-14.3	Retire Control - Damaged and/or Replaced - Control ID: J01902010001	T	CCN - 32154
V3.607	7/19/2013	PJ-SMA-14.3	Retire Control - Damaged and/or Replaced - Control ID: J01902030002	T	CCN - 32154
V3.608	7/19/2013	PJ-SMA-14.3	New Control - Routine/Replacement - Control ID: J01902040003	T	CCN - 32154
V3.609	7/19/2013	PJ-SMA-14.3	New Control - Augment Existing - Control ID: J01903060005	T	CCN - 32154
V3.610	7/19/2013	PJ-SMA-14.3	Map Revision - (R5)	T	CCN - 32154
V3.611	8/7/2013	3M-SMA-0.2	Retire Control - Damaged and/or Replaced - Control ID: H00102020001	T	CCN - 31912
V3.612	8/7/2013	3M-SMA-0.2	New Control - Routine/Replacement - Control ID: H00102040006	T	CCN - 31912
V3.613	8/7/2013	3M-SMA-0.2	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 31912
V3.614	8/7/2013	3M-SMA-0.2	SMA Boundary Modification	T	CCN - 31912
V3.615	8/7/2013	3M-SMA-0.2	Map Revision - (R6)	T	CCN - 31912
V3.616	7/29/2013	3M-SMA-0.4	Retire Control - Damaged and/or Replaced - Control ID: H00202010001	T	CCN - 32114
V3.617	7/29/2013	3M-SMA-0.4	New Control - Routine/Replacement - Control ID: H00202040005	T	CCN - 32114
V3.618	7/29/2013	3M-SMA-0.4	Map Revision - (R5)	T	CCN - 32114
V3.619	8/30/2013	PJ-SMA-10	Retire Control - Damaged and/or Replaced - Control ID: J01202010005	T	CCN - 31991
V3.620	8/30/2013	PJ-SMA-10	New Control - Augment Existing - Control ID: J01206010008	T	CCN - 31991
V3.621	8/30/2013	PJ-SMA-10	New Control - Augment Existing - Control ID: J01206010009	T	CCN - 31991
V3.622	8/30/2013	PJ-SMA-10	New Control - Augment Existing - Control ID: J01206010010	T	CCN - 31991
V3.623	8/30/2013	PJ-SMA-10	SMA Boundary Modification	T	CCN - 31991
V3.624	8/30/2013	PJ-SMA-10	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 31991
V3.625	8/30/2013	PJ-SMA-10	Map Revision - (R7)	T	CCN - 31991
V3.626	8/16/2013	PJ-SMA-11	New Control - Augment Existing - Control ID: J01303060019	T	CCN - 34921

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
V3.627	8/16/2013	PJ-SMA-11	New Control - Augment Existing - Control ID: J01301010020	T	CCN - 34921
V3.628	8/16/2013	PJ-SMA-11	Map Revision - (R9)	T	CCN - 34921
V3.629	8/16/2013	2M-SMA-1.9	Map Revision - (R3)	T	CCN - 34924
V3.630	8/16/2013	2M-SMA-2.2	Map Revision - (R5)	T	CCN - 34925
V3.631	9/23/2013	PJ-SMA-10	Retire Control - Lifecycle Expired - Control ID: J01206010006	T	CCN - 31762
V3.632	9/23/2013	PJ-SMA-10	Map Revision - (R8)	T	CCN - 31762
V3.633	10/31/2013	PJ-SMA-19	Retire Control - Lifecycle Expired - Control ID: J02506010007	T	CCN - 36909
V3.634	10/31/2013	PJ-SMA-19	Map Revision - (R3)	T	CCN - 36909
V3.635	11/20/2013	PJ-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: J00904060001	T	CCN - 37259
V3.636	11/20/2013	PJ-SMA-8	New Control - Routine/Replacement - Control ID: J00906010011	T	CCN - 37259
V3.637	11/20/2013	PJ-SMA-8	Map Revision - (R7)	T	CCN - 37259
V3.638	11/20/2013	PJ-SMA-1.05	Retire Control - Damaged and/or Replaced - Control ID: J00106010010	T	CCN - 37270
V3.639	11/20/2013	PJ-SMA-1.05	Map Revision - (R10)	T	CCN - 37270
V3.640	11/20/2013	PJ-SMA-14.3	Retire Control - Damaged and/or Replaced - Control ID: J01903060004	T	CCN - 36571
V3.641	11/20/2013	PJ-SMA-14.3	New Control - Routine/Replacement - Control ID: J01903060005	T	CCN - 36571
V3.642	11/20/2013	PJ-SMA-14.3	Map Revision - (R6)	T	CCN - 36571
V3.643	11/20/2013	PJ-SMA-14.8	Retire Control - Damaged and/or Replaced - Control ID: J02203060006	T	CCN - 37053
V3.644	11/20/2013	PJ-SMA-14.8	New Control - Routine/Replacement - Control ID: J02203060008	T	CCN - 37053
V3.645	11/20/2013	PJ-SMA-14.8	Map Revision - (R5)	T	CCN - 37053
V3.646	11/20/2013	2M-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: E01403060016	T	CCN - 37301
V3.647	11/20/2013	2M-SMA-3	New Control - Routine/Replacement - Control ID: E01403060017	T	CCN - 37301
V3.648	11/20/2013	2M-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: E01403060010	T	CCN - 37301
V3.649	11/20/2013	2M-SMA-3	New Control - Routine/Replacement - Control ID: E01403060018	T	CCN - 37301
V3.650	11/20/2013	2M-SMA-3	Map Revision - (R10)	T	CCN - 37301

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
V3.651	3/14/2014	All Sections	Change to SDPPP - Updated storm water results section for each SMA in the SDPPP volume that had a storm water sample collected in 2013.	T	
V3.652	4/2/2014	2M-SMA-2	Map Revision - (R8)	T	CCN - 38036
V3.653	4/2/2014	PJ-SMA-3.05	Map Revision - (R6)	T	CCN - 38037
V3.654	4/3/2014	PJ-SMA-14.4	Map Revision - (R7)	T	CCN - 38187
V3.655	4/7/2014	Attachment 1	Change to SDPPP - Updated amendments to SDPPP completed in 2013.	D	
V3.656	4/7/2014	Attachment 3	Change to SDPPP - Updated precipitation data collected in 2013.	T	
V3.657	4/7/2014	Attachment 4	Change to SDPPP - Updated changes to SMA and Site characteristics made in 2013.	T	
V3.658	4/7/2014	Attachment 5	Change to SDPPP - Updated sampling plan for samples to be collected in 2014.	T	
V3.659	4/3/2014	All Sections	Change to SDPPP - Updated AOC and SWMU (Site) descriptions in the SDPPP volume to the most recent updated versions prepared for the Permit Renewal.	T	

2013 Update to the SDPPP, Revision 1



Attachment 3 Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	April 8, 2013	0.01	0.01	5
RG121.9	April 9, 2013	0.3	0.06	140
RG121.9	April 10, 2013	0.28	0.15	80
RG121.9	April 23, 2013	0.01	0.01	5
RG121.9	May 9, 2013	0.06	0.04	25
RG121.9	May 10, 2013	0.05	0.03	25
RG121.9	May 15, 2013	0.07	0.06	25
RG121.9	May 20, 2013	0.01	0.01	5
RG121.9	June 14, 2013	0.44	0.17	70
RG121.9	June 17, 2013	0.01	0.01	5
RG121.9	June 28, 2013	0.01	0.01	5
RG121.9	June 29, 2013	0.07	0.06	25
RG121.9	June 30, 2013	0.4	0.23	55
RG121.9	July 2, 2013	0.27	0.16	55
RG121.9	July 5, 2013	0.14	0.06	40
RG121.9	July 6, 2013	0.09	0.08	20
RG121.9	July 7, 2013	0.01	0.01	5
RG121.9	July 11, 2013	0.16	0.16	25
RG121.9	July 12, 2013	0.79	0.63	75
RG121.9	July 13, 2013	0.24	0.11	55
RG121.9	July 14, 2013	0.22	0.16	55
RG121.9	July 15, 2013	0.02	0.01	10
RG121.9	July 20, 2013	0.01	0.01	5
RG121.9	July 21, 2013	0.08	0.06	20
RG121.9	July 24, 2013	0.01	0.01	5
RG121.9	July 25, 2013	0.29	0.11	80
RG121.9	July 26, 2013	0.19	0.08	75
RG121.9	July 28, 2013	0.06	0.05	15
RG121.9	August 1, 2013	0.12	0.07	40
RG121.9	August 2, 2013	0.01	0.01	5
RG121.9	August 4, 2013	0.22	0.05	110
RG121.9	August 5, 2013	0.35	0.18	75
RG121.9	August 8, 2013	0.03	0.03	10
RG121.9	August 9, 2013	0.12	0.05	35
RG121.9	August 13, 2013	0.06	0.04	20

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG121.9	August 18, 2013	0.2	0.15	55
RG121.9	August 19, 2013	0.02	0.02	10
RG121.9	August 20, 2013	0.14	0.12	30
RG121.9	August 21, 2013	0.01	0.01	5
RG121.9	August 25, 2013	0.02	0.02	5
RG121.9	August 30, 2013	0.12	0.12	25
RG121.9	August 31, 2013	0.01	0.01	5
RG121.9	September 1, 2013	0.05	0.05	20
RG121.9	September 2, 2013	0.06	0.05	25
RG121.9	September 8, 2013	0.06	0.06	25
RG121.9	September 10, 2013	1.35	0.15	440
RG121.9	September 11, 2013	0.02	0.01	10
RG121.9	September 12, 2013	2.31	0.35	575
RG121.9	September 13, 2013	2.35	1.11	330
RG121.9	September 14, 2013	0.19	0.05	80
RG121.9	September 15, 2013	0.07	0.06	20
RG121.9	September 17, 2013	0.38	0.2	70
RG121.9	September 18, 2013	0.07	0.04	30
RG121.9	September 22, 2013	0.74	0.15	120
RG121.9	September 27, 2013	0.05	0.03	30
RG121.9	October 9, 2013	0.01	0.01	5
RG121.9	October 10, 2013	0.35	0.16	120
RG121.9	October 13, 2013	0.12	0.04	60
RG121.9	October 15, 2013	0.21	0.04	120
RG121.9	October 16, 2013	0.21	0.06	120
RG121.9	October 24, 2013	0.29	0.09	120
RG121.9	October 25, 2013	0.01	0.01	5
RG121.9	October 29, 2013	0.04	0.02	30
RG121.9	October 30, 2013	0.05	0.03	30
RG121.9	October 31, 2013	0.01	0.01	5
RG121.9	November 4, 2013	0.53	0.16	180
RG240	April 9, 2013	0.25	0.05	120
RG240	April 10, 2013	0.33	0.06	165
RG240	April 18, 2013	0.02	0.01	10
RG240	May 7, 2013	0.01	0.01	5
RG240	May 9, 2013	0.04	0.02	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG240	May 10, 2013	0.09	0.06	40
RG240	May 15, 2013	0.03	0.02	15
RG240	June 6, 2013	0.01	0.01	5
RG240	June 13, 2013	0.01	0.01	5
RG240	June 14, 2013	0.25	0.1	55
RG240	June 29, 2013	0.1	0.07	40
RG240	June 30, 2013	0.22	0.22	30
RG240	July 2, 2013	0.27	0.16	65
RG240	July 3, 2013	0.01	0.01	5
RG240	July 5, 2013	0.13	0.05	40
RG240	July 6, 2013	0.04	0.01	30
RG240	July 7, 2013	0.24	0.22	30
RG240	July 9, 2013	0.01	0.01	5
RG240	July 11, 2013	0.06	0.06	15
RG240	July 12, 2013	0.43	0.33	65
RG240	July 13, 2013	0.4	0.29	65
RG240	July 14, 2013	0.08	0.05	35
RG240	July 15, 2013	0.03	0.02	15
RG240	July 19, 2013	0.01	0.01	5
RG240	July 20, 2013	0.05	0.03	30
RG240	July 21, 2013	0.03	0.02	15
RG240	July 22, 2013	0.02	0.02	10
RG240	July 23, 2013	0.05	0.05	30
RG240	July 25, 2013	0.33	0.13	70
RG240	July 26, 2013	0.17	0.07	65
RG240	July 28, 2013	0.01	0.01	5
RG240	August 1, 2013	0.25	0.15	70
RG240	August 2, 2013	0.02	0.01	10
RG240	August 4, 2013	0.55	0.25	165
RG240	August 5, 2013	0.11	0.09	35
RG240	August 7, 2013	0.01	0.01	5
RG240	August 9, 2013	0.09	0.07	30
RG240	August 10, 2013	0.01	0.01	5
RG240	August 12, 2013	0.01	0.01	5
RG240	August 13, 2013	0.01	0.01	5
RG240	August 14, 2013	0.1	0.09	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG240	August 17, 2013	0.01	0.01	5
RG240	August 18, 2013	0.08	0.04	30
RG240	August 19, 2013	0.02	0.01	10
RG240	August 20, 2013	0.62	0.58	45
RG240	August 24, 2013	0.01	0.01	5
RG240	August 25, 2013	0.03	0.03	15
RG240	September 1, 2013	0.31	0.3	30
RG240	September 2, 2013	0.09	0.05	35
RG240	September 3, 2013	0.03	0.01	15
RG240	September 8, 2013	0.15	0.1	50
RG240	September 10, 2013	1.59	0.19	480
RG240	September 12, 2013	2.2	0.23	630
RG240	September 13, 2013	2.18	0.97	320
RG240	September 14, 2013	0.13	0.04	65
RG240	September 17, 2013	0.37	0.24	70
RG240	September 18, 2013	0.12	0.07	45
RG240	September 19, 2013	0.01	0.01	5
RG240	September 22, 2013	0.6	0.2	120
RG240	September 27, 2013	0.08	0.04	40
RG240	October 9, 2013	0.01	0.01	5
RG240	October 10, 2013	0.35	0.12	120
RG240	October 11, 2013	0.01	0.01	5
RG240	October 13, 2013	0.14	0.07	60
RG240	October 15, 2013	0.04	0.02	30
RG240	October 16, 2013	0.43	0.12	170
RG240	October 24, 2013	0.36	0.11	140
RG240	October 25, 2013	0.01	0.01	5
RG240	October 29, 2013	0.02	0.01	10
RG240	October 30, 2013	0.03	0.01	15
RG240	October 31, 2013	0.02	0.02	10
RG240	November 4, 2013	0.51	0.11	200
RG240	November 5, 2013	0.03	0.01	15
RG245.5	April 8, 2013	0.04	0.04	20
RG245.5	April 9, 2013	0.15	0.02	75
RG245.5	April 10, 2013	0.2	0.07	95
RG245.5	April 17, 2013	0.01	0.01	5

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG245.5	May 9, 2013	0.01	0.01	5
RG245.5	May 10, 2013	0.03	0.03	15
RG245.5	May 15, 2013	0.02	0.02	10
RG245.5	June 13, 2013	0.01	0.01	5
RG245.5	June 14, 2013	0.07	0.04	35
RG245.5	June 29, 2013	0.04	0.04	10
RG245.5	June 30, 2013	0.3	0.23	50
RG245.5	July 2, 2013	0.06	0.04	30
RG245.5	July 3, 2013	0.04	0.03	20
RG245.5	July 5, 2013	0.25	0.12	45
RG245.5	July 6, 2013	0.05	0.03	25
RG245.5	July 7, 2013	0.01	0.01	5
RG245.5	July 9, 2013	0.44	0.41	30
RG245.5	July 11, 2013	0.02	0.02	10
RG245.5	July 12, 2013	0.26	0.23	40
RG245.5	July 13, 2013	0.07	0.04	30
RG245.5	July 14, 2013	0.06	0.04	20
RG245.5	July 16, 2013	0.01	0.01	5
RG245.5	July 21, 2013	0.06	0.06	20
RG245.5	July 22, 2013	0.01	0.01	5
RG245.5	July 23, 2013	0.01	0.01	5
RG245.5	July 25, 2013	0.79	0.48	90
RG245.5	July 26, 2013	0.39	0.26	80
RG245.5	July 27, 2013	0.01	0.01	5
RG245.5	July 28, 2013	0.07	0.05	25
RG245.5	July 31, 2013	0.01	0.01	5
RG245.5	August 1, 2013	0.07	0.02	35
RG245.5	August 2, 2013	0.05	0.03	25
RG245.5	August 4, 2013	0.46	0.14	160
RG245.5	August 5, 2013	0.02	0.02	10
RG245.5	August 8, 2013	0.26	0.19	55
RG245.5	August 13, 2013	0.1	0.05	35
RG245.5	August 18, 2013	0.19	0.17	30
RG245.5	August 24, 2013	0.01	0.01	5
RG245.5	September 1, 2013	0.03	0.02	10
RG245.5	September 8, 2013	0.09	0.08	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG245.5	September 10, 2013	1.32	0.17	455
RG245.5	September 11, 2013	0.01	0.01	5
RG245.5	September 12, 2013	1.83	0.3	375
RG245.5	September 13, 2013	2.06	0.69	310
RG245.5	September 14, 2013	0.62	0.16	180
RG245.5	September 17, 2013	0.08	0.05	25
RG245.5	September 18, 2013	0.03	0.01	15
RG245.5	September 19, 2013	0.01	0.01	5
RG245.5	September 21, 2013	0.04	0.03	20
RG245.5	September 22, 2013	0.37	0.11	110
RG245.5	October 10, 2013	0.22	0.08	85
RG245.5	October 13, 2013	0.09	0.04	45
RG245.5	October 15, 2013	0.23	0.06	115
RG245.5	October 16, 2013	0.07	0.03	35
RG245.5	October 24, 2013	0.28	0.1	120
RG245.5	October 25, 2013	0.02	0.02	10
RG245.5	October 29, 2013	0.01	0.01	5
RG245.5	October 30, 2013	0.01	0.01	5
RG245.5	October 31, 2013	0.11	0.1	10
RG245.5	November 1, 2013	0.07	0.05	10
RG245.5	November 3, 2013	0.01	0.01	5
RG245.5	November 4, 2013	0.01	0.01	5
RG253	April 9, 2013	0.22	0.06	105
RG253	April 10, 2013	0.29	0.16	85
RG253	May 9, 2013	0.01	0.01	5
RG253	May 10, 2013	0.11	0.09	40
RG253	May 15, 2013	0.06	0.05	15
RG253	June 5, 2013	0.01	0.01	5
RG253	June 14, 2013	0.21	0.1	55
RG253	June 29, 2013	0.09	0.07	35
RG253	June 30, 2013	0.23	0.19	45
RG253	July 2, 2013	0.24	0.12	65
RG253	July 3, 2013	0.01	0.01	5
RG253	July 5, 2013	0.12	0.03	40
RG253	July 6, 2013	0.06	0.01	30
RG253	July 7, 2013	0.19	0.1	55

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	July 8, 2013	0.01	0.01	5
RG253	July 11, 2013	0.14	0.13	30
RG253	July 12, 2013	0.43	0.28	85
RG253	July 13, 2013	0.67	0.57	65
RG253	July 14, 2013	0.1	0.07	35
RG253	July 15, 2013	0.03	0.02	15
RG253	July 19, 2013	0.01	0.01	5
RG253	July 20, 2013	0.03	0.02	15
RG253	July 21, 2013	0.04	0.02	20
RG253	July 22, 2013	0.14	0.13	30
RG253	July 23, 2013	0.05	0.04	20
RG253	July 25, 2013	0.38	0.15	85
RG253	July 26, 2013	0.45	0.33	85
RG253	July 28, 2013	0.01	0.01	5
RG253	August 1, 2013	0.29	0.19	70
RG253	August 2, 2013	0.03	0.02	15
RG253	August 4, 2013	0.66	0.24	195
RG253	August 5, 2013	0.51	0.5	35
RG253	August 6, 2013	0.02	0.02	10
RG253	August 9, 2013	0.01	0.01	5
RG253	August 10, 2013	0.01	0.01	5
RG253	August 13, 2013	0.01	0.01	5
RG253	August 14, 2013	0.03	0.02	15
RG253	August 17, 2013	0.05	0.03	20
RG253	August 18, 2013	0.04	0.03	15
RG253	August 19, 2013	0.05	0.03	20
RG253	August 20, 2013	0.22	0.21	30
RG253	September 2, 2013	0.07	0.03	30
RG253	September 3, 2013	0.05	0.03	25
RG253	September 10, 2013	1.48	0.18	600
RG253	September 12, 2013	2.4	0.28	630
RG253	September 13, 2013	2.59	1.19	335
RG253	September 14, 2013	0.22	0.06	90
RG253	September 17, 2013	0.58	0.35	75
RG253	September 18, 2013	0.11	0.07	45
RG253	September 22, 2013	0.69	0.18	120

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	September 27, 2013	0.07	0.04	35
RG253	October 10, 2013	0.39	0.13	135
RG253	October 11, 2013	0.01	0.01	5
RG253	October 13, 2013	0.1	0.07	40
RG253	October 15, 2013	0.04	0.02	20
RG253	October 16, 2013	0.42	0.17	105
RG253	October 24, 2013	0.36	0.1	140
RG253	October 25, 2013	0.02	0.01	10
RG253	October 29, 2013	0.03	0.02	15
RG253	October 30, 2013	0.01	0.01	5
RG253	October 31, 2013	0.04	0.02	20
RG253	November 4, 2013	0.5	0.11	205
RG253	November 5, 2013	0.02	0.01	10
RG257	April 9, 2013	0.33	0.06	155
RG257	April 10, 2013	0.3	0.19	75
RG257	April 18, 2013	0.02	0.01	10
RG257	May 9, 2013	0.04	0.02	20
RG257	May 10, 2013	0.04	0.03	20
RG257	May 15, 2013	0.04	0.02	15
RG257	June 5, 2013	0.01	0.01	5
RG257	June 14, 2013	0.13	0.07	45
RG257	June 29, 2013	0.06	0.05	20
RG257	June 30, 2013	0.36	0.28	45
RG257	July 2, 2013	0.23	0.15	55
RG257	July 3, 2013	0.01	0.01	5
RG257	July 4, 2013	0.02	0.02	10
RG257	July 5, 2013	0.13	0.09	40
RG257	July 6, 2013	0.05	0.01	25
RG257	July 7, 2013	0.06	0.04	30
RG257	July 8, 2013	0.01	0.01	5
RG257	July 11, 2013	0.31	0.3	35
RG257	July 12, 2013	0.8	0.72	60
RG257	July 13, 2013	0.34	0.23	70
RG257	July 14, 2013	0.14	0.1	35
RG257	July 15, 2013	0.02	0.01	10
RG257	July 20, 2013	0.01	0.01	5

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG257	July 21, 2013	0.02	0.01	10
RG257	July 22, 2013	0.26	0.25	30
RG257	July 25, 2013	0.26	0.11	65
RG257	July 26, 2013	0.38	0.24	95
RG257	July 28, 2013	0.01	0.01	5
RG257	August 1, 2013	0.14	0.07	45
RG257	August 2, 2013	0.12	0.11	15
RG257	August 4, 2013	0.4	0.15	135
RG257	August 5, 2013	0.27	0.25	40
RG257	August 8, 2013	0.02	0.02	10
RG257	August 9, 2013	0.11	0.08	25
RG257	August 12, 2013	0.01	0.01	5
RG257	August 13, 2013	0.02	0.01	10
RG257	August 14, 2013	0.07	0.03	30
RG257	August 17, 2013	0.01	0.01	5
RG257	August 18, 2013	0.2	0.15	45
RG257	August 20, 2013	0.01	0.01	5
RG257	August 24, 2013	0.01	0.01	5
RG257	August 25, 2013	0.02	0.02	10
RG257	August 30, 2013	0.17	0.15	40
RG257	September 2, 2013	0.04	0.03	20
RG257	September 3, 2013	0.02	0.02	10
RG257	September 8, 2013	0.1	0.08	40
RG257	September 11, 2013	0.03	0.02	15
RG257	September 12, 2013	2.2	0.28	570
RG257	September 13, 2013	2.63	1.33	340
RG257	September 14, 2013	0.18	0.05	80
RG257	September 17, 2013	0.43	0.34	50
RG257	September 18, 2013	0.07	0.04	30
RG257	September 22, 2013	0.68	0.16	125
RG257	September 27, 2013	0.05	0.04	25
RG257	October 10, 2013	0.32	0.15	105
RG257	October 11, 2013	0.01	0.01	5
RG257	October 13, 2013	0.11	0.04	50
RG257	October 15, 2013	0.08	0.04	35
RG257	October 16, 2013	0.32	0.12	105

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG257	October 17, 2013	0.01	0.01	5
RG257	October 24, 2013	0.35	0.09	150
RG257	October 25, 2013	0.02	0.01	10
RG257	October 29, 2013	0.03	0.02	15
RG257	October 30, 2013	0.04	0.02	20
RG257	October 31, 2013	0.01	0.01	5
RG257	November 4, 2013	0.6	0.13	230
RG257	November 5, 2013	0.04	0.01	20
RG262.4	April 8, 2013	0.02	0.02	10
RG262.4	April 9, 2013	0.24	0.05	120
RG262.4	April 10, 2013	0.26	0.05	130
RG262.4	April 18, 2013	0.02	0.01	10
RG262.4	May 9, 2013	0.01	0.01	5
RG262.4	May 10, 2013	0.06	0.05	25
RG262.4	May 15, 2013	0.06	0.04	20
RG262.4	May 20, 2013	0.01	0.01	5
RG262.4	June 14, 2013	0.06	0.03	30
RG262.4	June 29, 2013	0.04	0.04	10
RG262.4	June 30, 2013	0.36	0.24	65
RG262.4	July 2, 2013	0.14	0.06	45
RG262.4	July 3, 2013	0.08	0.08	10
RG262.4	July 4, 2013	0.02	0.02	10
RG262.4	July 5, 2013	0.39	0.34	45
RG262.4	July 6, 2013	0.04	0.02	20
RG262.4	July 7, 2013	0.03	0.03	15
RG262.4	July 8, 2013	0.01	0.01	5
RG262.4	July 9, 2013	0.11	0.11	15
RG262.4	July 11, 2013	0.02	0.02	10
RG262.4	July 12, 2013	0.48	0.4	50
RG262.4	July 13, 2013	0.24	0.15	60
RG262.4	July 14, 2013	0.29	0.27	30
RG262.4	July 21, 2013	0.07	0.06	25
RG262.4	July 22, 2013	0.03	0.03	15
RG262.4	July 23, 2013	0.03	0.02	15
RG262.4	July 25, 2013	0.57	0.46	70
RG262.4	July 26, 2013	0.29	0.14	90

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	July 27, 2013	0.01	0.01	5
RG262.4	July 28, 2013	0.01	0.01	5
RG262.4	July 31, 2013	0.03	0.02	15
RG262.4	August 1, 2013	0.09	0.02	45
RG262.4	August 2, 2013	0.1	0.07	30
RG262.4	August 4, 2013	0.66	0.26	190
RG262.4	August 8, 2013	0.08	0.06	30
RG262.4	August 14, 2013	0.01	0.01	5
RG262.4	August 18, 2013	0.23	0.21	35
RG262.4	August 24, 2013	0.01	0.01	5
RG262.4	August 25, 2013	0.02	0.01	10
RG262.4	August 30, 2013	0.01	0.01	5
RG262.4	September 1, 2013	0.01	0.01	5
RG262.4	September 2, 2013	0.09	0.09	30
RG262.4	September 3, 2013	0.02	0.02	10
RG262.4	September 8, 2013	0.2	0.17	45
RG262.4	September 11, 2013	0.03	0.02	15
RG262.4	September 12, 2013	2.03	0.27	475
RG262.4	September 13, 2013	2.27	0.98	335
RG262.4	September 14, 2013	0.97	0.33	195
RG262.4	September 17, 2013	0.1	0.07	25
RG262.4	September 18, 2013	0.01	0.01	5
RG262.4	September 22, 2013	0.33	0.1	120
RG262.4	September 27, 2013	0.01	0.01	5
RG262.4	October 9, 2013	0.02	0.02	10
RG262.4	October 10, 2013	0.28	0.1	105
RG262.4	October 13, 2013	0.1	0.04	40
RG262.4	October 15, 2013	0.25	0.07	110
RG262.4	October 16, 2013	0.13	0.05	65
RG262.4	October 24, 2013	0.4	0.14	150
RG262.4	October 25, 2013	0.02	0.02	10
RG262.4	October 29, 2013	0.02	0.01	10
RG262.4	October 30, 2013	0.02	0.02	10
RG262.4	October 31, 2013	0.01	0.01	5
RG262.4	November 4, 2013	0.71	0.15	250
RG262.4	November 5, 2013	0.01	0.01	5

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-06	January 26, 2013	0.39	0.17	225
RG-TA-06	January 28, 2013	0.1	0.02	135
RG-TA-06	March 8, 2013	0.14	0.05	135
RG-TA-06	April 8, 2013	0.04	0.04	30
RG-TA-06	April 9, 2013	0.52	0.07	420
RG-TA-06	April 17, 2013	0.04	0.04	30
RG-TA-06	May 9, 2013	0.03	0.01	45
RG-TA-06	May 10, 2013	0.03	0.03	30
RG-TA-06	May 15, 2013	0.05	0.05	15
RG-TA-06	June 14, 2013	0.19	0.09	105
RG-TA-06	June 29, 2013	0.08	0.07	45
RG-TA-06	June 30, 2013	0.49	0.24	90
RG-TA-06	July 2, 2013	0.28	0.14	120
RG-TA-06	July 5, 2013	0.21	0.14	75
RG-TA-06	July 6, 2013	0.03	0.01	45
RG-TA-06	July 7, 2013	0.03	0.02	45
RG-TA-06	July 11, 2013	0.25	0.25	30
RG-TA-06	July 12, 2013	1.62	1.13	90
RG-TA-06	July 13, 2013	0.27	0.13	105
RG-TA-06	July 14, 2013	0.29	0.22	75
RG-TA-06	July 15, 2013	0.02	0.01	30
RG-TA-06	July 21, 2013	0.04	0.02	60
RG-TA-06	July 25, 2013	0.38	0.15	150
RG-TA-06	July 26, 2013	0.28	0.14	120
RG-TA-06	July 28, 2013	0.01	0.01	15
RG-TA-06	August 1, 2013	0.25	0.19	105
RG-TA-06	August 2, 2013	0.01	0.01	15
RG-TA-06	August 4, 2013	0.38	0.11	270
RG-TA-06	August 5, 2013	0.37	0.2	90
RG-TA-06	August 8, 2013	0.05	0.05	30
RG-TA-06	August 9, 2013	0.08	0.05	45
RG-TA-06	August 12, 2013	0.01	0.01	15
RG-TA-06	August 13, 2013	0.06	0.03	45
RG-TA-06	August 14, 2013	0.04	0.02	45
RG-TA-06	August 18, 2013	0.23	0.14	60
RG-TA-06	August 20, 2013	0.06	0.06	30

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-06	August 25, 2013	0.03	0.03	15
RG-TA-06	August 30, 2013	0.22	0.18	45
RG-TA-06	September 1, 2013	0.06	0.06	30
RG-TA-06	September 2, 2013	0.03	0.02	45
RG-TA-06	September 8, 2013	0.1	0.08	60
RG-TA-06	September 10, 2013	1.39	0.13	780
RG-TA-06	September 11, 2013	0.06	0.04	60
RG-TA-06	September 12, 2013	2.46	0.31	900
RG-TA-06	September 13, 2013	2.93	1.39	465
RG-TA-06	September 14, 2013	0.21	0.07	195
RG-TA-06	September 17, 2013	0.54	0.36	105
RG-TA-06	September 18, 2013	0.07	0.04	60
RG-TA-06	September 22, 2013	0.82	0.17	210
RG-TA-06	September 27, 2013	0.05	0.03	60
RG-TA-06	October 10, 2013	0.36	0.15	120
RG-TA-06	October 13, 2013	0.13	0.04	150
RG-TA-06	October 14, 2013	0.01	0.01	15
RG-TA-06	October 15, 2013	0.12	0.06	120
RG-TA-06	October 16, 2013	0.33	0.12	135
RG-TA-06	October 24, 2013	0.4	0.12	255
RG-TA-06	October 25, 2013	0.01	0.01	15
RG-TA-06	October 29, 2013	0.03	0.02	45
RG-TA-06	October 30, 2013	0.05	0.03	60
RG-TA-06	November 4, 2013	0.7	0.18	300
RG-TA-06	November 5, 2013	0.01	0.01	15
RG-TA-06	November 15, 2013	0.17	0.03	225
RG-TA-54	January 26, 2013	0.25	0.07	195
RG-TA-54	January 28, 2013	0.01	0.01	15
RG-TA-54	March 8, 2013	0.15	0.1	60
RG-TA-54	April 8, 2013	0.02	0.01	30
RG-TA-54	April 9, 2013	0.08	0.02	120
RG-TA-54	June 14, 2013	0.07	0.06	45
RG-TA-54	June 28, 2013	0.78	0.68	60
RG-TA-54	June 29, 2013	0.01	0.01	15
RG-TA-54	June 30, 2013	0.15	0.14	45
RG-TA-54	July 2, 2013	0.07	0.06	60

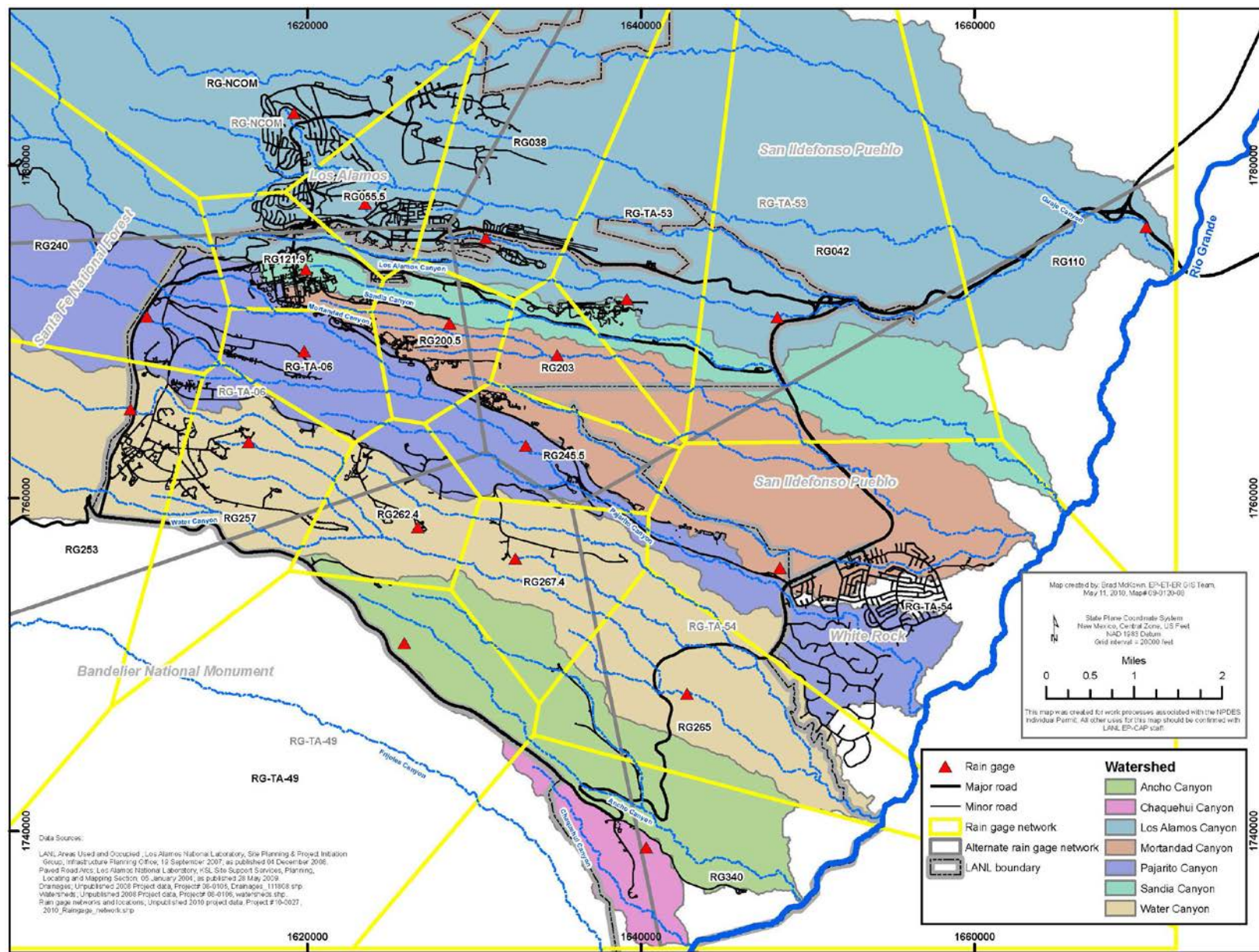
Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-54	July 3, 2013	0.5	0.49	45
RG-TA-54	July 5, 2013	0.05	0.03	30
RG-TA-54	July 6, 2013	0.05	0.04	45
RG-TA-54	July 7, 2013	0.01	0.01	15
RG-TA-54	July 11, 2013	0.84	0.66	60
RG-TA-54	July 12, 2013	0.08	0.08	15
RG-TA-54	July 14, 2013	0.46	0.44	60
RG-TA-54	July 15, 2013	0.01	0.01	15
RG-TA-54	July 19, 2013	0.01	0.01	15
RG-TA-54	July 23, 2013	0.03	0.03	30
RG-TA-54	July 25, 2013	0.66	0.3	195
RG-TA-54	July 26, 2013	0.42	0.25	120
RG-TA-54	July 28, 2013	0.18	0.14	60
RG-TA-54	July 31, 2013	0.03	0.02	45
RG-TA-54	August 1, 2013	0.03	0.01	45
RG-TA-54	August 2, 2013	0.06	0.03	75
RG-TA-54	August 4, 2013	0.22	0.06	165
RG-TA-54	August 5, 2013	0.56	0.56	30
RG-TA-54	August 8, 2013	0.86	0.77	75
RG-TA-54	August 13, 2013	0.05	0.04	45
RG-TA-54	August 25, 2013	0.01	0.01	15
RG-TA-54	August 30, 2013	0.06	0.05	45
RG-TA-54	September 1, 2013	0.15	0.1	75
RG-TA-54	September 3, 2013	0.12	0.09	60
RG-TA-54	September 10, 2013	1.39	0.22	675
RG-TA-54	September 12, 2013	3.24	0.71	525
RG-TA-54	September 13, 2013	1.28	0.42	435
RG-TA-54	September 14, 2013	0.78	0.19	285
RG-TA-54	September 17, 2013	0.11	0.1	45
RG-TA-54	September 18, 2013	0.01	0.01	15
RG-TA-54	September 21, 2013	0.25	0.21	45
RG-TA-54	September 22, 2013	0.35	0.31	75
RG-TA-54	October 10, 2013	0.27	0.12	90
RG-TA-54	October 15, 2013	0.12	0.02	180
RG-TA-54	October 24, 2013	0.23	0.08	180
RG-TA-54	November 4, 2013	0.81	0.35	360

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG-TA-54	November 15, 2013	0.14	0.03	240
RG-TA-54	November 21, 2013	0.52	0.07	360
RG-TA-54	November 23, 2013	0.07	0.02	180
RG-TA-54	November 24, 2013	0.09	0.01	120

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)
Twomile	E001	2M-SMA-1	1616471 (35.87305)	1773067 (-106.330833)	808,387.02	03-010(a)	7,480.34
Twomile	E002	2M-SMA-1.42	1615432 (35.864817)	1770069 (-106.334333)	238.90	06-001(a)	0.00
Twomile	E003	2M-SMA-1.43	1615556 (35.861333)	1768803 (-106.3339)	9,742.30	22-014(a) 22-015(a)	98.29 60.06
Twomile	E004	2M-SMA-1.44	1615829 (35.8651)	1770174 (-106.332983)	288.33	06-001(b)	221.18
Twomile	E005	2M-SMA-1.45	1615829.64 (35.864276)	1769892.78 (-106.332742)	27,737.17	06-006	9,693.38
Twomile	E006	2M-SMA-1.5	1615739 (35.861047)	1768703 (-106.3332356)	90.00	22-014(b)	8.33
Twomile	E007	2M-SMA-1.65	1616952 (35.86035)	1768439 (-106.3292)	2,335.23	40-005	31.20
Twomile	E008	2M-SMA-1.67	1617799 (35.863183)	1769475 (-106.326333)	3,672.04	06-003(h)	3,168.53
Twomile	E009	2M-SMA-1.7	1618223 (35.868217)	1771303 (-106.324917)	9,523.48	03-055(a)	0.00
Twomile	E010	2M-SMA-1.8	1618405 (35.86825)	1771315 (-106.3243)	53,560.20	03-001(k)	600.00
Twomile	E011	2M-SMA-1.9	1617919 (35.87215)	1772736 (-106.325933)	11,104.28	03-003(a)	1,709.60
Twomile	E012	2M-SMA-2	1618915 (35.868405)	1771455 (-106.322726)	458,665.93	03-050(d) 03-054(b)	129.18 3,672.52
Twomile	E013	2M-SMA-2.2	1619199 (35.868783)	1771512 (-106.321617)	4,039.88	03-003(k)	0.77
Twomile	E015	2M-SMA-2.5	1620107 (35.8573)	1767329 (-106.31855)	1,925.26	40-001(c)	48.60
Twomile	E014	2M-SMA-3	1621835 (35.860017)	1768315 (-106.312717)	1,032,244.09	07-001(a) 07-001(b) 07-001(c) 07-001(d)	2,265.31 884.92 0.00 3,075.48
Threemile	H001	3M-SMA-0.2	1622831 (35.848467)	1764112 (-106.30935)	3,347.78	15-010(b)	25.43
Threemile	H002	3M-SMA-0.4	1627075 (35.843383)	1762259 (-106.295017)	235,152.99	15-006(b)	627.41
Threemile	H003	3M-SMA-0.5	1628495 (35.843217)	1762195 (-106.290217)	315,963.74	15-006(c) 15-009(c)	865.19 146.97
Threemile	H004	3M-SMA-0.6	1628371 (35.845133)	1762895 (-106.29065)	29,678.86	15-008(b)	25,784.61

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft²)	Site Number	Site Drainage Area (ft²)
Threemile	H005	3M-SMA-2.6	1633503 (35.838833)	1760603 (-106.273333)	12,220.06	36-008 C-36-003	10,503.38 3.13
Threemile	H006	3M-SMA-4	1634679 (35.839183)	1760727 (-106.269367)	46,131,320.74	18-002(b) 18-003(c) 18-010(f)	2.31 0.77 0.77
Pajarito	J001	PJ-SMA-1.05	1613152 (35.862417)	1769199 (-106.342017)	10,767.13	09-013	7,896.56
Pajarito	J002	PJ-SMA-2	1613379 (35.857233)	1767311 (-106.34125)	40,895.61	09-009	3,293.67
Pajarito	J003	PJ-SMA-3.05	1613987 (35.8565379)	1766967 (-106.3391653)	633.10	09-004(o)	95.00
Pajarito	J004	PJ-SMA-4.05	1614889 (35.8537)	1766026 (-106.33615)	52,608.18	09-004(g)	156.75
Pajarito	J005	PJ-SMA-5	1615255 (35.859633)	1768179 (-106.334917)	51,399.45	22-015(c)	7.03
Pajarito	J006	PJ-SMA-5.1	1615493 (35.859833)	1768258 (-106.334117)	9,050.88	22-016	0.00
Pajarito	J007	PJ-SMA-6	1616907 (35.8573)	1767335 (-106.32935)	5,257.12	40-010	4,471.19
Pajarito	J008	PJ-SMA-7	1619154 (35.8568894)	1767180 (-106.3217566)	5,239.00	40-006(c)	1485.17
Pajarito	J009	PJ-SMA-8	1619495 (35.8570254)	1767229 (-106.3206049)	3,720.00	40-006(b)	968.26
Pajarito	J010	PJ-SMA-9	1619820 (35.856717)	1767118 (-106.319517)	12,111.07	40-009	3,966.81
Pajarito	J012	PJ-SMA-10 ¹	1620931 (35.856739)	1767124 (-106.315760)	8,407.08	40-006(a)	636.59
Pajarito	J013	PJ-SMA-11	1622271 (35.856)	1766851 (-106.311233)	25,449.06	40-003(a)	5271.63
Pajarito	J014	PJ-SMA-11.1	1622311 (35.85605)	1766875 (-106.3111)	62,576.27	40-003(b)	7,414.55
Pajarito	J015	PJ-SMA-13	1634943 (35.841883)	1761709 (-106.268467)	6,977.39	18-002(a)	1.54
Pajarito	J016	PJ-SMA-13.7 ¹	1635561 (35.840065)	1761049 (-106.266385)	83,635.20	18-010(b)	0.00
Pajarito	J017	PJ-SMA-14	1636219 (35.843467)	1762287 (-106.264167)	10,552.06	54-004	2,022.21
Pajarito	J018	PJ-SMA-14.2	1635813 (35.839667)	1760906 (-106.265533)	51.84	18-012(b)	0.77
Pajarito	J019	PJ-SMA-14.3	1635962 (35.839383)	1760802 (-106.265033)	24.13	18-003(e)	0.00

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft²)	Site Number	Site Drainage Area (ft²)
Pajarito	J020	PJ-SMA-14.4	1635967 (35.839717)	1760919 (-106.265017)	14,580.52	18-010(d)	0.77
Pajarito	J021	PJ-SMA-14.6	1636131 (35.839533)	1760855 (-106.264467)	16,256.96	18-010(e)	0.77
Pajarito	J022	PJ-SMA-14.8	1636187 (35.838317)	1760411 (-106.264267)	2,578.20	18-012(a)	0.72
Pajarito	J023	PJ-SMA-16	1640959 (35.830567)	1757592 (-106.248167)	17,038.16	27-002	1,790.55
Pajarito	J024	PJ-SMA-17	1642592 (35.83015)	1757437 (-106.242667)	551,419.73	54-018	181,987.49
Pajarito	J026	PJ-SMA-18	1643997 (35.828917)	1756989 (-106.237917)	237,408.23	54-014(d) 54-017	11,056.71 58,872.77
Pajarito	J025	PJ-SMA-19	1644331 (35.829233)	1757106 (-106.2368)	845,108.54	54-013(b) 54-017 54-020	0.00 272,540.59 1,100.47
Pajarito	J027	PJ-SMA-20	1644964 (35.82975)	1757292 (-106.23465)	290,080.75	54-017	190,661.89
Pajarito	J028	STRM-SMA-1.05	1610899 (35.859683)	1768204 (-106.349617)	144,271.08	08-009(f)	0.77
Pajarito	J029	STRM-SMA-1.5 ¹	1611081 (35.860811)	1768615 (-106.349005)	165,963.60	08-009(d)	261.54
Pajarito	J030	STRM-SMA-4.2	1612117 (35.858767)	1767869 (-106.3455)	3,459.21	09-008(b)	1,733.55
Pajarito	J031	STRM-SMA-5.05	1613807 (35.8595)	1768137 (-106.3398)	87,012.57	09-013	76,189.35

¹ Minor sampler movement.

Attachment 5 Sampling Requirements and Plan

Sampling and Analysis Requirements

Sampling Conditions	Analytical Suite										
	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	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: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-Zn F	SW-PCB- 1668A-PQL	SW-HEXP-8330	SW-SVOC-625
Field prep code	UF	UF	UF	F	UF	F	F	F	UF	UF	UF
Preservation	HNO ₃	HNO ₃	NaOH, Ice	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	365	7	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	0.5	0.5	3	2.5	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	0.25	0.25	1	0.77	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Amber glass

UF: Unfiltered.

F: Filtered.

Attachment 5, Sampling Requirements and Plan (continued)

Sampling and Analysis Plan

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	SVOCs
2M-SMA-1	129	SS2432	CAI2											
2M-SMA-1.42	130	SS093203	CAM5	X					X					
2M-SMA-1.43	131	SS093204	CAI											
2M-SMA-1.44	132	SS093205	CAM5	X						X				
2M-SMA-1.45	133	SS123220	CAM5	X	X	X	X	X						
2M-SMA-1.5	134	SS2436	MEx	X	X	X	X	X					X	X
2M-SMA-1.65	135	SS093209	CAM5	X										
2M-SMA-1.67	136	SS103216	MEx	X	X	X	X	X					X	
2M-SMA-1.7	137	SS2438	CAM5							X				
2M-SMA-1.8	138	SS103217	CAI											
2M-SMA-1.9	139	SS103218	CAI											
2M-SMA-2	140	SS123221	CAI2											
2M-SMA-2.2	141	SS093214	CAI											
2M-SMA-3	142	SS2439	CAI											
2M-SMA-2.5	143	SS093210	BCComp											
3M-SMA-0.2	144	SS091501	MEx	X	X	X	X	X						
3M-SMA-0.4	145	SS101502	CAI											
3M-SMA-0.5	146	SS2459	MEx	X	X	X	X	X					X	
3M-SMA-0.6	147	SS2457	MEx	X	X	X	X	X						
3M-SMA-2.6	148	SS101503	MEx	X	X	X	X	X					X	X
3M-SMA-4	149	SS101504	MEx	X	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	Zinc	PCBs	High Explosives	SVOCs
PJ-SMA-1.05	150	SS092327	CAI											
PJ-SMA-2	151	SS2422	MEx	X	X	X	X	X						
PJ-SMA-3.05	152	SS092326	CAM5	X		X								
PJ-SMA-4.05	153	SS092328	CAI											
PJ-SMA-5	154	SS24254	CAI											
PJ-SMA-5.1	155	SS092306	CAM5	X						X	X			
PJ-SMA-6	156	SS24255	MEx	X	X	X	X	X						
PJ-SMA-7	157	SS112337	MEx	X	X	X	X	X					X	
PJ-SMA-8	158	SS112338	MEx	X	X	X	X	X					X	
PJ-SMA-9	159	SS2427	MEx	X	X	X	X	X					X	X
PJ-SMA-10	160	SS132340	MEx	X	X	X	X	X					X	X
PJ-SMA-11	161	SS102333	CAI											
PJ-SMA-11.1	162	SS102334	CAI											
PJ-SMA-13	163	SS102335	MEx	X	X	X	X	X					X	
PJ-SMA-13.7	164	SS132339	CAM5	X	X	X	X	X						
PJ-SMA-14	165	SS2465	MEx	X	X	X	X	X					X	
PJ-SMA-14.2	166	SS092320	MEx	X	X	X	X	X						
PJ-SMA-14.3	167	SS092321	MEx	X	X	X	X	X						
PJ-SMA-14.4	168	SS092322	MEx	X	X	X	X	X						
PJ-SMA-14.6	169	SS092323	MEx	X	X	X	X	X						
PJ-SMA-14.8	170	SS092324	BCComp											

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	Zinc	PCBs	High Explosives	SVOCs
PJ-SMA-16	171	SS092325	BCComp											
PJ-SMA-17	172	SS092331	CAI											
PJ-SMA-18	173	SS092329	CAI											
PJ-SMA-19	174	SS092330	CAI											
PJ-SMA-20	175	SS092332	CACompC	X	X	X	X	X				X		
STRM-SMA-1.05	176	SS093001	CAI2											
STRM-SMA-1.5	177	SS133007	CAM5	X	X	X	X	X						X
STRM-SMA-4.2	178	SS093006	CAM5			X			X					
STRM-SMA-5.05	179	SS093002	CAM5	X		X			X			X		

CAI2 = Enhanced control corrective action monitoring has exceeded a target action level. A path to completion of corrective action is being planned.

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.

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.

BCComp = Baseline Confirmation Complete: All confirmation monitoring results for all pollutants of concern at the SMA are at or below TALs, and corrective action is not required at the Sites. No further sampling is required.

CACompC=Control measures installed to totally eliminate exposure of pollutants to storm water.