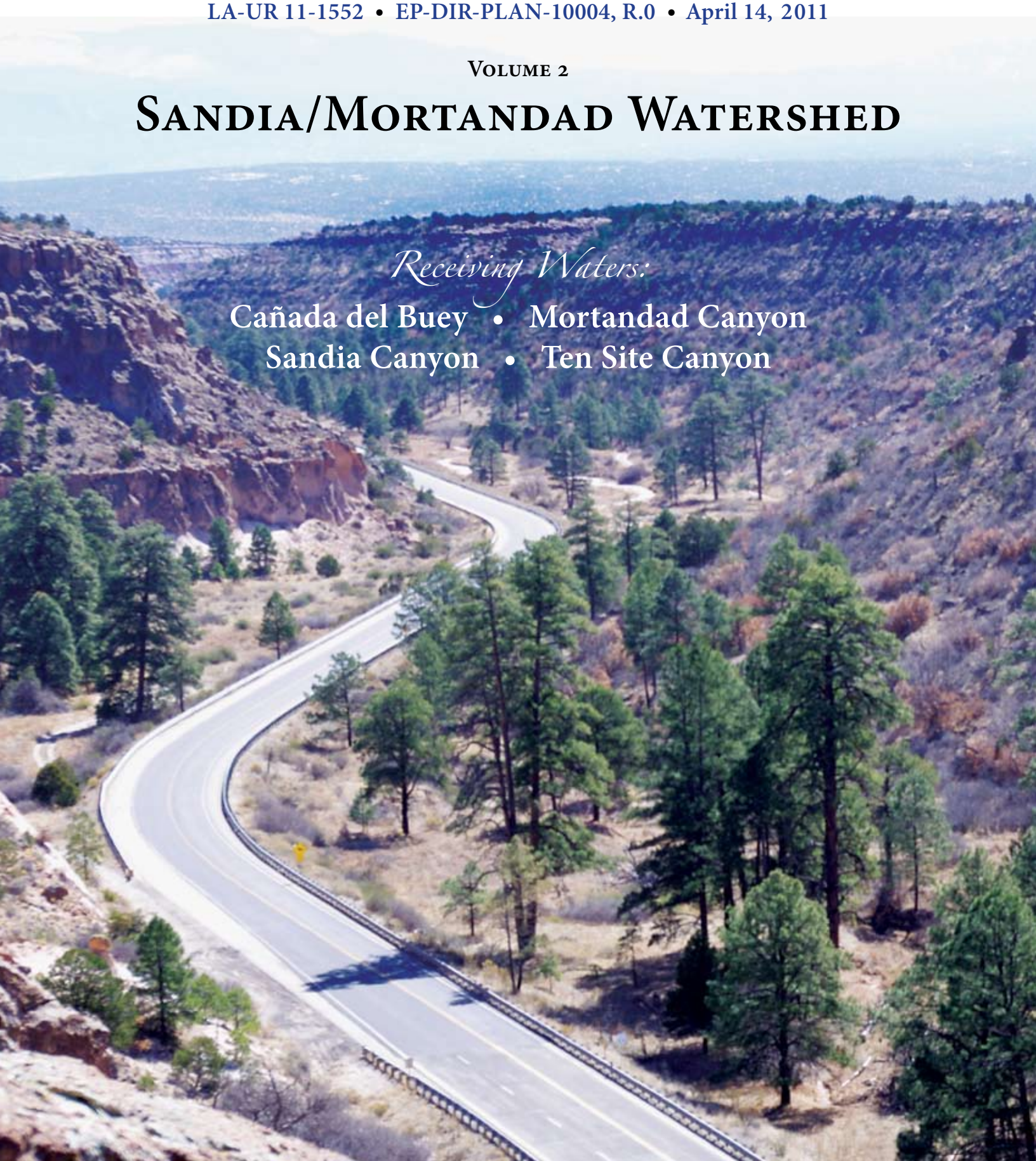
SITE DISCHARGE POLLUTION PREVENTION PLAN

Los Alamos National Laboratory • NPDES Permit No. NM0030759

LA-UR 11-1552 • EP-DIR-PLAN-10004, R.0 • April 14, 2011

Volume 2

Sandia/Mortandad Watershed



Receiving Waters:

Cañada del Buey • Mortandad Canyon

Sandia Canyon • Ten Site Canyon

CONTENTS

Section 100 SITE DISCHARGE POLLUTION PREVENTION PLAN CERTIFICATION AND APPROVAL 7

Section 200 SITE DISCHARGE POLLUTION PREVENTION PLAN AMENDMENTS 8

Section 300 INTRODUCTION AND PROGRAM DESCRIPTION 8

300.1 Objectives
300.2 SDPPP Organization
300.3 Sandia Mortandad Watershed Overview
300.3.1 Receiving Waters and Wetlands in Sandia Mortandad Watershed
300.3.2 Vicinity Map
300.4 Precipitation Network and Monitoring
300.4.1 Regional Hydrologic Characteristics
300.4.2 Precipitation Measurement
300.4.3 Procedures

Section 400 SITE DISCHARGE POLLUTION PREVENTION TEAM 15

400.1 Roles and Responsibilities
400.2 Training

Section 500 POTENTIAL POLLUTANT SOURCES 17

500.1 Historical Industrial Activity Areas
500.2 Urban Influences
500.3 Public Influences

Section 600 BASELINE CONTROL MEASURES 19

600.1 Erosion and Sediment Controls
600.2 Management of Run-on and Run-off
600.3 Non-Storm Water Discharges
600.4 Other Control Measures
600.4.1 Litter and Debris
600.4.2 Dust Minimization
600.4.3 Waste Minimization
600.4.4 Flow Dissipation
600.5 Selection of Control Measures
600.6 Schedules for Baseline Control Measure Installation

Section 700 STORM WATER MONITORING OVERVIEW 21

700.1 Monitoring and Analysis Requirements
700.1.1 Initial Confirmation Sampling
700.1.2 Confirmation Results
700.1.2.1 Confirmation Results Below Target Action Levels
700.1.2.2 Confirmation Results Above Target Action Levels
700.2 Sampling Location Selection and Determining Substantially Identical Effluent
700.3 Procedures

Section 800 INSPECTION REQUIREMENTS OVERVIEW 24
800.1 Post-Storm Inspections
800.2 Monitoring Response Inspections
800.3 Annual Inspection and Erosion Re-evaluation
800.4 Construction Activity Associated with Site Remediation
800.5 Procedures

Section 900 CORRECTIVE ACTION AND OTHER CONDITIONS 25
900.1 Completion of Corrective Action
900.1.1 Alternative Compliance
900.2 Deadlines
900.2.1 High Priority Sites
900.2.2 Moderate Priority Sites

Section 1000 SITE MONITORING AREAS 29
1000.1 CDB-SMA-0.15 30
1000.2 CDB-SMA-0.25 38
1000.3 CDB-SMA-0.55 46
1000.4 CDB-SMA-1 56
1000.5 CDB-SMA-1.15 66
1000.6 CDB-SMA-1.35 74
1000.7 CDB-SMA-1.54 84
1000.8 CDB-SMA-1.55 94
1000.9 CDB-SMA-1.65 102
1000.10 CDB-SMA-4 110
1000.11 M-SMA-1 118
1000.12 M-SMA-1.2 126
1000.13 M-SMA-1.21 134
1000.14 M-SMA-1.22 142
1000.15 M-SMA-3 150
1000.16 M-SMA-3.1 160
1000.17 M-SMA-3.5 168
1000.18 M-SMA-4 178
1000.19 M-SMA-5 188
1000.20 M-SMA-6 198
1000.21 M-SMA-7 206
1000.22 M-SMA-7.9 214
1000.23 M-SMA-9.1 222
1000.24 M-SMA-10 230
1000.25 M-SMA-10.01 238
1000.26 M-SMA-10.3 246
1000.27 M-SMA-11.1 254
1000.28 M-SMA-12 262
1000.29 M-SMA-12.5 270
1000.30 M-SMA-12.6 280
1000.31 M-SMA-12.7 288
1000.32 M-SMA-12.8 296
1000.33 M-SMA-12.9 304
1000.34 M-SMA-12.92 312
1000.35 M-SMA-13 320
1000.36 S-SMA-0.25 328

1000.37 S-SMA-1.1 338
1000.38 S-SMA-2 346
1000.39 S-SMA-2.01 356
1000.40 S-SMA-2.8 364
1000.41 S-SMA-3.51 372
1000.42 S-SMA-3.52 380
1000.43 S-SMA-3.52 388
1000.44 S-SMA-3.6 396
1000.45 S-SMA-3.7 404
1000.46 S-SMA-3.71 412
1000.47 S-SMA-3.72 420
1000.48 S-SMA-3.95 428
1000.49 S-SMA-4.1 436
1000.50 S-SMA-4.5 444
1000.51 S-SMA-5 452
1000.52 S-SMA-5.2 460
1000.53 S-SMA-5.5 468
1000.54 S-SMA-6 476
1000.55 PRATT-SMA-1.05 484
1000.56 T-SMA-1 496
1000.57 T-SMA-2.5 504
1000.58 T-SMA-2.85 512
1000.59 T-SMA-3 520
1000.60 T-SMA-4 528
1000.61 T-SMA-5 538
1000.62 T-SMA-6.8 548
1000.63 T-SMA-7 556
1000.64 T-SMA-7.1 564

ATTACHMENTS

Attachment A Amendments 570
Attachment B Vicinity Map 572
Attachment C Precipitation Network 576
Attachment D Physical Characteristics 582
Attachment E Procedural Documents 587
Attachment F Training Log 590
Attachment G Acronyms and References 591



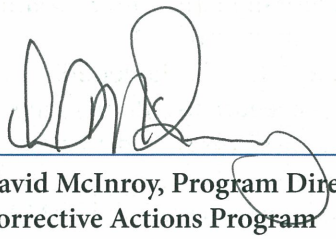
Sandia Canyon area

SECTION 100 SDPPP

CERTIFICATIONS AND APPROVAL

Certification Statement Of Authorization

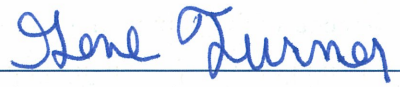
'I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage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



Apr. 19, 2011

David McInroy, Program Director
Corrective Actions Program
Environmental Programs
Los Alamos National Security, LLC

Date



4/25/11

Gene Turner, Permitting Manager
Environmental Project Office
National Nuclear Security Administration

Date

SECTION 200
SDPPP AMENDMENTS

This Site Discharge Pollution Prevention Plan (SDPPP) is a dynamic document that requires continuous updating as elements of the Individual Permit (IP) storm water program are implemented, completed, or changed. This SDPPP will be updated annually to fully incorporate all changes made during the previous year and to reflect any changes projected for the following year. Amendments to this SDPPP are consolidated in Attachment A.

In support of the annual update, work conducted following the publication of this document will be documented in supporting records kept alongside the SDPPP to demonstrate compliance with the requirements of the IP. As required in Part I.F.4 of the IP, the SDPPP will be updated annually to fully capture this interim work and to reflect programmatic and regulatory changes that have occurred over the course of the year. Annual updates to this document will contain at a minimum the following information:

- Construction or a change in design, operation, or maintenance at the facility having a significant impact. on the
- discharge, or potential for discharge, of pollutants from the facility;
- Findings of deficiencies in control
- measures during inspection or based on analytical monitoring results;
- Any change of monitoring requirement or compliance status;
- Any change of Site Monitoring Area (SMA) location; and
- Summary of changes from the last year's SDPPP.

SECTION 300
INTRODUCTION AND PROJECT DESCRIPTION

Los Alamos National Security, LLC (LANS) under the direction of the National Nuclear Security Administration (NNSA) have prepared this SDPPP pursuant to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (Permit or IP) issued by the U.S. Environmental Protection Agency (EPA) Region 6 office, effective November 1, 2010. The IP authorizes and regulates storm water discharges from historical industrial activity areas associated with specified Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs), collectively called Sites. These Sites may have the potential to discharge storm water into seven major watersheds on the Pajarito Plateau, which are tributaries to the Rio Grande.

300.1 Objectives

The SDPPP has three primary objectives:

- Identify and summarize potential pollutant sources, including potential sediment-borne pollutants, that may affect the quality of storm water discharges associated with Sites listed in Appendix A of the IP;
- Identify and describe the control measures intended to reduce or eliminate pollutants in storm water discharges;
- Monitor the effectiveness of control measures implemented at the SMAs in accordance with the requirements and schedules provided in the IP.

This SDPPP conforms to the required elements of the IP including those stipulated in Part I, Section F. A paper copy of the SDPPP is readily available onsite for the duration of the IP. A copy of the SDPPP is also available on a public website at *http://www.lanl.gov/environment/h2o/sdppp.shtml*

300.2 SDPPP Organization

The SDPPP is comprised of five volumes, each comprising one or more of seven major Pajarito Plateau watersheds. The SDPPP volumes are organized geographically from north to south, as shown in Table 300-1. A general vicinity map of the specific watersheds is provided in Attachment B of these volumes.

Table 300-1 SDPPP Organization

SDPPP Volume	Primary Watershed	Receiving Water(s)	Number of SMAs (Percentage)
Volume 1	Los Alamos / Pueblo	• Rendija Canyon • Bayo Canyon • Pueblo Canyon • DP Canyon • Los Alamos Canyon	64 (25.6%)
Volume 2	Sandia / Mortandad	• Mortandad Canyon • Ten Site Canyon • Cañada del Buey • Sandia Canyon	64 (25.6%)
Volume 3	Pajarito	• Pajarito Canyon • Starmers Gulch • Twomile Canyon • Threemile Canyon	51 (20.4%)
Volume 4	Water/ Cañon de Valle	• Cañon de Valle • Potrillo Canyon • Water Canyon • Fence Canyon	50 (20%)
Volume 5	Ancho / Chaquehui	• Ancho Canyon • Chaquehui Canyon	21 (8.4%)

Each volume of the SDPPP contains the following information:

- **Section 300** presents watershed-specific information and an overview of precipitation characteristics and monitoring.
- **Section 400** provides a description of the pollution prevention team, the functional roles and responsibilities, and describes the associated training programs at LANL.
- **Section 500** describes the potential storm water pollutant sources at the permitted Sites.
- **Section 600** describes the various baseline control measures implemented at the permitted Sites.
- **Section 700** provides an overview of storm water monitoring for the permitted Sites, including sampling procedures and applicable Target Action Levels (TALs).
- **Section 800** discusses inspection requirements required under the IP.
- **Section 900** discusses corrective action and other permit conditions as provided in the IP.
- **Section 1000** provides SMA-specific details for each of the monitored areas within the watershed.
- **Attachment A** Amendments
- **Attachment B** Vicinity Map
- **Attachment C** Precipitation Network
- **Attachment D** Physical Characteristics
- **Attachment E** Procedural Documents
- **Attachment F** Training Log
- **Attachment G** Acronyms and References

300.3 Sandia/Mortandad Watershed Overview

The Sandia and Mortandad watersheds are located within the central part of the Laboratory, a Vicinity Map is provided in Attachment B. The Sandia watershed heads on Laboratory property within TA-03 at an elevation of approximately 7,300 feet and trends east-southeast across the Laboratory, Bandelier National Monument, and San Ildefonso Pueblo. Sandia Canyon empties into the Rio Grande in White Rock Canyon at an elevation of 5,450 feet. The area of Sandia Canyon watershed is approximately 5.5 square miles.

The Mortandad watershed is located in the central portion of the Laboratory and covers approximately 10 square miles. The watershed contains a stream that is entirely ephemeral; neither perennial springs nor natural perennial reaches occur. The Mortandad watershed trends east-to-southeast and heads on the Pajarito Plateau near the main Laboratory complex at TA-03 at an elevation of 7,380 ft. The drainage extends from its headwaters to its confluence with the Rio Grande at an elevation of 5,440 ft. Mortandad canyon crosses San Ildefonso Pueblo land for several miles before joining the Rio Grande.

There are no significant tributaries to the Sandia watershed. Perennial stream flow occurs in the upper and middle portions of the canyon system due to sanitary wastewater and cooling tower effluent discharge to the canyon from operating facilities. The only known perennial spring in the watershed (Sandia Spring) is located in lower Sandia Canyon near the Rio Grande. TAs located in the Sandia Canyon watershed include TA-03, TA-20, TA-53, TA-60, TA-61, and TA-72.

The Mortandad watershed may be influenced by 2 significant tributaries, Ten-Site Canyon and Cañada del Buey. Snowmelt run-off and storm water run-off from seasonal snow and rain storms flow for a limited distance in the upper canyon and occasionally as far as the sediment traps. Upstream of TA-48, snowmelt, storm water run-off, and cooling water discharges are the sources of flow into the Mortandad watershed. Surface water flows from an NPDES-permitted outfall at the Laboratory's TA 50 Radioactive Liquid Waste Treatment Facility and from the NPDES-permitted cooling tower outfalls at TA-03. Current and former TAs located in the Mortandad Canyon watershed include TA-03, TA-04, TA-05, TA-18, TA-35, TA-42, TA-46, TA-48, TA-50, TA-51, TA-52, TA-54, TA-55, and TA-59.

Ten Site Canyon lies south of and extends parallel to Mortandad Canyon for about 1.5 miles. Ten Site Canyon joins Mortandad Canyon in the lower portion of the drainage. TAs located in Ten Site Canyon include TA-04, TA-35, and TA-50.

Cañada del Buey heads on Laboratory property at TA-52 and TA-36 at an elevation of approximately 7,200 feet and trends east-southeast across the Laboratory, San Ildefonso Pueblo land, and Los Alamos County and ends at its confluence with Mortandad Canyon at an elevation of 5,620 feet approximately 0.5 mile upstream of the Rio Grande. Within Laboratory boundaries, Cañada del Buey has one main tributary, the south fork of Cañada del Buey, and a smaller tributary, referred to as the TA-46 tributary or the SWSC tributary. A larger tributary to Cañada del Buey (the north fork) is entirely on San Ildefonso Pueblo land and joins the main channel in White Rock; no Laboratory activities have occurred within the north fork of Cañada del Buey. TAs located in Cañada del Buey include TA-04, TA-46, and TA-54.

300.3.1 Receiving Waters and Wetlands in Sandia Mortandad Watershed

Thirty wetlands occupying portions of fourteen different technical areas throughout the Laboratory have been identified and delineated by the US Army Corp of Engineers (COE 2005).

The Sandia Mortandad watershed contains, or may influence, eight wetland areas totaling approximately 5.39 acres. The approximate dimensions and areas of wetlands in proximity to the Sandia Mortandad watershed are shown in Table 300-2.

Table 300-2 Wetlands in Proximity to the Sandia Mortandad Watershed

Wetland Identification	Approximate Area (acres)	Approximate Length	Approximate Width
03-1	0.06	100	25
03-2	0.08	115	30
48-1	0.08	295	30
48-2	0.06	95	25
48-3	0.92	1400	30
48-4	0.05	50	50
55-1	1.19	1270	40
61-1	2.95	1285	100

Wetland 03-1 is located at the head of Upper Mortandad Canyon. This area is bounded on the north by developed area of TA-3. On the south the area is bounded by the north-facing slope of the canyon and Pajarito Road on the mesa top. The wetland is approximately 0.06 acres, with approximate dimensions of 100 feet in length by an average width of 25 feet. Vegetation in this area consists primarily of narrow-leaf cattail (*Typha angustifolia*).

Wetland 03-2 is located approximately 500 feet east of Wetland 03-1 on a south-facing slope of Upper Mortandad Canyon. This area is bounded on the north by developed area of TA-3. On the south the area is bounded by the canyon bottom. Wetland 03-2 is approximately 1,500 feet upstream (west) of wetland 48-1. The wetland is approximately 0.08 acres, with dimensions of 115 feet in length by an average width of 30 feet. Vegetation in this area includes coyote willow (*Salix exigua*), narrow-leaf cattail (*Typha angustifolia*), baltic rush (*Juncus balticus*), and poison ivy (*Toxicodendron radicans*).

Wetland 48-1 is located on the floor of Upper Mortandad Canyon. It is bounded on the north by the south-facing slope of the canyon and TA-60 on the mesa top. On the south the area is bounded by the north-facing slope of the canyon and TA 48 on the mesa top. The wetland is approximately 1,500 feet downstream (east) of wetland 3-2 and 250 feet upstream (west) of wetland 48-2. Wetland 48-1 is approximately 0.08 acres, with dimensions of 295 feet in length by an average width of 30 feet. Vegetation in the area includes baltic rush (*Juncus balticus*), coyote willow (*Salix exigua*), bluegrass (*Poa sp.*), narrow-leaf cattail (*Typha angustifolia*), and woolly sedge (*Carex lanuginosa*).

Wetland 48-2 is located on the floor of Upper Mortandad Canyon. It is bounded on the north by the south-facing slope of the canyon and TA-60 on the mesa top. On

the south the area is bounded by the north-facing slope of the canyon and TA 48 on the mesa top. The wetland is approximately 250 feet downstream (east) of wetland 48-1 and 250 feet upstream (west) of wetland 48-3. Wetland 48-2 is approximately 0.06 acres, with dimensions of 95 feet in length by an average width of 25 feet. Vegetation in the area includes baltic rush (*Juncus balticus*), coyote willow (*Salix exigua*), bluegrass (*Poa sp.*), narrow-leaf cattail (*Typha angustifolia*), and woolly sedge (*Carex lanuginosa*).

Wetland 48-3 is located on the floor of Upper Mortandad Canyon. It is bounded on the north by the south-facing slope of the canyon and TA-60 on the mesa top. On the south the area is bounded by the north-facing slope of the canyon and TA 48 on the mesa top. The wetland is approximately 250 feet downstream (east) of wetland 48-2. Wetland 48-3 is approximately 0.92 acres, with dimensions of 1,400 feet in length by an average width of 30 feet. Vegetation in the area includes baltic rush (*Juncus balticus*), coyote willow (*Salix exigua*), bluegrass (*Poa sp.*), narrow-leaf cattail (*Typha angustifolia*), and woolly sedge (*Carex lanuginosa*).

Wetland 48-4 is located at the head of a tributary of Mortandad Canyon. It is bounded on the north and west by developed areas at TA-48. Wetland 48-4 is located approximately 630 feet upstream (west) of wetland 55-1. Wetland 48-4 is approximately 0.05 acres, with dimensions of 50 feet in length by 50 feet in width. Vegetation in the area includes narrow-cattail (*Typha angustifolia*).

Wetland 55-1 is located on the floor of a tributary to Mortandad Canyon. It is bounded on the north by the south-facing slope of the canyon and undeveloped area of TA-48 on the mesa top. On the south, it is bounded by the north-facing slope of the canyon and developed area of TA-55 on the mesa top. Wetland 55-1 is located approximately 630 feet downstream (east) of wetland 48-4. The wetland is approximately 1.19 acres, with dimensions of 1,270 feet in length by an average width of 40 feet. Vegetation in the area includes coyote willow (*Salix exigua*), narrow-leaf cattail (*Typha angustifolia*), baltic rush (*Juncus balticus*), poison ivy (*Toxicodendron radicans*), and sedge grasses (*Carex sp.*).

Wetland 61-1 is located on the canyon floor at the head of Sandia Canyon. It is bounded on the north by the south-facing slope of the canyon and the Los Alamos County landfill on the mesa top. On the south, it is bounded by the north-facing slope of the canyon and developed areas of TA-60 on the mesa top. The wetland is approximately 2.95 acres, with dimensions of 1285 ft in length by an average of 100 ft in width. Vegetation in the area includes creeping bentgrass (*Agrostis stolonifera*), and broad-leaf cattail (*Typha latifolia*).

300.3.2 Vicinity Map

A vicinity map for the Sandia Mortandad watershed is provided in Attachment B. The map shows locations of SMAs and the wetlands in proximity to the watershed.

300.4 Precipitation Network and Monitoring

LANS maintains a network of meteorological towers that have provided local-area and national reporting of climate data since World War II. This network of towers has been augmented by a finer set of rain gages specifically used by the storm water program at LANL. The network rain gages provide additional data for SMAs located at lower elevation or in areas remote from the traditional towers. In most watersheds, a combination of traditional meteorological towers and network gages, are used to measure, track, and report precipitation related to SMAs.

300.4.1 Regional Hydrologic Characteristics

Los Alamos, NM has a semiarid climate with an average rainfall of about 19 inches per year. Over 30% of the area is dominated by ponderosa pine-stands at higher elevations that transition to Piñon-Juniper woodlands as elevation decreases. The Pajarito plateau is separated into finger mesas by west to east oriented canyons. The canyon bottoms contain riparian vegetation and stream flows are typically ephemeral and fed by snowmelt and/or rainfall. Perennial springs are present on the flanks of the Jemez Mountains and supply base flow to the upper reaches of some canyons, but the volume of flow is insufficient to maintain surface flows across the facility mostly due to channel transmission losses.

Canyons located within the LANL boundary are tributaries to the Rio Grande and some canyons will deliver surface flow, from heavy rains or sustained snowmelt. Run-off leaving the Laboratory's eastern boundary and adjacent canyons is measured by gage stations located on each major canyon. Downstream of LANL, the Rio Grande flows southward to Cochiti Reservoir.

300.4.2 Precipitation Measurement

Precipitation monitoring for the IP is conducted to identify a "storm rain event" that could affect control measures and storm water management devices employed at SWMUs or AOCs. A "storm rain event" is defined as a 0.25-inch or more intensive rain event occurring within 30 minutes. Precipitation monitoring identifies "storm rain events", the date and time of the event, and also assists with the identification of adverse weather events. Adverse weather conditions include dangerous weather-related events (e.g., flooding, wildfires, or hail) that make inspection dangerous for worker safety.

Within the Sandia Mortandad watershed, three meteorological towers and four extended network gages are used to measure and report precipitation. These precipitation gages are shown in Table 300-3. Attachment C illustrates the entire precipitation network currently employed at LANL.

Table 300-3 Rain Gages for the Sandia Mortandad Watershed

Meteorological Tower or Rain Gage	Primary Tower or Network Gage	Year Placed in Service	Location	Associated SMAs
RG-TA-06	Primary	2008	The rain gage is located on Two-Mile mesa.	2
RG-TA-53	Primary	1991	The rain gage is located on the narrow mesa between Sandia and Los Alamos Canyons.	5
RG-TA-54	Primary	2008	The rain gage is located near the confluence of Cañada del Buey and Three-Mile Canyon at the eastern edge of Mesita del Buey.	1
RG121.9	Network	2008	The rain gage is located in upper Sandia Canyon.	13
RG200.5	Network	2008	The rain gage is located in Mortandad Canyon.	23
RG203	Network	2008	The rain gage is located in Mortandad Canyon.	12
RG245.5	Network	2008	The rain gage is located in Pajarito Canyon near the confluence with Three-Mile Canyon.	8

300.4.3 Procedures

Standardized precipitation data management is used at LANL in order to efficiently manage field activities and ensure accurate reporting capabilities. Standard Operating Procedure (SOP), EP-DIV-SOP-10004, "Managing Electronic Precipitation Data for Storm Water Projects" describes the processes defining this work. Electronic precipitation data are stored in the Storm Water Tracking System (SWTS) module on the LANL Water Quality Database (WQDB).

Current versions of all IP related SOPs are summarized in Attachment E. The summary table in Attachment E also provides a hyperlink to the current version of the applicable procedure that resides on the public website. These procedures apply to the work activity described in this section. Additional procedures may be added as necessary to describe and document quality-affecting activities.

SECTION 400
SITE DISCHARGE POLLUTION PREVENTION TEAM

To facilitate the implementation, maintenance, and revision of the SDPPP, a Site Discharge Pollution Prevention Team (PPT) has been established. The PPT is responsible for assisting in developing and revising the SDPPP as well as maintaining control measures and taking corrective actions for deficiencies.

400.1 Roles and Responsibilities

The PPT consists of personnel from the LANS Corrective Actions Program, ENV-RCRA, and subcontract staff whose selection is based on their familiarity with the Site location and surrounding operations. The specific responsibilities of the PPT are provided in Table 400-1. Each member of the PPT has access to either an electronic or paper copy of applicable portions of this permit and this SDPPP.

Table 400-1 PPT Roles and Responsibilities

PPT–Title	Functional Responsibility
Surface Water and Canyons Investigation Project Manager	Responsible for managing implementation of Individual Permit requirements.
Storm Water Permitting/Compliance Team Leader and Delegees	Responsible for ensuring compliance is met for the Individual Permit Storm Water Program, communicating with the Surface Water and Canyons Investigation Project Manager on compliance issues, providing training and developing qualifications for personnel as specified in Section 400.2 of the SDPPP.
Corrective Actions Project Field Lead	Responsible for implementation of Individual Permit field requirements (Sections 600 and 900) by installing, inspecting and maintaining baseline control measures, and implementation of corrective actions when TALs are exceeded.
Corrective Actions Project Monitoring Field Lead	Responsible for implementation of storm water monitoring as required in Section 700 of the SDPPP.
Corrective Actions Project Characterization and Remediation Project Managers	Responsible for helping in the implementation of remediation and characterization activities at LANL for their specific locations on LANL property as they pertain to the Individual Permit.
Inspector	Responsible for conducting Site inspections as required by the IP. Coordinates with the Lead Inspector, to resolve issues related to successful conduct of operations.
Pollution Prevention Team Members	Responsible for implementing and updating the SDPPP, assisting in maintaining control measures and implementing corrective actions for deficiencies, and completing training as specified in section 400.2 of the SDPPP.

400.2 Training

Project personnel receive both formal and informal training in the execution of storm water management at SMAs. Formal training, which covers all aspects of the developed SDPPP, is conducted each spring prior to the field season and

documented in the SDPPP. During the field season, daily tailgate meetings are conducted to inform personnel of work assignments, impending changes, and issues related to work.

Each PPT member receives SDPPP training and has ready access to the IP and SDPPP documentation. The list of PPT members is revised when there are changes in PPT members or their duties. The most current list is kept with the master copy of the SDPPP.

Training for the PPT is conducted at least annually as specified in Part I, Section A.3. Summaries of these trainings will be documented in Attachment F, Training Log. Employee training is essential for effective implementation of the SDPPP and success of the storm water program. The objective of the training program is to:

- instill in employees and managers an understanding of the purpose of the SDPPP Plan, Volume 1 through 5,
- give the PPT the tools and training they need to inspect, maintain, and modify control measures used at our Sites,
- satisfy reporting and documentation requirements.

SECTION 500
POTENTIAL POLLUTANT SOURCES

A baseline review has been completed for each permitted area as part of the planning process. The review evaluated the characteristics of the suspected release(s) from SWMUs and AOCs within the context of the monitored area, the placement of the sampler within the area, and recommended Site-specific controls specific for each area. This review also included an evaluation of any additional potential pollutant sources that might be present. This assessment work allows the PPT to better address the non-numeric technology-based effluent requirements specified in the IP.

The following sections discuss each of the primary categories of pollutant sources within the Sandia Mortandad watershed. The primary categories of pollutant sources discussed within the context of each SMA are historical industrial activities, urban influences, and public influences. This discussion is further detailed at the SMA-level in Section 1000.

500.1 Historical Industrial Activity

Within the Sandia Mortandad watershed, there are 64 Permitted Features comprised of 119 Sites associated with 64 SMAs. Sites associated with this watershed are primarily associated with historical Laboratory operations dating back to the establishment of the Laboratory in the 1940s. Potential pollutants of concern at related SMAs in the Sandia Mortandad watershed are generally classified as metals, organics, and radioactivity present in surface soils.

Sandia canyon may be influenced by storm water discharges associated with 23 Sites permitted under the IP monitored in 19 SMAs. Laboratory activities in proximity to the Sandia watershed have primarily been liquid waste treatment associated with industrial and sanitary systems. In the late 1940s, a brief operation of a small-charge implosion and initiator experiment site was located at TA-20. Other early activities were associated with outfalls and firing site activities located at TA-03, which is the current location of the Laboratory administration complex. In recent years the Laboratory's security force firing range was located in proximity to the canyon. Additional impacts to this canyon may have occurred with the continued expansion of Laboratory operations to include accelerator technology research and a firing range in the 1960s, specifically at TA-53 and TA-72.

Cañada del Buey canyon may be impacted by storm water discharges associated with 32 permitted Sites that are monitored by ten SMAs. Sources of potential contamination in Cañada del Buey include TA-46, TA-51, TA-52,

TA-54, and former TA-04. These TAs and their associated areas of concern/solid waste management units (AOCs/SWMUs) are located on mesa tops adjacent to Cañada del Buey. Cañada del Buey serves primarily as a buffer zone for surface and subsurface material disposal areas (MDAs) at TA-54 on Mesita del Buey, just south of the canyon. The earliest discharges were associated with outfalls, surface run-off, and dispersion from firing sites located at former TA-04 (Alpha Site), which is now part of TA-52.

Mortandad canyon may be affected by storm water discharges associated with 40 Sites under the IP that are monitored by 25 SMAs. The primary sources of contamination in this watershed include historic releases of contaminants from outfalls and spills at TA-35 and TA-50, including the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50. RCRA constituents, including metals and VOCs, have historically been released into Mortandad and related tributaries.

Ten Site canyon may be influenced by storm water discharges associated with 24 Sites permitted under the IP that are monitored by ten SMAs. From 1951 to 1963 the Laboratory's wastewater treatment plant was operated at TA-35. Routine and off-normal discharges from the liquid waste treatment operation resulted in releases of contaminants to Ten Site Canyon. As the volume of liquid radioactive wastes continued to increase, the wastewater treatment operations were eventually transferred to the RLWTF located at TA-50. Early discharges to this canyon were probably limited to outfalls from buildings associated with firing sites located at TA-04 and TA-05. Sanitary septic systems and the TA-35 wastewater treatment plant began discharging circa 1951. From 1951 to 1963, treated wastewater containing radionuclides was discharged from the Ten Site Laboratory (Building TA-35-2) into Pratt Canyon (SWMU 35-003(d)-00), a small tributary of Ten Site Canyon. The TA-35 WWTP was closed in 1963, underwent initial decontamination and decommissioning (D&D) in 1984 and 1985 (Elder et al. 1986, 03089), and underwent further D&D in 1995 and 1996 (LANL 1997, 56835). TA-35 remains a dense industrial area and storm water run-off from paved areas may also contribute to contaminants in the watershed. From 1975 to 1992, the TA-35 sanitary septic sewage lagoons released treated effluent to Ten Site Canyon at an NPDES permitted outfall. Photographic waste discharge, noncontact cooling water, and treated cooling water were also previously released at now inactive outfalls into Ten Site canyon.

500.2 Urban Influences

Less than 5% of SMAs within this watershed are subject to influence from urban sources. The urban designation at a specific SMA indicates a potential influence from paved parking, roads, storage areas, or other activities in proximity to the SMA. Where designated as a potential pollutant source for a SMA, these urban influences are not directly a LANL-based activity. The principal concerns posed by urban influences are an increase in storm water volume across or near the SMA, or the introduction of contaminants into the storm water that are not related to the historical activities conducted at the Site(s).

Increased volumes of storm water, if not adequately controlled, can result in a subsequent increase in sediment migration and may contribute to erosion of the managed area. Run-off from paved areas and roadways may contain increased concentrations of metals, petroleum products, and related vehicular fluids. Both the County of Los Alamos and the State of New Mexico maintain primary roadways that are adjacent to many of the SMAs monitored within this watershed. Where a Site has an unmitigated urban influence, the urban area is included

in the Site inspection if the conclusion is that the interface could influence sampling results.

Run-on from urbanized areas is typically prevented from coming into contact with Site(s) by diversion. Where diversion is not possible the run-on is managed by the Site controls as it co-mingles with the SMA storm water run-off. Selection of control measures to manage co-mingled storm water are made on a Site-specific basis. Specific storm water controls selected for the Sites with urban influences are described in detail in Section 1000 of this SDPPP.

500.3 Public Influences

Within the watershed, less than 15% of SMAs have the potential for public influence. While this category of potential pollutant sources is not as difficult to manage as those with urban influence, each of the primary canyons comprising this watershed has some component accessible to pedestrian traffic.

Where Sites are readily accessible to the public, there is a higher potential for litter and floatable debris. There is also an increased potential for vandalism or tampering with monitoring equipment. Where a Site has an unmitigated public influence, that area is included in the Site inspection if the conclusion is that the interface could influence management or sampling at the Site. Where monitoring equipment is disturbed, the equipment will be enclosed in tamper-proof boxes. SMAs with a potential public influence have been identified in Section 1000 of this SDPPP.

SECTION 600
BASELINE CONTROL MEASURES

In the Sandia Mortandad watershed baseline control measures have been implemented at 64 SMAs. Of the 64 SMAs in this watershed, 14 had completed baseline control installations and implementation before the effective date of the Permit, November 1, 2010, as identified in Appendix E, Table E-1 of the IP.

As described in the previous section, each SMA has been evaluated for pollutant sources that may be present in addition to potential historical industrial activity associated with the Site(s). Control measures have been similarly selected and the installation is related to the specific concerns within the SMA.

This section describes the general types of storm water controls deployed at SMAs in the Sandia Mortandad watershed. Specific control types are further described for each control class. Control measures referenced in this document follow the specifications provided in Storm Water BMP Manual.

Changes to baseline control measures such as repair, modification, or replacement, will be documented in interim documentation. These changes will be kept alongside the SDPPP until they are reflected in annual updates.

600.1 Erosion and Sediment Controls

These types of controls minimize the potential for erosion occurring from precipitation-based storm water flows across an area and to retain transported sediment onsite.

Baseline control measures used for erosion control at LANL include the following major classes: established vegetation, seed and mulch, channel/swales, gabions, and caps.

- Types of established vegetation include forested needle cast, vegetation buffer strip, and grasses and shrubs.
- Types of seed and mulch include hydromulch and seed, erosion control blankets and seed, wood straw and seed, and gravel mulch.
- Types of channel/swales include earthen, concrete/asphalt, rock, culverts, water bars, vegetated swales, and rip rap.
- Caps can be composed of earth, rock, or asphalt.

Baseline control measures used for sediment control include the following major categories: established vegetation, berms, sediment traps and basins,

gabions, and check dams.

- Types of berms include: earthen, base course, log, asphalt, Triangular Silt Dikes®, straw wattles, Terra Tubes®, retaining walls, curbing, and gravel bags.
- Check dams can be composed of: rock, log or juniper bales.

600.2 Management of Run-on and Run-off

The purpose of run-on/run-off control measures is to divert, infiltrate, reuse, contain or otherwise reduce storm water run-on/run-off. Baseline control measures used for managing run-on and run-off at LANL include the following control classes: established vegetation, channel/swales, gabions, sediment traps and basins, check dams, and berms.

600.3 Non-Storm Water Discharges

Visual surveys are conducted as part of the Permit-required Site inspections to identify the potential for non-storm water discharges at each SMA. There are no identified sources of unauthorized discharges at this time, including process wastewater, spills or leaks of toxic or hazardous materials, contaminated groundwater, or any contaminated non-storm water associated with the SMAs.

Non-storm water discharges include, but are not limited to, process wastewater, spills or leaks of toxic or hazardous materials, contaminated groundwater, etc. The Multi-Sector General Permit sets a precedent of allowable non-storm water discharges under NPDES storm water permits. The following non-storm water discharges are allowable to the extent that soils within the SMA drainage area are not disturbed:

- Discharges from fire fighting activities
- Fire hydrant flushing
- Potable water sources including waterline flushing
- Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
- Irrigation drainage;
- Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with the approved labeling;
- Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed);
- Routine external building washdown that does not use detergents;
- Uncontaminated ground water or spring water;
- Foundation or footing drains where flows are not contaminated with process materials; and
- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g., 'piped' cooling tower blowdown or drains).

600.4 Other Control Measures

600.4.1 Litter and Debris

Control measures have been implemented to ensure that no waste, garbage, or floatable debris are discharged to receiving waters. SMAs adjacent to or within urban areas have the greatest potential for impacts due to off-site litter sources. Sites will be inspected for litter, and visible, potentially floatable debris as part of the Permit-required Site inspections. Any litter, and visible, floatable debris will be removed and managed in appropriate containers and in accordance with LANL waste management policies. SMAs exhibiting problems with litter or other floatable debris, as identified in Site inspections, will have signage or other structural controls installed to address these areas.

600.4.2 Dust Minimization

The potential for generating dust, along with off-site vehicle tracking of raw, final or waste materials, or sediments is primarily at SMAs subject to construction activity involving

ongoing soil disturbance. As identified in the Permit, required Site inspections, dust generation and the tracking of materials shall be minimized with the application of water and/or an approved soil stabilizer. Water and soil stabilizer used to suppress dust generation will be applied at a rate to avoid discharge from the Site.

600.4.3 Waste Minimization

The introduction of raw, final, or waste materials to exposed areas will be minimized. Good housekeeping practices will be maintained and materials introduced or removed from the areas will be managed or disposed of properly at the end of each workday in accordance with LANL waste management policies.

600.4.4 Flow Dissipation

Flow velocity dissipation is addressed through the implementation of baseline control measures. Virtually all control measures deployed dissipate the velocity of flow across an area. Discharges from culverts and other conveyances have controls currently installed to dissipate the resultant flow velocity.

600.5 Selection of Control Measures

The baseline review of SMAs identified any additional potential pollutant sources that may be present, evaluated the physical characteristics of the SMA, and recommended control measures appropriate to the SMA for installation. Section 1000 presents information specific to each SMA, discusses the physical area influencing the SMA, and presents controls by pollutant source, as applicable. These controls have been selected to address the specific physical characteristics of the Sites and the drainage area. Controls provided for each SMA comprise the baseline selection of controls intended to control and stabilize the drainage areas associated with Sites as provided in Appendix E, Table E-1 of the Permit.

600.6 Schedules for Baseline Control Measure Installation

Within six months of the effective date of the IP (November 1, 2010), baseline control measures must be installed at each Site. The PPT will be responsible for ensuring control measure construction, implementation, and maintenance for each Site. Following the installation of all baseline controls, the effectiveness of control measures will be determined by the monitoring results of storm water samples at the SMA. The PPT is responsible for implementing control measures beyond the baseline within the required time frame. Section 700 describes in further detail, the relationship between monitoring results and non-numeric, technology-based, effluent limitations.

SECTION 700 STORM WATER MONITORING OVERVIEW

The purpose of the storm water monitoring specified in the IP is to determine the effectiveness of the control measures implemented to meet the non-numeric technology-based effluent limitations. This determination is made in part, by the collection of storm water samples, following the initial installation of baseline control measures. Concentrations of specific pollutants in the collected sample are compared with specific Target Action Levels (TALs) listed in Section I.C of the IP.

700.1 Monitoring and Analysis Requirements

Monitoring requirements are specified by the IP and generally correspond to the pollutant concerns associated with a specific SMA. Concentrations of pollutants in excess of TALs are not necessarily violations of water quality standards. The TALs are used as a screening tool to indicate whether the baseline control measures implemented at Sites require additional corrective action as provided in Section I.E of the IP.

700.1.1 Initial Confirmation Sampling

The IP establishes an initial phase of confirmation sampling to follow the completion of the baseline control measures installation. Any sampling performed for purposes of confirmation monitoring at a particular SMA must be performed following a storm event that results in an actual discharge from the SMA in sufficient volume to perform the required analyses (referred to herein as a 'measurable storm event'). The interval between collected samples must be at least fifteen (15) days.

Within the Sandia Mortandad watershed, 14 SMAs had completed baseline control installations before the effective date of the Permit. Storm water monitoring at these 14 SMAs requires the collection of one storm water sample from two separate measurable storm events within one year after the effective date of the Permit. SMA-specific monitoring plan and requirements are presented in Section 1000.

SMAs with Baseline Control Measures Complete at the Effective Date of Permit in Sandia Mortandad Watershed

- S-SMA-0.25
- S-SMA-2
- S-SMA-3.6
- CDB-SMA-0.15
- CDB-SMA-0.25
- CDB-SMA-1.15
- CDB-SMA-1.35
- CDB-SMA-1.54
- CDB-SMA-1.55
- CDB-SMA-1.65
- M-SMA-1
- M-SMA-4
- M-SMA-12.5
- M-SMA-12.92

The remaining SMA planned baseline controls will similarly collect two storm water monitoring samples following the installation, from at least 2 separate measurable storm events occurring at least 15 days apart, within 18 months of the effective date of the IP.

For each sampling event, the date and duration (in hours) of the storm event(s) sampled, the rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff, and the duration between the storm event samples and the end of the previous measurable storm event will be recorded. Snow melt samples will not be used for purposes of confirmation monitoring.

700.1.2 Confirmation Results

Following the collection of confirmation samples, sampling results are compared against applicable TALs. Sampling results either confirm the effectiveness of the installed baseline control measures or the results dictate further actions as described in the following sections.

700.1.2.1 Confirmation Results Below Target Action Levels

If all analytical results for a particular pollutant of concern at a particular SMA are at or below the maximum target action level (MTAL) and the average of all applicable sampling results is at or below the average target action level (ATAL), or the applicable minimum quantification level (MQL), whichever is greater, analytical monitoring of that pollutant at the same SMA is no longer required for the remaining period of the permit. The Site(s) are certified to have completed corrective action as specified in Part I.E.2 of the IP and as discussed further in Section 900, Corrective Action.

An exception is made for instances where future installation of control measures at the Site(s) being monitored involves soil disturbance. If soil disturbance is involved, the initial confirmation monitoring phase is repeated and samples are collected again for all listed pollutants of concern at that SMA.

If analytical results for all pollutants of concern at a particular SMA are at or below the MTALs and the average of all applicable sampling results is at

or below the ATALs, or the applicable MQLs, whichever is greater, no further sampling is required for the Site or group of Sites within the associated SMA for the remaining period of the permit (except as provided in Section E. 5. of the IP). Inspections at all Sites in accordance with Section G. of the Permit will continue and control measures will be maintained in effective operating condition as required by Section B.2 of the IP. A minimum of two confirmation samples must be collected and analyzed before removing a Site or group of Sites from monitoring requirements, except as provided in Sections E.5.(d) and (e) of the IP.

700.1.2.2 Confirmation Results Above Target Action Levels

If, following installation of baseline control measures, any validated sample analytical result for a specific pollutant of concern at a particular SMA is greater than the applicable MTAL (or applicable MQL, whichever is greater) or the average of all applicable sampling results is greater than the applicable ATAL (or applicable MQL, whichever is greater), a visual inspection of all Sites within the SMA drainage area, a re-evaluation of the existing control measures, and an initiation of corrective action will be conducted as soon as practicable.

Such corrective action may entail the design and installation of enhanced (additional, expanded or better tailored) control measures reasonably expected to achieve compliance with target action levels indentified in the Permit for all Sites within the SMA drainage area. If this type of corrective action is selected, at least two confirmation samples shall be collected (one confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart) following installation of any enhanced control. If either validated confirmation sample result for any specific pollutant of concern exceeds applicable target action levels, a visual inspection for all Sites within the SMA drainage area will be conducted, including a re-evaluation of the existing control measures, and an initiation of further measures to achieve completion of corrective action as soon as practicable.

700.2 Sampling Location Selection and Determining Substantially Identical Effluent

Sampling locations have been selected to provide a representative storm water sample of discharges from areas that are potentially impacted by Sites regulated under LANL's RCRA Permit. Coordinates of samplers used to conduct storm water monitoring required under this Permit, estimates of the size of the SMA drainage area, and estimates of the Site(s) drainage area are provided in Attachment D, Physical Characteristics.

Within the Sandia/Mortandad watershed, sampler locations at S-SMA-4.5, S-SMA-5.5 and M-SMA-6 have had minor adjustments from the locations originally provided in the Permit. These minor adjustments were made to collect more representative storm water samples from these areas. Updated location data and physical characteristics for these SMAs are provided in Attachment D.

In some cases, due to the physical characteristics of the potentially impacted drainage area or the nature of the suspected release, it is not possible to monitor or manage Sites independently of one another. In many cases, NPDES permitted Sites ceased operation several decades ago. During their operational history, surrounding units were also operational. Resultant surface concerns may be co-mingled by natural sediment migration or by remedial actions at the unit or in proximity to the unit.

Where more than one Site exists within an SMA, a discussion of substantially identical effluent is provided following the descriptions of the Sites in Section 1000. Sites can be said to have substantially identical

effluents if they share one or more of the following characteristics:

- **Shared Drainage** – The Sites have the same drainage and are discharged to the same receiving water.
- **Contaminant Similarities** – The Sites have similar potential pollutants due to historic activities at the Sites
- **Extensive Remediation** – The Sites have been subject to extensive disturbance of surface soils to the extent that they can no longer be distinguished from one another.

700.3 Procedures

Procedures governing the collection and processing of storm water samples are detailed in the following documents:

- EP-SOP 5213, Inspecting Storm Water Run-off Samplers and Retrieving Samples
- EP-SOP 5215, Processing Storm Water Samples
- EP-DIV-SOP-10008 Installing, Setting Up, and Operating ISCO samplers
- EP-DIV-SOP-10005 Operation and Maintenance of Gage Stations for Storm Water Projects

Current versions of all IP related SOPs are summarized in Attachment E. The summary table in Attachment E also provides a hyperlink to the current version of the applicable procedure that resides on the public website. These procedures apply to the work activity described in this section. Additional procedures may be added as necessary to describe and document quality-affecting activities.

SECTION 800 INSPECTION REQUIREMENTS OVERVIEW

Inspection of a Site, an SMA, or control measure is done when the following circumstances exist:

- A rain event at or near the Site registers 0.25 inch or more of rain within 30 minutes.
- Water sample confirmation results above TALs.
- At least annually for changes of conditions affecting erosion.
- After a significant event, such as fire, which could significantly impact the Control Measures and environmental conditions in the affected area(s).

If an inspection identifies erosion or a deficient control, the control will be repaired or new control measures may be recommended to reduce erosion potential. Inspection results, maintenance performed on existing control measures, and installation of new control measures will be documented in this SDPPP.

800.1 Post-Storm Inspections

If adverse weather prevents a post-storm Site inspection within the allotted 15 calendar days, then LANS will inspect the Site as soon as practicable following the adverse weather. All adverse weather events that impact the inspection of control measures are documented in this SDPPP. Adverse weather conditions may include dangerous weather-related events such as flooding, wildfires, or hail that make inspection dangerous for the worker. Interruptions in inspections due to adverse weather will be documented with information similar to post-storm inspections. These records will be maintained alongside the SDPPP until the annual update occurs. Where several storm events exceeding 0.25 inch per 30 minutes occur over a period not to exceed 15 days from the first event, then LANL may conduct a single inspection within 15 days of the first event.

800.2 Monitoring Response Inspections

If, following installation of baseline control measures, any sample analytical result for a specific pollutant of concern at a particular SMA is greater than the applicable MTAL (or applicable MQL, whichever is greater) or the average of

all applicable sampling results is greater than the applicable ATAL (or applicable MQL, whichever is greater), a visual inspection for all Sites within the SMA drainage area will be conducted. Existing control measures will be re-evaluated and initiation of corrective action will be conducted as soon as practicable.

800.3 Annual Inspection and Erosion Re-evaluation

The PPT evaluates each Site annually for changes of conditions affecting erosion. Additionally, the PPT reevaluates the Site after notice of a significant event that could impact the control measures and environmental conditions of the Site. These types of inspections are done as soon as practicable. Following the erosion evaluations, the PPT documents the inspection in an inspection report.

800.4 Construction Activity Associated with Site Remediation

Where soil disturbance associated with the installation of control measures exceed one acre, these activities will be addressed under the requirements of the Construction General Permit (CGP) program or through a separate individual NPDES Permit. Where Sites in Appendix A of the IP are undergoing remediation, weekly inspections will be conducted to ensure sediments and control measures are maintained in working order. Corrective actions shall be taken immediately if deficiencies are noted in these inspections. The SDPPP will be updated annually to reflect steps taken to minimize discharges from Sites subject to remediation activity at the Laboratory. The table provided in Attachment A will be used to document each amendment. All Amendments to the SDPPP and a summary of remediation activities will be reported in the Annual Report as specified in Part I.H of the IP. Completed remediation amendments will be retained alongside the SDPPP until the annual update occurs.

800.5 Procedures

Procedural documents are developed to methodically describe the conduct of operations for the IP program. The following procedures provide detail for activities described in this Section:

- EP-SOP-5211, Surface Water Site Assessments, describes the process of the annual Site re-evaluation.
- EP-SOP-5217, Installing, Inspecting, and Maintaining Storm Water Control Measures, describes this process and presents examples of resultant documentation.
- SOP 5219, Photograph Management
- EP-SOP- 5220, EX-ID/PR-ID Project Reviews for the FFCA Project and Individual Permit, describes the process for proactively identifying and managing proposed construction projects that may influence SMAs.

Current versions of all IP related SOPs are summarized in Attachment E. The summary table in Attachment E also provides a hyperlink to the current version of the applicable procedure that resides on the public website. These procedures apply to the work activity described in this section. Additional procedures may be added as necessary to describe and document quality-affecting activities.

SECTION 900 CORRECTIVE ACTION AND OTHER CONDITIONS

Corrective action must be completed for all Sites permitted under the IP. Deadlines for completion of this requirement are specific to the priority attributed to the Sites by the Permit. The following sections describe the steps for meeting the corrective action requirements.

900.1 Completion of Corrective Action

Corrective action is to be completed for all Sites described in this SDPPP. Completion of corrective action is demonstrated by one of the following methods:

1. Analytical results from confirmation sampling show pollutant concentrations for all pollutants of concern at the Site to be at or below applicable target action levels; or
2. Control measures that totally retain and prevent the discharge of storm water have been installed at the Site; or
3. Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site; or
4. The Site has achieved RCRA "no further action" status or a Certificate of Completion under NMED's Consent Order.

900.1.1 Alternative Compliance

Where certification of corrective action cannot be completed, LANS may petition to place Site(s) into Alternative Compliance. In Alternative Compliance, the completion of corrective action will be accomplished on a case-by-case basis, and as necessary, pursuant to an individually tailored compliance schedule determined by EPA.

900.2 Deadlines

900.2.1 High Priority Sites

Within the Sandia Mortandad watershed, there are 32 Sites that are deemed high priority Sites. Corrective action is to be completed and certified within three years of the effective date of the IP. The high priority sites for the Sandia Mortandad watershed are as follows:

03-009(i)	03-012(b)
03-013(a)	03-014(b2)
03-021	03-029
03-045(b)	03-045(c)
03-052(b)	03-052(f)
03-056(c)	20-002(c)
35-003(h)	35-003(p)
35-003(r)	35-004(h)
35-009(d)	35-014(e2)
35-016(i)	35-016(k)
35-016(l)	35-016(m)
48-003	50-006(a)
50-006(d)	50-009
53-014	54-017
54-018	54-020
60-007(b)	72-001

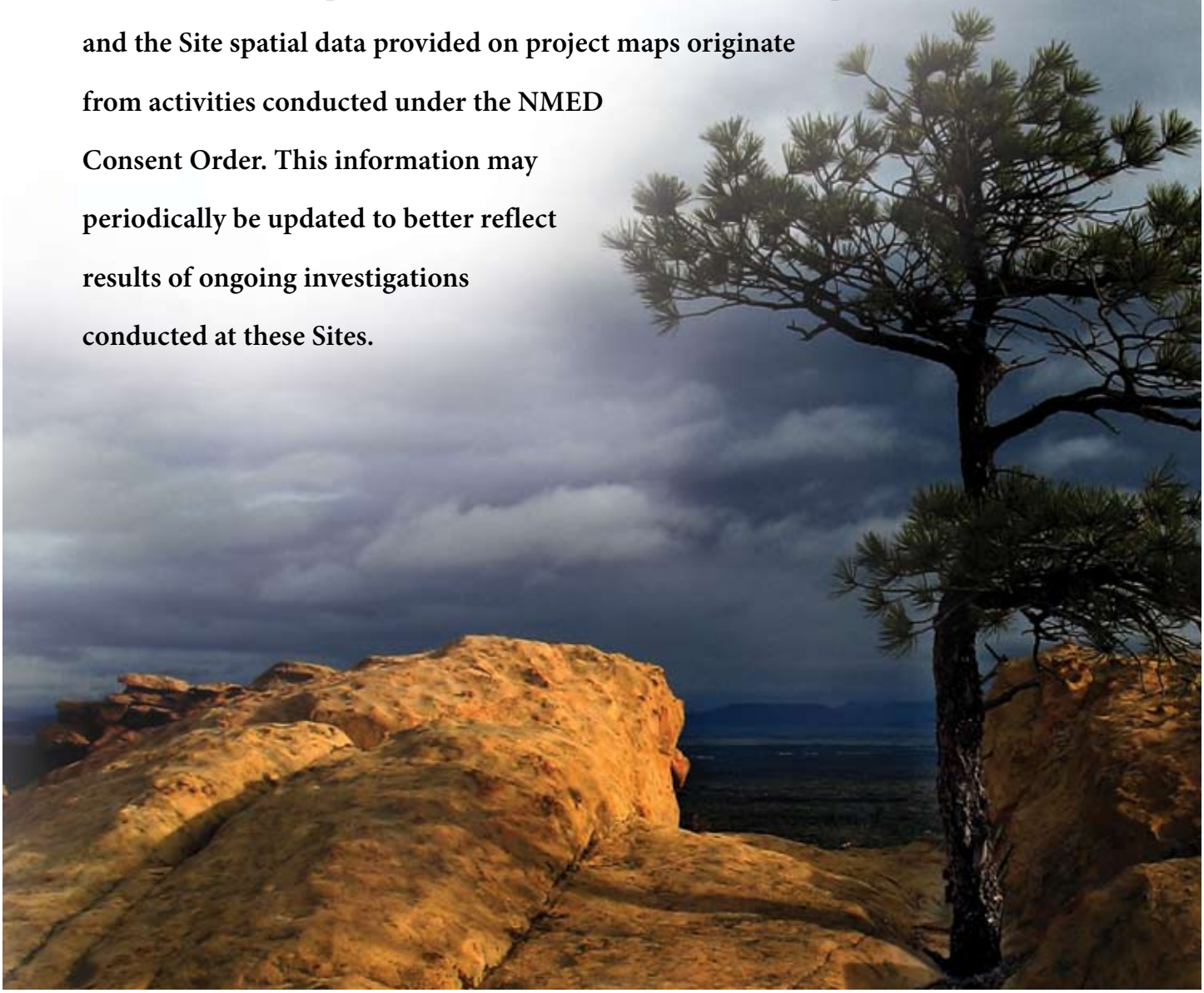
900.2.2 Moderate Priority Sites

Within the Sandia Mortandad watershed, there are 87 Sites that are deemed moderate priority Sites. Corrective action is to be completed and certified, within five years of the effective date of the IP.

SECTION 1000
SITE MONITORING AREAS

The following sections provide SMA-specific details of each permitted feature monitored under the IP. Each SMA described includes an area description, details of each identified potential pollutant source including a demonstration of substantially identical effluent where appropriate, a description of control measures specific to the identified pollutant source, a project map, the storm water monitoring requirements and schedule, and a summary of the current corrective action status for the SMA.

Site information provided in this SDPPP such as Site descriptions and the Site spatial data provided on project maps originate from activities conducted under the NMED Consent Order. This information may periodically be updated to better reflect results of ongoing investigations conducted at these Sites.



1000.1 CDB-SMA-0.15

1000.1.1 Area Description

1000.1.2 Potential Pollutant Sources

1000.1.2.1 Historical Industrial Activity Areas

1000.1.3 Control Measures

1000.1.4 Project Map

1000.1.5 Storm Water Monitoring Plan and Schedule

1000.1.6 Corrective Action Status



1000.1 CDB-SMA-0.15

1000.1.1 Area Description

CDB-SMA-0.15 is located west of the headwaters of upper Cañada del Buey. The area is highly developed with paved roads on the northern and western boundaries. The southern boundary runs across a mixture of developed and undeveloped land. The eastern boundary is undeveloped land. Run-off flows east across the area to a steep south facing slope that makes up the headwaters of upper Cañada del Buey.

1000.1.2 Potential Pollutant Sources

1000.1.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with Permitted Feature (PF) C001, CDB-SMA-0.15, Sites 04-003(a) and 04-004.

SWMU 04-003(a) is an outfall located approximately 15 ft southeast of former building 04-7 at former TA-04 (now TA-52). Former building 04-7 operated from 1948 to 1955 and housed a darkroom and photoprocessing laboratory that discharged to the outfall. Discharges to the outfall flowed to a trench southeast of former building 04-7 that eventually discharged into Cañada del Buey. Portions of the trench have since been covered by buildings 52-114 and 52-115 and an asphalt parking lot. Beta activity was detected in the darkroom in 1955, and portions of the floor were removed in an attempt to remediate the contamination. It is not known whether the drainlines were removed when former building 04-7 was dismantled in 1956.

AOC 04-004 is an area of potential soil contamination associated with the footprint of former building 04-7 at former TA-04 (now TA-52). The former building, which measured approximately 16 ft x 43 ft, housed a darkroom and photoprocessing laboratory. The building was used to develop film from 1948 to 1955 and was dismantled in 1956.

1000.1.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
04-003(a)	Outfall associated with former Photo-processing Building 4-07	Co-located, Overlapping	Shared	•		•	
04-004	Soil contamination from former photo-processing Building 4-07	Co-located, Overlapping	Shared	•		•	

Substantially Identical Determination

TA-04 was established in 1944 as a test firing site for small charges and for implosion studies using the electric method of detonation wave determination. TA-04 operated from 1944 until 1949 (LANL 1992, 007666, p. 3-5). This technical area was dismantled in 1956 and portions of this former technical area have since been covered by buildings 52-114 and 52-115 and an asphalt parking lot. Because of the shared drainage, similarity of contaminants, and the extensive remediation in the area, these Sites will discharge substantially identical effluent.

1000.1.3 Control Measures

Run-on enters this SMA from the paved road, Puye Road, paralleling the northern boundary. There is also run-on from the paved access road on the western side of the SMA. The majority of the run-on flows across the area via natural drainage channels.

Subsections to 1000.1.3 list all control measures used to control pollutant sources identified in Section 1000.1.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.1.4.

1000.1.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C001 01 01 0008	Seed and Mulch - Seed and Wood Mulch		•	•	
C001 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
C001 03 12 0009	Berms - Rock	•			•
C001 03 12 0010	Berms - Rock	•			•
C001 06 01 0011	Check Dam - Rock	•			•
C001 06 03 0003	Check Dam - Juniper Bales	•			•
C001 06 03 0004	Check Dam - Juniper Bales		•		•
C001 06 03 0005	Check Dam - Juniper Bales		•		•
C001 06 03 0006	Check Dam - Juniper Bales		•		•
C001 06 03 0007	Check Dam - Juniper Bales		•		•

Seed and Wood Mulch (C001-01-01-0008)

The seed and mulch was applied to the area west of building 52-0114 extending west to the fence line. Its function is to prevent erosion from area run-off and stabilize the soil. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (C001-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rock Berms (C001-03-12-0009, -0010)

This is a pair of rock berms located in northern portion of the SMA, outside the fence line and spanning the width of the SMA. They are in place to mitigate storm water run-on from the paved areas to the north and west. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Check Dam (C001-06-01-0011)

This check dam is located at the northern end of the SMA just south of Puye Road. It is used to control storm water run-on from the paved road. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Western Juniper Bales (C001-06-03-0003)

This juniper bale is located near the western end of the SMA near the fence line. It is in place to prevent run-on to the area. A juniper bale barrier is a series of juniper bales placed on a level contour to intercept sheet flows.

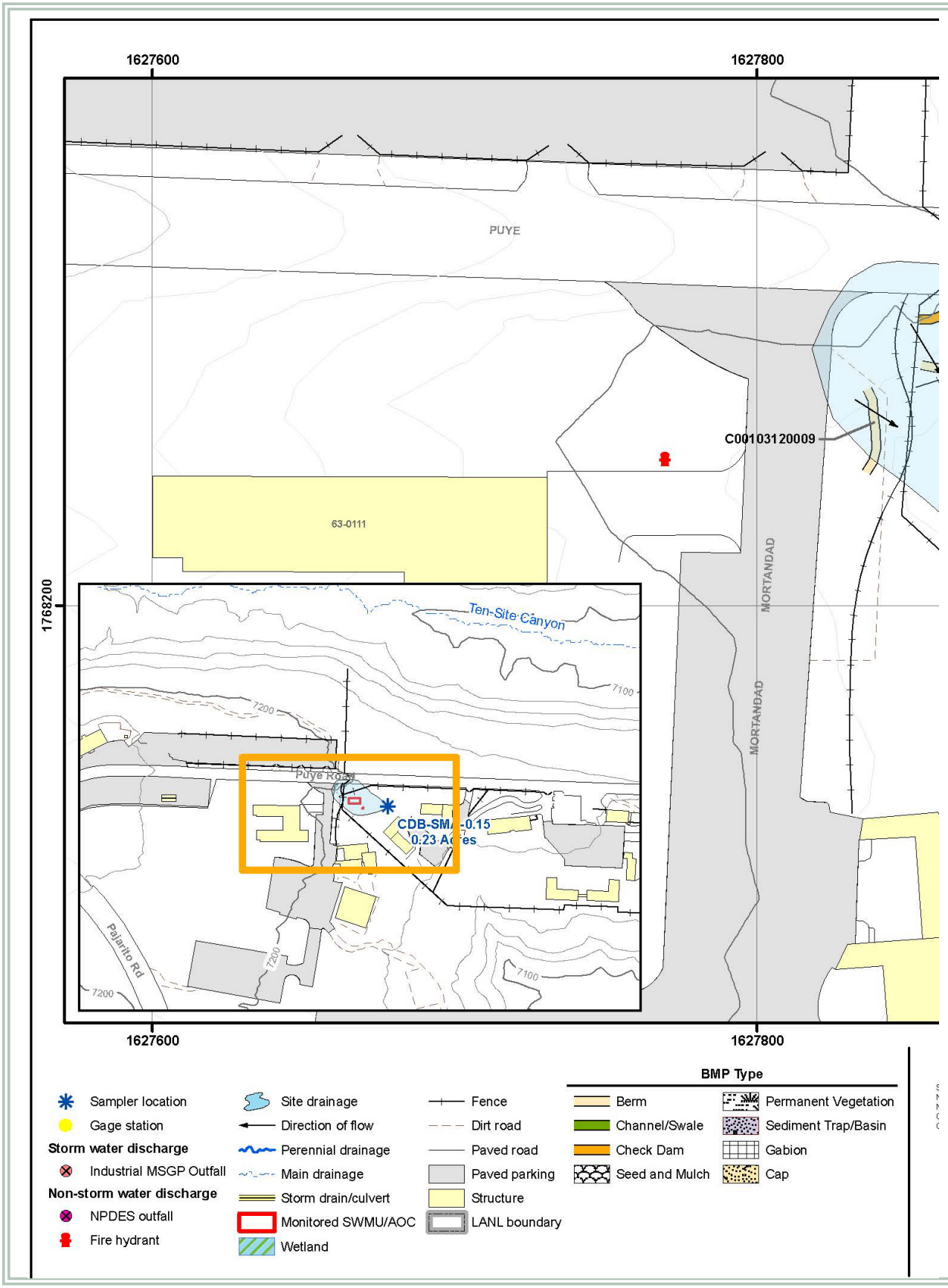
Juniper Bales (C001-06-03-0004, -0005, -0006)

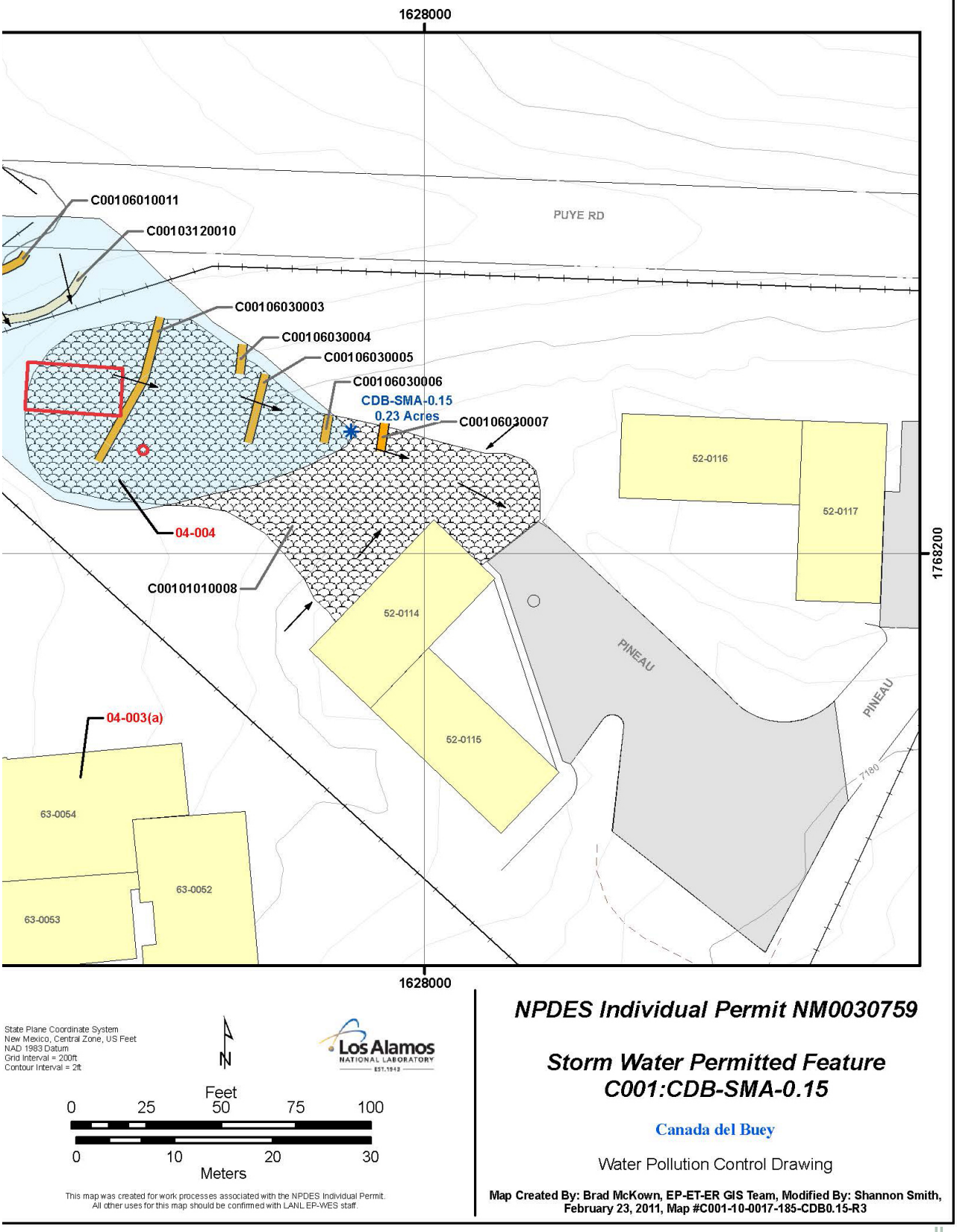
This is a series of three juniper bales located along the northern boundary of the SMA above the sampler. They are in place to mitigate run-off from the SMA. A juniper bale barrier is a series of juniper bales placed on a level contour to intercept sheet flows.

Eastern Juniper Bales (C001-06-03-0007)

The juniper bale is located below the sampler to the east. It is used to control run-off from the SMA. A juniper bale barrier is a series of juniper bales placed on a level contour to intercept sheet flows.

1000.1.4 Project Map




1628000
C00106010011
C00103120010
PUYE RD
C00106030003
C00106030004
C00106030005
C00106030006
CDB-SMA-0.15
0.23 Acres
C00106030007
52-0116
52-0117
04-004
C00101010008
1768200
52-0114
PINEAU
PINEAU
04-003(a)
52-0115
7180
63-0054
63-0052
63-0053
1628000
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid Interval = 200ft
Contour Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST. 1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C001:CDB-SMA-0.15
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C001-10-0017-185-CDB0.15-R3

1000.1.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
• (2)	• (2)	• (2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.1.6 Corrective Action Status

The Sites associated with CDB-SMA-0.15 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.2 CDB-SMA-0.25

1000.2.1 Area Description

1000.2.2 Potential Pollutant Sources

1000.2.2.1 Historical Industrial Activity Areas

1000.2.3 Control Measures

1000.2.4 Project Map

1000.2.5 Storm Water Monitoring Plan and Schedule

1000.2.6 Corrective Action Status



1000.2 CDB-SMA-0.25

1000.2.1 Area Description

CDB-SMA-0.25, is located in upper Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Storm water flows northeast down a steep north facing slope of Cañada del Buey. To the east and west of the SMA are steep canyon walls. The southern boundary is developed impervious area of TA-46. North of the SMA is the canyon floor and main drainage area of Cañada del Buey.

1000.2.2 Potential Pollutant Sources

1000.2.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF C002, CDB-SMA-0.25, Site 46-004(c2).

SWMU 46-004(c2) is the outfall from an industrial drainline from building 46-0001 that received effluent from floor drains in the north equipment room of building 46-0001. The outfall consists of a 4 in. diameter cast-iron pipe that discharged to a ditch approximately 50 ft northwest of building 46-0001. Effluent from the floor drains discharged to the ditch. From the ditch, the effluent flowed to a storm drain culvert that discharged into Cañada del Buey. The outfall is former NPDES-permitted outfall 03AS042, which was removed from the NPDES permit in March 1998. In 1997, the floor drains that discharged to the SWMU 46-004(c2) outfall either were removed from service or were rerouted to the SWSC plant. Building 46-0001 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area in support of the Rover Program.

1000.2.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-004(c2)	Outfall from Building 46-1	Discrete Location, No overlap	Individual	•	•	•	PCBs SVC

1000.2.3 Control Measures

The potential contributions to run-on at this SMA mainly originate on the paved and unpaved areas at the southern end of the area.

Subsections to 1000.2.3 list all control measures used to control pollutant sources identified in Section 1000.2.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.2.4.

1000.2.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C002 01 06 0014	Seed and Mulch - Erosion Control Blankets			•	
C002 02 01 0005	Established Vegetation - Grasses and Shrubs			•	
C002 03 01 0013	Berms - Earthen		•		•
C002 04 06 0001	Channel/Swale - Rip Rap	•		•	
C002 04 06 0009	Channel/Swale - Rip Rap	•		•	
C002 06 02 0007	Check Dam - Log		•		•
C002 06 02 0010	Check Dam - Log		•		•
C002 06 02 0012	Check Dam - Log		•		•

Erosion Control Blanket (C002-01-06-0014)

This erosion control blanket is located on the slopes of the earthen berm just south of the sampler. It is used to control erosion on the berm`s slope. Used to temporarily stabilize and protect disturbed soil from raindrop impact and surface erosion, to increase infiltration, to decrease compaction and soil crusting, to conserve soil moisture, and to promote vegetation establishment. Erosion control blankets are used in place of mulch on areas of high velocity run-off and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

Established Vegetation (C002-02-01-0005)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (C002-03-01-0013)

This berm is located at the northern end of the SMA just south of the sampler. It is in place to control run-off from the area. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

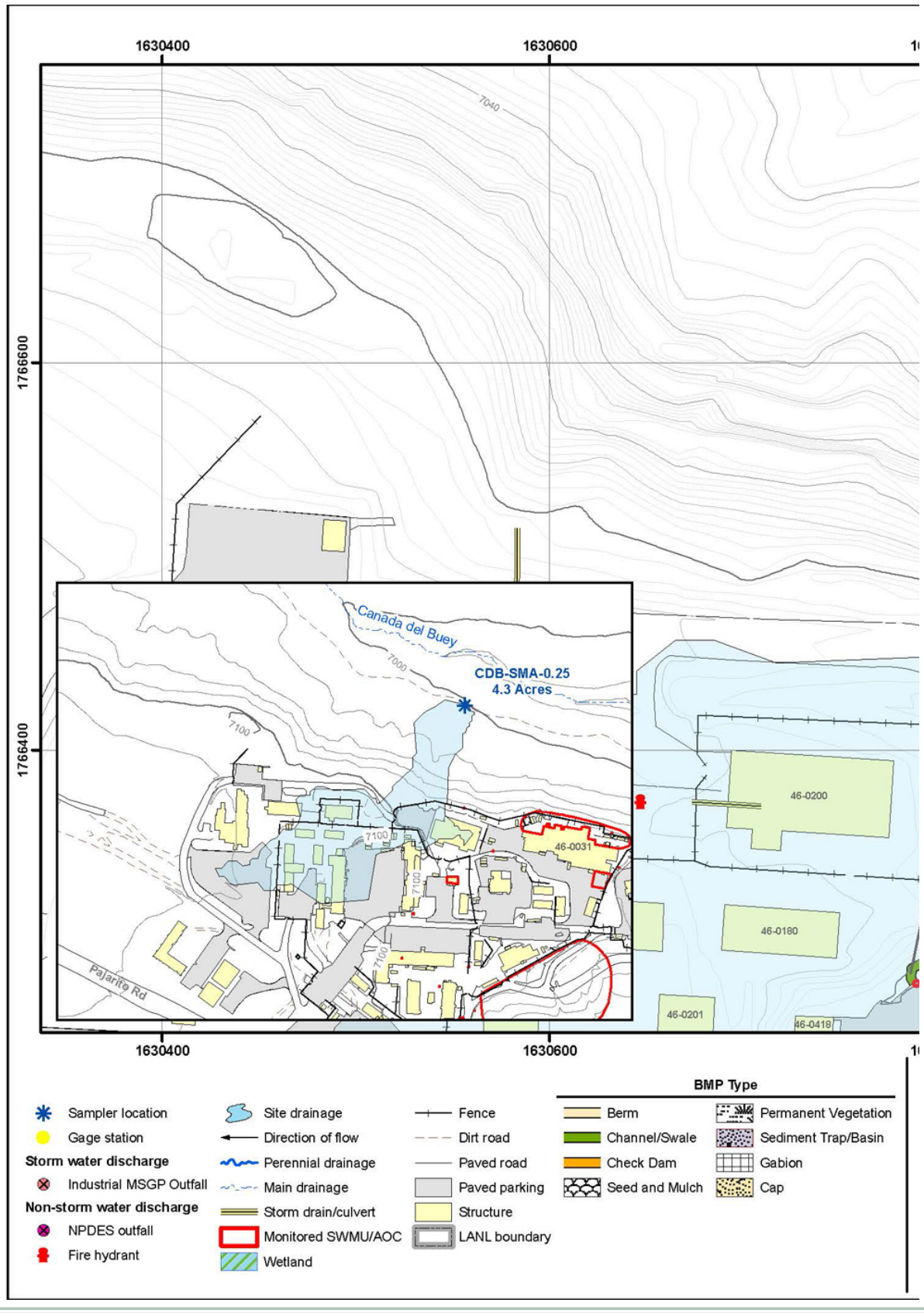
Rip Rap
(C002-04-06-0001)
This rip rap is located off the northwest corner of building 46-0154 adjacent to the paved area. It is used to limit run-on from the paved areas. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

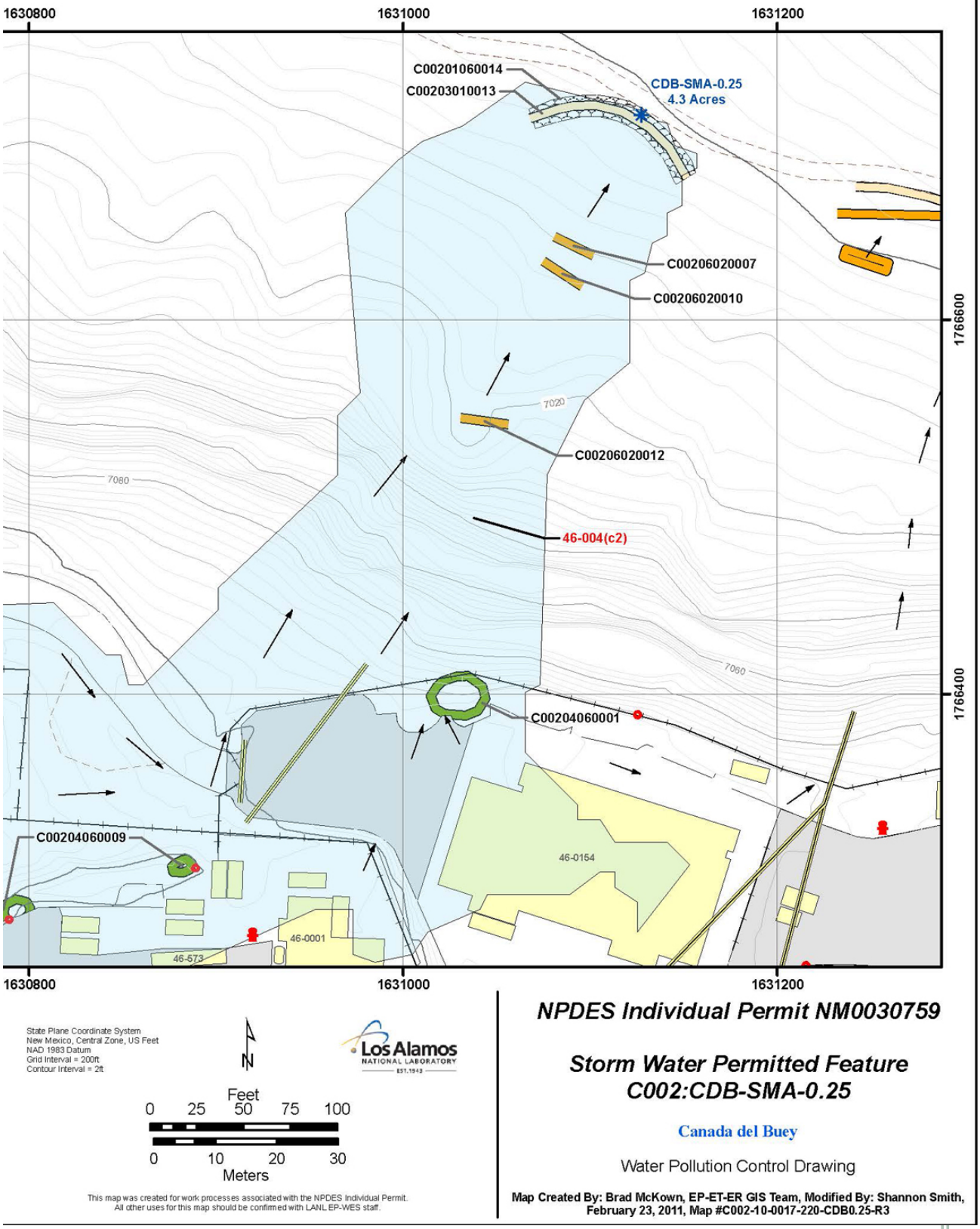
Rip Rap - West
(C002-04-06-0009)
This is a group of two rip raps located next to the fence on the edge of the paved area north west of the fire hydrant. They are used to restrict run-on to the Site. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Log Check Dam - Central
(C002-06-02-0007, -0010)
This is a group of two log check dams located in the central portion of the main drainage channel above the sampler. They are used to mitigate run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Log Check Dam - South
(C002-06-02-0012)
This log check dam is located in the southern portion of the main drainage channel near the base of canyon slope. It is used to control run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.2.4 Project Map




1630800
1631000
1631200
1766600
1766400
C00201060014
C00203010013
CDB-SMA-0.25
4.3 Acres
C00206020007
C00206020010
C00206020012
46-004(c2)
C00204060001
C00204060009
46-0154
46-0001
46-573
7020
7080
7060
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid Interval = 200ft
Contour Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST.1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C002:CDB-SMA-0.25
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C002-10-0017-220-CDB0.25-R3

1000.2.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
• (2)	• (2)	• (2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.2.6 Corrective Action Status

The Site associated with CDB-SMA-0.25 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.3 CDB-SMA-0.55

1000.3.1 Area Description

1000.3.2 Potential Pollutant Sources

1000.3.2.1 Historical Industrial Activity Areas

1000.3.3 Control Measures

1000.3.3.1 Control Measures for Historical Industrial Activity Areas

1000.3.4 Project Map

1000.3.5 Storm Water Monitoring Plan and Schedule

1000.3.6 Corrective Action Status



1000.3 CDB-SMA-0.55

1000.3.1 Area Description

CDB-SMA-0.55, is located in upper Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Run-off flows north down a steep north facing slope of Cañada del Buey. To the east and west of the SMA are steep canyon walls. The southern boundary is a developed, impervious area of TA-46. North of the SMA is the canyon floor and main drainage area of Cañada del Buey.

1000.3.2 Potential Pollutant Sources

1000.3.2.1 Historical Industrial Activity Areas

There are five historical industrial activity areas associated with PF C003, CDB-SMA-0.55, Sites 46-004(e2), 46-004(g), 46-004(m), 46-004(s) and 46-006(f).

AOC 46-004(e2) is the outfall from roof, floor, and sink drains in building 46-42 at TA-46. The outfall consists of a 4-in.-diameter pipe located approximately 50 ft northeast of building 46-42 at the head of a drainage ditch associated with SWMU 46-006(a). The outfall is located approximately 3 ft below the level of the asphalt pavement. Building 46-42 was constructed as an equipment checkout facility and contains electronics and robotics laboratories. In the mid 1990s, the floor and sink drains that discharged to this outfall either were removed from service or were rerouted to the sanitary sewer system. The outfall currently receives storm water from building 46-42 roof drains only.

New Site Description: SWMU 46-004(g) consists of an area of potential surface soil contamination associated with exhaust emissions from stacks on building 46-1 and an inactive outfall from an industrial drainline in building 46-1 at TA-46. Work in building 46-1 that generated exhaust emissions involved the baking and high-temperature testing of fuel rods.

The outfall component of SWMU 46-004(g) consists of an inactive 12-in.-diameter VCP industrial drain that received effluent from floor drains and roof drains within the central portion of building 46-1 and discharged into Cañada del Buey north of building 46-154. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area. In 1996 and 1997, the floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant. Roof drains from building 46-1 that discharged to this outfall were rerouted to the storm water drain system in 1996.

SWMU 46-004(m) is a former NPDES-permitted outfall (04A013) located approximately 60 ft north of building 46-30 at TA-46. The outfall protrudes from a 10-ft-deep bank on the hillside north of building 46-30. The outfall discharged effluent from an industrial drainline in building 46-30 to a ditch at the foot of the bank. The ditch channeled wastewater to a storm drain culvert that discharges into Cañada del Buey. Engineering drawings show this industrial drainline received effluent from the roof drains, laboratory sinks, and floor drains in building 46-30. Building 46-30 was constructed as a hydraulics laboratory and contained a high-bay area with a crane, an actuator test area, and a small machine shop. In December 1995, the outfall was removed from the NPDES permit. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-30 ceased.

SWMU 46-004(s) is an outfall located approximately 20 ft south of building 46-1 at TA-46. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged to a drainage ditch (SWMU 46-007) on the south side of building 46-1. The drainage ditch leads to a storm drain culvert that discharges into Cañada del Buey. The outfall received effluent from floor and

roof drains of the south high bay in building 46-1. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area. In 1995, all floor drains in the south high bay of building 46-1 either were plugged or were rerouted to the SWSC plant. Currently, roof drains from the south high bay discharge to the storm drainage system and/or daylight near building 46-1.

SWMU 46-006(f) is a storage shed (building 46-36) located approximately 50 ft east of building 46-1 at TA-46. The 20-ft × 30-ft metal storage shed was constructed in 1955. The floor of the storage shed is paved and sits approximately 6 to 8 in. belowgrade. The area surrounding the storage shed also has been a storage area as well as a staging area for equipment and materials awaiting disposal and an unloading area for new equipment. The areas on the west and south sides of the storage shed are paved; the areas on the north and east are unpaved. Stored materials may have included oils (possibly containing PCBs), alkali metals, asbestos-containing products, beryllium alloys, potassium dichromate, lead bricks, lead shot, and mercury. Because the floor of building 46-36 is belowgrade, frequent flooding of the storage shed occurs during the rainy season. The surrounding area slopes north to a storm drain culvert that discharges into Cañada del Buey.

1000.3.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-004(e2)	Outfall from Building 46-42	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
46-004(g)	Drains and Exhaust System	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
46-004(m)	Outfall from Building 46-30	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
46-004(s)	Outfall associated with Building 46-1	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
46-006(f)	Storage area	Co-located, Overlapping	Shared	•	•	•	PCBs SVC

Substantially Identical Determination

Sites grouped within this SMA are associated with former outfalls and discharges to a slope of Cañada del Buey. Discharges to the area were co-mingled, overlapping, and have similar contaminants. Because of these aspects, Sites within this SMA will discharge substantially identical effluent.

1000.3.3 Control Measures

The majority of run-on to this SMA originates from the paved areas in the southern portion of the SMA. Planned controls are to fortify run-off controls in this area.

Subsections to 1000.3.3 list all control measures used to control pollutant sources identified in Section 1000.3.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.3.4.

1000.3.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C003 02 01 0008	Established Vegetation - Grasses and Shrubs			•	
C003 03 01 0011	Berms - Earthen		•		•
C003 06 01 0006	Check Dam - Rock	•			•
C003 06 01 0009	Check Dam - Rock		•		•
C003 06 01 0013	Check Dam - Rock	•			•
C003 06 01 0015	Check Dam - Rock	•			•
C003 06 01 0016	Check Dam - Rock	•			•
C003 06 01 0017	Check Dam - Rock	•			•
C003 06 01 0018	Check Dam - Rock	•			•
C003 06 01 0019	Check Dam - Rock	•			•
C003 06 01 0020	Check Dam - Rock	•			•
C003 06 02 0012	Check Dam - Log		•		•
C003 06 02 0014	Check Dam - Log		•		•

Established Vegetation (C003-02-01-0008)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (C003-03-01-0011)

This berm is located just north of the sampler adjacent to the unpaved access road.

It functions as a run-off control. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Check Dam - South (C003-06-01-0006)

This check dam is located in the channel between structures 46-0154 and 46-0036. It is used to help control run-on from the paved areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam (C003-06-01-0009)

This check dam is located just south of the sampler and is used to help restrict run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams - Central (C003-06-01-0013, 0015, 0016)

This is a series of three check dams located in the drainage channel between structures 46-0154 and 46-0001. They are in place to mitigate storm water run-on associated with the paved areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

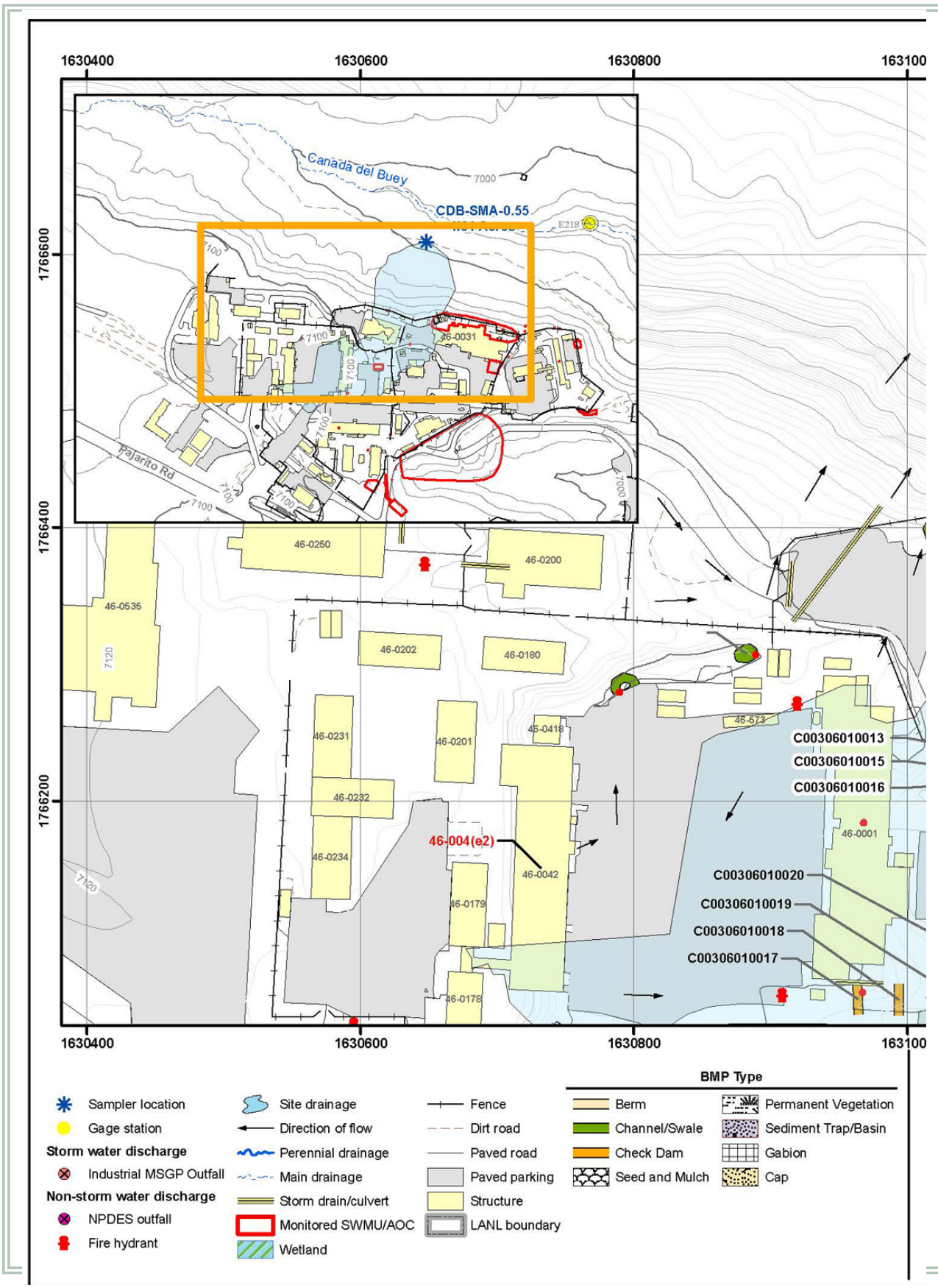
Rock Check Dams - South (C003-06-01-0017, -0018, -0019, -0020)

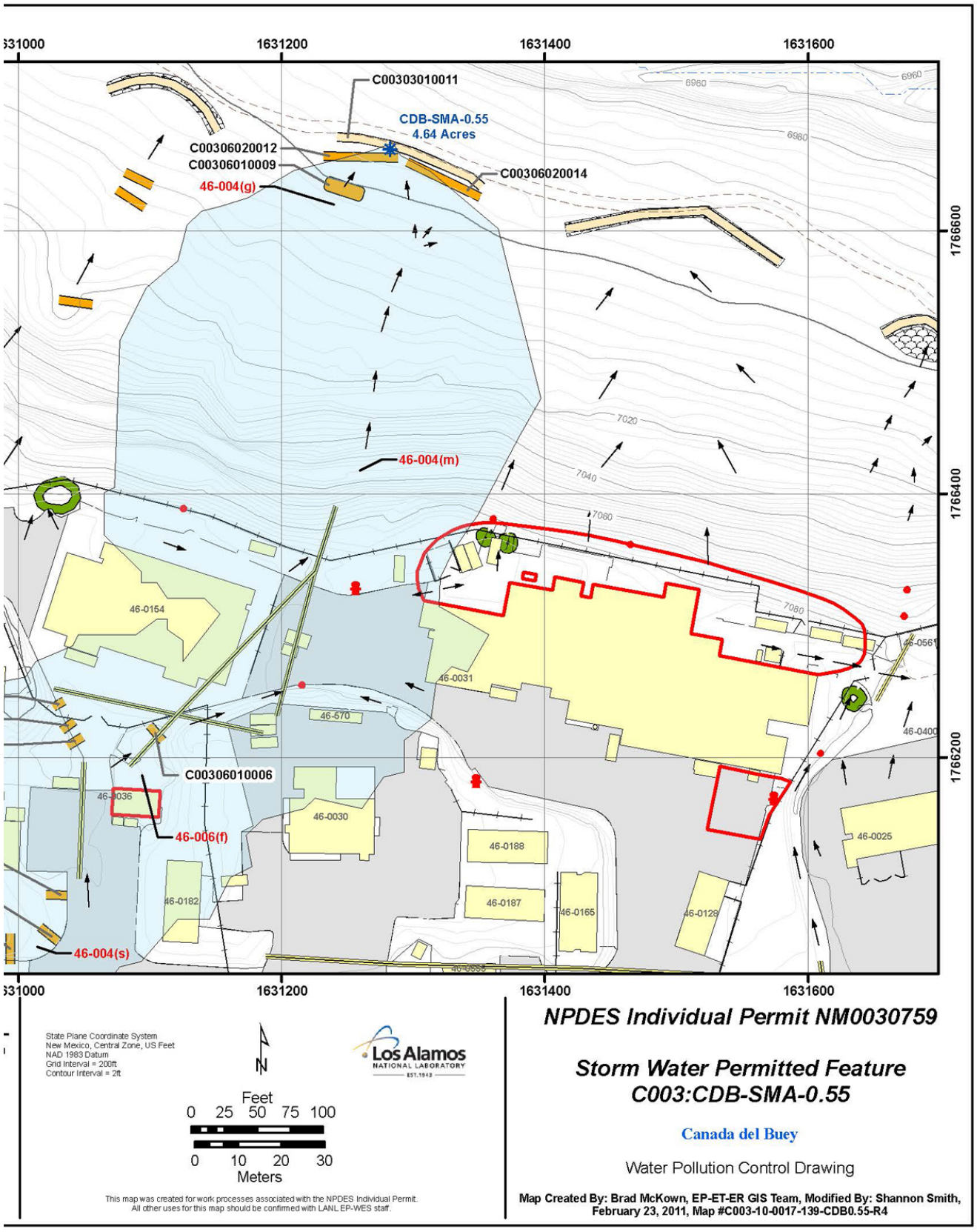
This is a series of four check dams that are located in the channel at the southeast corner of structure 46-0001. They are used to help manage run-on from the paved areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed acrossa natural or man-made channel or drainage ditch.

Log Check Dam (C003-06-02-0012, -0014)

This is a series of log check dams located south of the sampler, running parallel to the unpaved access road. They are in place to prevent run-off from the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.3.4 Project Map




1631000
1631200
1631400
1631600
1766600
1766400
1766200
C00303010011
CDB-SMA-0.55
4.64 Acres
C00306020012
C00306010009
C00306020014
46-004(g)
46-004(m)
46-004(s)
46-006(f)
C00306010006
46-0154
46-0031
46-570
46-0030
46-0188
46-0187
46-0165
46-0128
46-0182
46-0025
46-0400
6960
6980
7020
7040
7060
7080
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid Interval = 200ft
Contour Interval = 2ft
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C003:CDB-SMA-0.55
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C003-10-0017-139-CDB0.55-R4

1000.3.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.3.6 Corrective Action Status

The Sites associated with CDB-SMA-0.55 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.4 CDB-SMA-1

1000.4.1 Area Description

1000.4.2 Potential Pollutant Sources

1000.4.2.1 Historical Industrial Activity Areas

1000.4.3 Control Measures

1000.4.4 Project Map

1000.4.5 Storm Water Monitoring Plan and Schedule

1000.4.6 Corrective Action Status



1000.4 CDB-SMA-1

1000.4.1 Area Description

CDB-SMA-1 is located at the headwaters of a small tributary canyon of Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Run-off flows east to a steep east facing slope of the headwaters of the tributary canyon, before reaching Cañada del Buey further east. A paved access road and developed area are on the northern boundary. The western portion of the southern boundary is undeveloped land, while there are paved roads and developed areas on the eastern portion of the southern boundary. The eastern boundary of the SMA is the steep east facing slopes of the headwaters of the tributary canyon.

1000.4.2 Potential Pollutant Sources

1000.4.2.1 Historical Industrial Activity Areas

There are eight historical industrial activity areas associated with PF C004, CDB-SMA-1, Sites 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), 46-009(a) and C-46-001.

SWMU 46-003(c) is a septic system consisting of a septic tank (structure 46-49), a distribution box (structure 46-50), associated drainline, a drain field, and an outfall. This septic system served the restroom facilities, floor drains, roof drains, sinks, and acid sinks in building 46-24, which housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. Septic tank 46-49 is located southeast of building 46-76, beneath an asphalt road outside the TA-46 security fence. In 1958, an acid dry well located in room B22 of building 46-24 was connected into this system but drained to the septic tank for less than 1 yr. The drain field associated with this septic system was removed from service sometime before 1968, and septic tank 46-49 was rerouted to the drain field associated with SWMU 46-003(f). In the 1970s, sanitary waste drainlines that previously discharged to septic tank 46-49 were rerouted to the SWMU 46-002 surface impoundment system, and septic tank 46-49 was removed from service, emptied, filled, and left in place.

SWMU 46-004(d2) is an area of potential soil contamination associated with exhaust emissions from stacks on building 46-24 at TA-46. Building 46-24 housed laboratories and offices. During 1960 and 1961, experiments conducted in building 46-24 used, and may have released, beryllium and beryllium oxide.

SWMU 46-004(f) is an inactive outfall from an industrial drainline that served rooms 101 through 134 of building 46-24 at TA-46. The outfall consists of a 6-in.-diameter VCP that received discharges from a sump, acid sink, several floor and sink drains, and cooling water system. The outfall pipe discharged to a drain approximately 50 ft east of building 46-24. This drain is part of a network of drains that discharge to SWSC Canyon at former NPDES-permitted outfall 04A018. Building 46-24 housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-24 ceased.

SWMU 46-004(t) is a former NPDES-permitted outfall (04A014) located approximately 60 ft southeast of building 46-76 at TA-46. The outfall is a 4-in.-diameter VCP drainline that received effluent from sink drains in rooms 101 and 102 and all floor drains in room 104 and the high bay of building 46-88. The drainline discharged at a point approximately 250 ft northeast of building 46-88 on the west side of SWSC Road. Effluent from the outfall flowed to a storm drain culvert under the road and discharged to SWSC Canyon. Building 46-88 housed a structural laboratory for testing pressure vessels associated with the Rover Program. Later, the building was used for process chemistry work to isolate nonradioactive isotopes of carbon,

oxygen, and nitrogen. Outfall 04A014 was removed from the NPDES permit in July 1995. Before the outfall was removed from the NPDES permit, all discharges from building 46-88 ceased.

SWMU 46-004(w) is a former NPDES-permitted outfall located approximately 70 ft south of building 46-24 at TA-46. The outfall is a 2-in.-diameter cast-iron pipe that discharged to a drain south of building 46-24, near the northeast corner of a laser laboratory (building 46-76). The outfall served a sink drain in building 46-59. SWMU 46-004(w) also received effluent from the SWMU 46-004(r) outfall and was part of a network of drains that discharged to SWSC Canyon at former NPDES-permitted outfall 04A018. Building 46-59 was used for hydraulic and structural testing of components in support of the Rover Program. The outfall was removed from the NPDES permit in December 1995. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-59 ceased.

SWMU 46-008(g) is an unpaved storage area located south of a laser laboratory (building 46-76) at TA 46. In 1990, 20 drums containing dielectric oil were reported to be stored directly on the ground at this location. The site is a level area bisected by a drainage that flows east into SWSC Canyon through a storm drain culvert.

SWMU 46-009(a) is a surface disposal area located at the head of SWSC Canyon near the southeastern corner of TA-46. The surface disposal area covers approximately 5000 yd2, extending from the canyon rim to the floor of SWSC Canyon. The disposal area contains a variety of material including asphalt, concrete, plywood, pipe, and other construction materials. The dates material was disposed of at the site are not known. Aerial photographs of TA-46 taken in 1958 show the presence of the surface disposal area, confirming that disposal had started by at least 1958.

AOC C-46-001 is the location of a one-time spill of mercury in the vicinity of building 46-75 at TA-46. On July 22, 1975, 250–500 g (0.55–1.1 lb) of mercury spilled on the ground near building 46-75. The spill was cleaned up shortly after it occurred. The memorandum documenting the spill does not provide the precise location of where the spill occurred at building 46-75; however, aerial photos show the entire area surrounding building 46-75 was paved at the time of the spill.

1000.4.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-003(c)	Septic system	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(d2)	Stack Eemissions	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(f)	Drain associated with Building 46-24	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(t)	Outfall from Building 46-88	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(w)	Outfall from Building 46-59	Discrete Location, No overlap	Shared	•	•	•	PCBs
46-008(g)	Storage area	Co-located, Overlapping	Shared	•	•	•	PCBs
46-009(a)	Landfill	Co-located, Overlapping	Shared	•	•	•	PCBs
C-46-001	Spill/Non-intentional release area	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites grouped within this SMA discharged or may influence storm water run-off at the head of SWSC Canyon. These Sites share a common drainage, have similar contaminants, and will discharge substantially identical effluent.

1000.4.3 Control Measures

The majority of run-on contributions to the SMA originate from the paved areas in the developed portion of the SMA. An engineered storm water system routes water through most of the SWMUs.

Subsections to 1000.4.3 list all control measures used to control pollutant sources identified in Section 1000.4.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.4.4.

1000.4.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C004 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
C004 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
C004 02 03 0007	Established Vegetation - Vegetative Buffer Strip			•	
C004 04 06 0006	Channel/Swale - Rip Rap	•		•	
C004 04 06 0008	Channel/Swale - Rip Rap		•		•
C004 04 06 0009	Channel/Swale - Rip Rap	•			•
C004 06 01 0004	Check Dam - Rock		•		•
C004 06 01 0010	Check Dam - Rock	•			•
C004 06 01 0011	Check Dam - Rock	•			•
C004 06 01 0012	Check Dam - Rock	•			•
C004 06 01 0013	Check Dam - Rock		•		•

Established Vegetation (C004-02-01-0001, -02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Established Vegetation (C004-02-03-0007)

This buffer strip is located to the south of structure 46-0076 and to the west of the paved access road. It is used to control erosion on the slope. A vegetative buffer strip is a gently sloping area of vegetative cover that run-off water flows through before entering a stream, storm sewer, or other conveyance. The buffer strip may be an undisturbed strip of natural vegetation or it can be a graded and planted area. Vegetation buffer strips are more defined areas of permanent vegetation, often incorporated into developed areas, which act to protect soils from erosion.

Rip Rap (C004-04-06-0006)

This rip rap is located southeast of building 46-0041 below the paved access road. It is in place to control run-on from the paved areas entering the SMA. Rip rap is a

permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap - Southern (C004-04-06-0008)

This rip rap is located in the southern portion of the SMA near the 'T' on Sunbeam Road. It is in place to help control run-off from the paved areas. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap - West (C004-04-06-0009)

This rip rap is located at the culvert inlet west of structure 46-0024. It is in place to help control run-on from the paved parking areas. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam (C004-06-01-0004, -0013)

This is a series of two rock check dams located east of Sunbeam Road near the intersection. They are in place to control run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

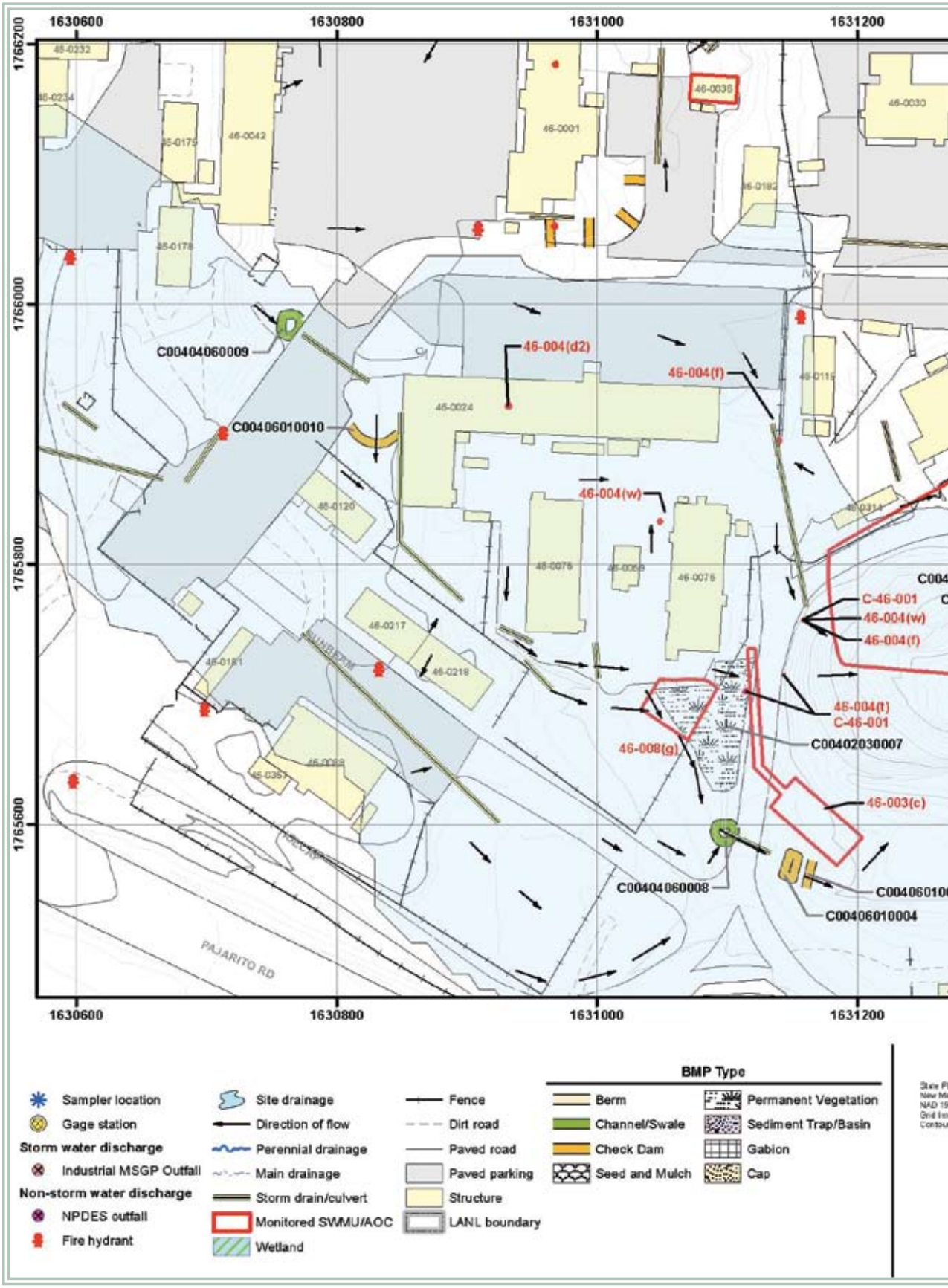
Rock Check Dam - West (C004-06-01-0010)

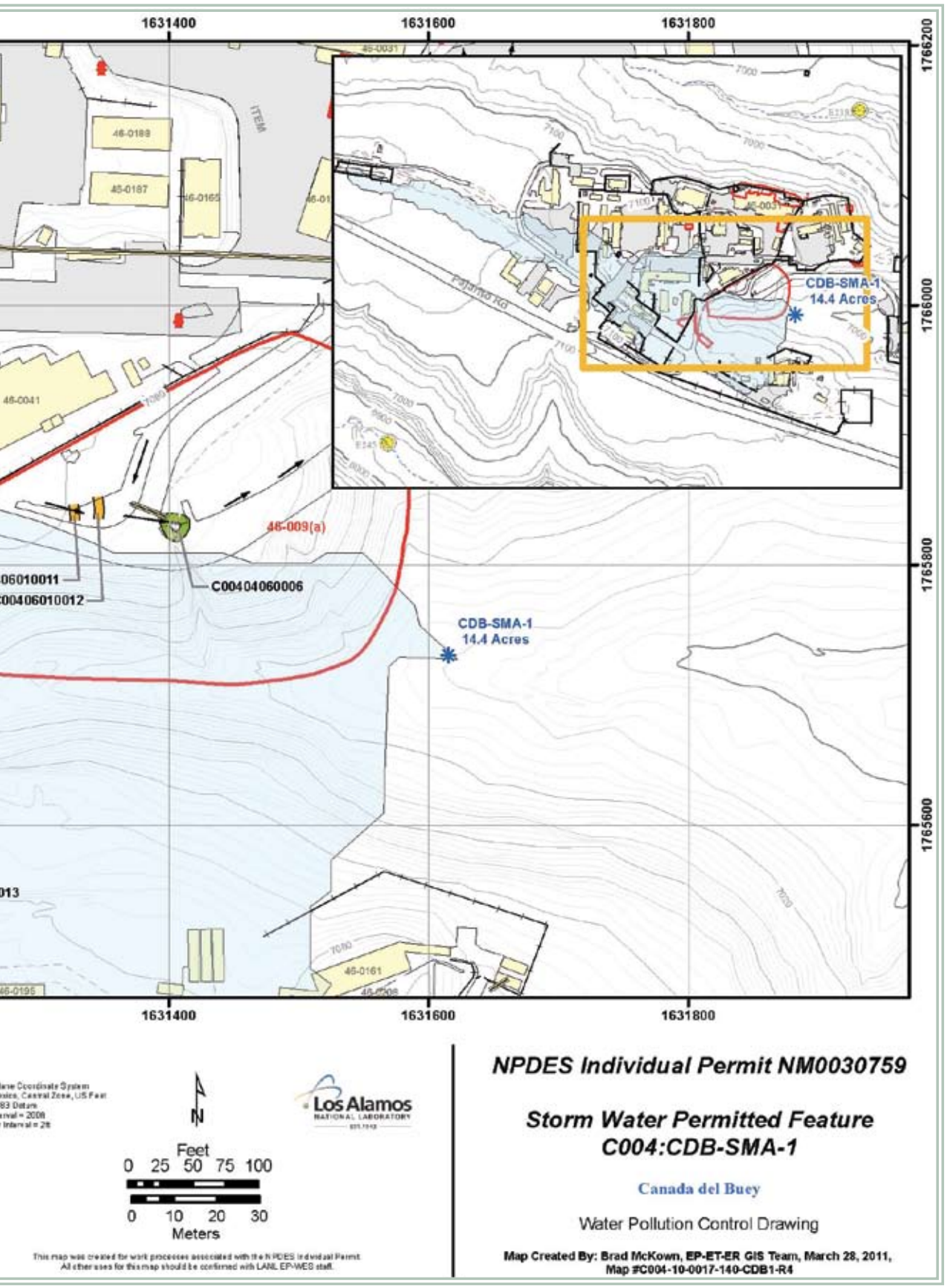
This check dam is located across the drainage channel between structure 46-0024 and the paved parking area west of the building. It is in place to help control storm water run-on from the paved areas above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams - East (C004-06-01-0011, -0012)

This is a pair of check dams that are located in the drainage channel south of structure 46-0041. They are functioning as run-on controls and restricting sediment transport. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.4.4 Project Map




1631400
1631600
1631800
1766200
1766000
1765800
1765600
CDB-SMA-1
14.4 Acres
46-0189
46-0187
46-0165
46-0041
46-009(a)
C00404060006
06010011
00406010012
013
46-0161
46-0195
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C004:CDB-SMA-1
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #C004-10-0017-140-CDB1-R4

1000.4.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.4.6 Corrective Action Status

The Sites associated with CDB-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.5 CDB-SMA-1.15

1000.5.1 Area Description

1000.5.2 Potential Pollutant Sources

1000.5.2.1 Historical Industrial Activity Areas

1000.5.3 Control Measures

1000.5.4 Project Map

1000.5.5 Storm Water Monitoring Plan and Schedule

1000.5.6 Corrective Action Status



1000.5 CDB-SMA-1.15

1000.5.1 Area Description

CDB-SMA-1.15 is located in upper Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Run-off flows north down a steep north facing slope of Cañada del Buey. A dirt access road is on the northern boundary. To the east and west of the SMA are steep canyon walls. The southern boundary is developed impervious area of TA-46. North of the SMA is the canyon floor and main drainage area of Cañada del Buey.

1000.5.2 Potential Pollutant Sources

1000.5.2.1 Historical Industrial Activity Areas

There are four historical industrial activity areas associated with PF C005, CDB-SMA-1.15, Sites 46-004(b), 46-004(y), 46-004(z) and 46-006(d).

SWMU 46-004(b) is the location of a former alkali-metal cleaning tank (structure 46-0081). The tank measured approximately 4 ft × 8 ft × 6 ft tall and was located on asphalt pavement within 20 ft of the northwest corner of building 46-31, within the boundary of SWMU 46-006(d). The tank was of steel construction with an outlet plumbed to the SWMU 46-004(c), a dry well. The tank was used in the late 1950s and early 1960s to douse laboratory equipment from cesium plasma diode experiments before the equipment's reuse or disposal. Butanol or kerosene was used on the equipment to dissolve naturally occurring alkali isotopes of cesium and lithium. The tank was removed in 1973.

SWMU 46-004(y) is a former NPDES-permitted outfall (03A043) located approximately 40 ft north of building 46-31 at TA-46. This outfall consisted of a 6 in. diameter cast-iron pipe that received blowdown from a cooling tower in building 46-31 and effluent from the building's floor drains, roof drains, and laboratory sinks. The outfall pipe discharged into Cañada del Buey. The outfall pipe to the canyon was removed before 1996, the roof drains were rerouted to new storm drains that discharge to the north side of building 46-31, and all floor and sink drains discharging to this outfall were rerouted to the SWSC plant. In July 1996, the outfall was removed from the NPDES permit.

SWMU 46-004(z) is an inactive outfall located approximately 60 ft northwest of building 46-31 at TA-46. This outfall consists of a 6 in. diameter cast-iron pipe that receives storm water discharge from two roof drains at building 46-31 and discharges into Cañada del Buey. Previously, the outfall also served the floor drains for rooms 160 through 172 of building 46-31. The floor drains leading to this outfall were rerouted to the SWSC plant some time before 1993.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive run-off from SWMU 46-006(d).

1000.5.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-004(b)	Soil contamination associated with former tank	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(y)	Outfall from Building 46-31	Co-located, Overlapping	Shared	•	•	•	PCBs
46-004(z)	Outfall from Building 46-31	Co-located, Overlapping	Shared	•	•	•	PCBs
46-006(d)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites grouped within this SMA are associated with discharges from historical activities at TA-46. The Sites share a common drainage, have similar contaminants, and will discharge substantially identical effluent.

1000.5.3 Control Measures

The majority of potential run-on to this SMA originates in the paved areas and roof drains in the developed area in the southern portion of the SMA.

Subsections to 1000.5.3 list all control measures used to control pollutant sources identified in Section 1000.5.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.5.4.

1000.5.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C005 01 06 0009	Seed and Mulch - Erosion Control Blankets		•	•	
C005 02 01 0005	Established Vegetation - Grasses and Shrubs			•	
C005 03 01 0006	Berms - Earthen		•		•
C005 04 06 0007	Channel/Swale - Rip Rap	•		•	
C005 04 06 0008	Channel/Swale - Rip Rap	•		•	

Erosion Control Blankets (C005-01-06-0009)

These erosion control blankets are associated with the berm adjacent to the sampler. Their main purpose is to prevent erosion of the berm. Used to temporarily stabilize and protect disturbed soil from raindrop impact and surface erosion, to increase infiltration, to decrease compaction and soil crusting, to conserve soil moisture, and to promote vegetation establishment. Erosion control blankets are used in place of mulch on areas of high velocity run-off and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

Established Vegetation (C005-02-01-0005)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

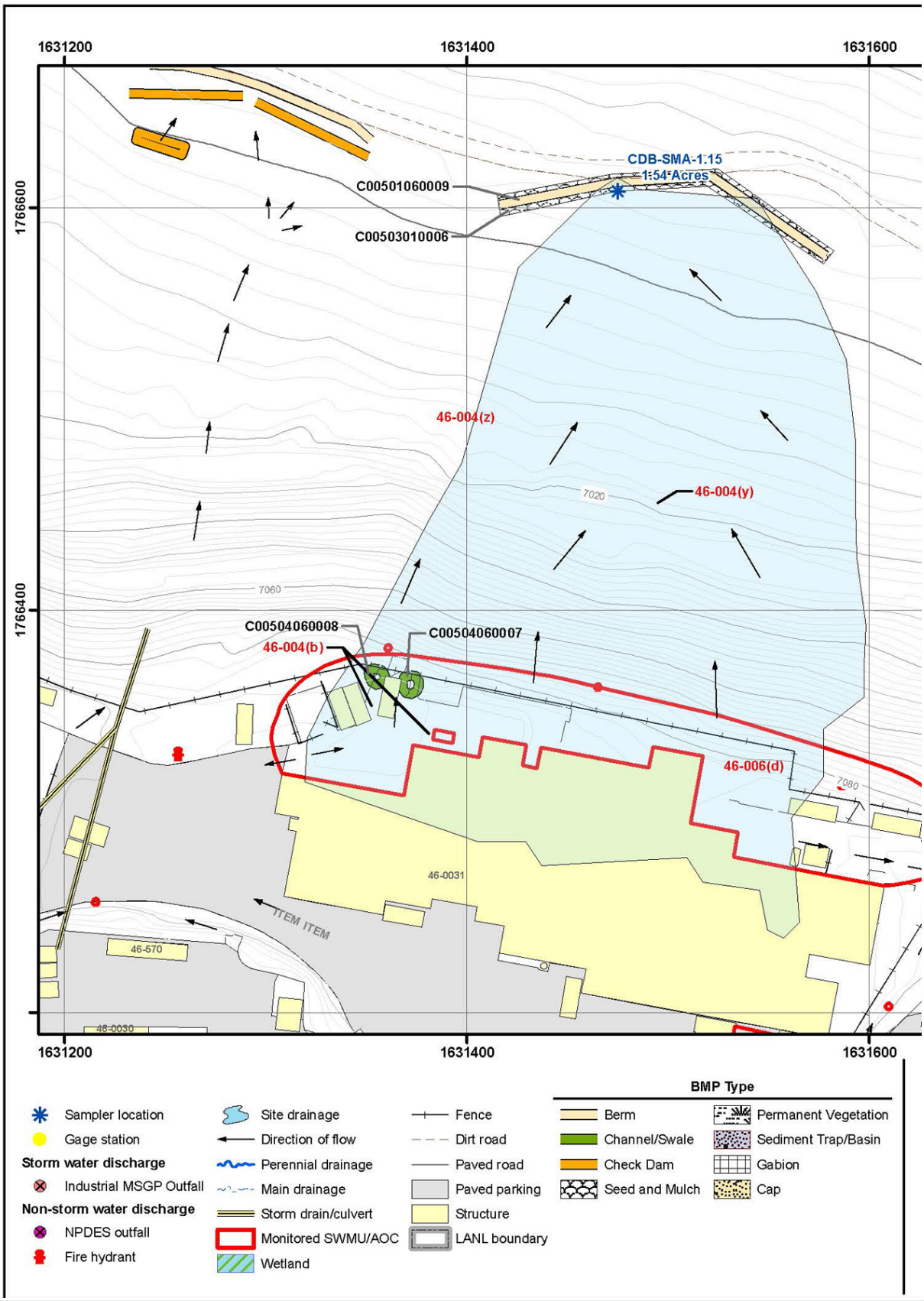
Earthen Berm (C005-03-01-0006)

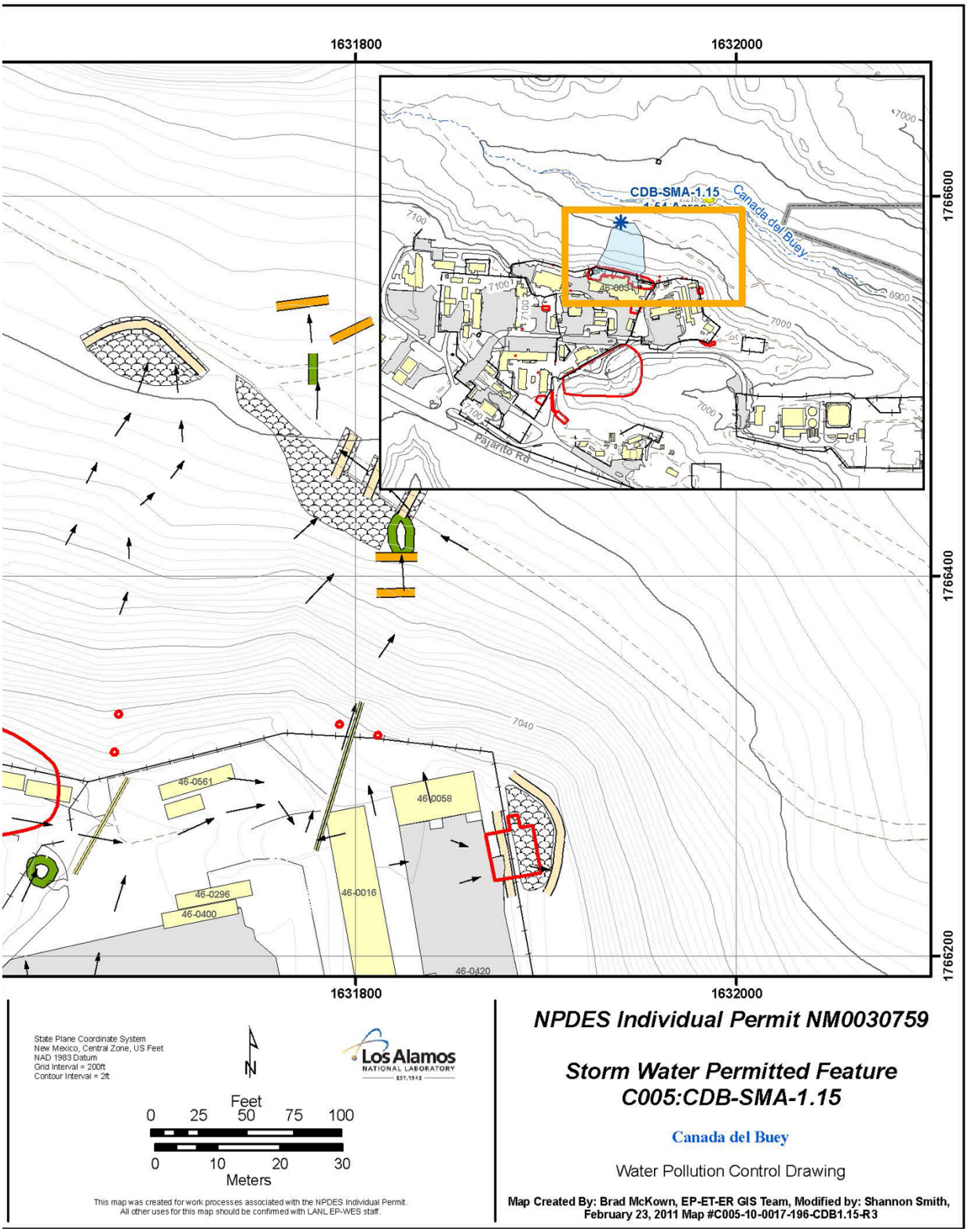
This berm is located at the northern end of the SMA adjacent to the sampler, running parallel to the unpaved access road. It is in place to mitigate run-off from the slope above. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rip Rap (C005-04-06-0007, -0008)

This is a series of two rip raps located in the southern portion of the SMA adjacent to the paved area near building 46-0031. They are in place to control run-on from the paved areas surrounding the buildings. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

1000.5.4 Project Map




1631800
1632000
1766600
1766400
1766200
CDB-SMA-1.15
Canada del Buey
Pajarito Rd
46-0033
46-0561
46-0058
46-0016
46-0296
46-0400
46-0420
7000
7100
7040
6900
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid Interval = 200ft
Contour Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST.1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C005:CDB-SMA-1.15
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified by: Shannon Smith,
February 23, 2011 Map #C005-10-0017-196-CDB1.15-R3

1000.5.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.5.6 Corrective Action Status

The Sites associated with CDB-SMA-1.15 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.6 CDB-SMA-1.35

1000.6.1 Area Description

1000.6.2 Potential Pollutant Sources

1000.6.2.1 Historical Industrial Activity Areas

1000.6.3 Control Measures

1000.6.4 Project Map

1000.6.5 Storm Water Monitoring Plan and Schedule

1000.6.6 Corrective Action Status



1000.6 CDB-SMA-1.35

1000.6.1 Area Description

CDB-SMA-1.35, is located in upper Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Run-off flows north down a steep north facing slope of Cañada del Buey. A dirt access road is on the northern boundary. To the east and west of the SMA are steep canyon walls. The southern boundary is developed impervious area of TA-46. North of the SMA is the canyon floor and main drainage area of Cañada del Buey.

1000.6.2 Potential Pollutant Sources

1000.6.2.1 Historical Industrial Activity Areas

There are six historical industrial activity areas associated with PF C006, CDB-SMA-1.35, Sites 46-004(a2), 46-004(u), 46-004(v), 46-004(x), 46-006(d) and 46-008(f).

SWMU 46-004(a2) is an outfall located on the east side of building 46-31 at TA-46. The outfall received effluent from a 6-in. diameter industrial drainline in the building. The sinks and drains in rooms 101, 103, and 105 of building 46-31 were connected to this outfall. The outfall discharged to a shallow ditch on the east side of building 46-31, which leads approximately 50 ft north to a storm drain culvert discharging into Cañada del Buey. By 1994, the outfall pipe was plugged, and all drains leading to the outfall either were removed from service or were rerouted to the SWSC plant. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31.

SWMU 46-004(u) is an inactive outfall located approximately 10 ft north of former building 46-87 at TA-46. The outfall consisted of an 8-in.-diameter cast-iron pipe that discharged into Cañada del Buey. This pipe was the overflow pipe for a concrete wet well located in former building 46 87. The wet well was designed as a holding pit for deionized water and historically received effluent from a closed-loop cooling water system serving buildings 46-16, 46-25, and 46-31. The wet well also received effluent from sink drains in building 46-25, which was a battery storage facility also used for small-scale painting activities in support of the Rover Program. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. Building 46-87 also stored water-treatment chemicals. Building 46-87 underwent D&D in December 2001. By the early 1990s, the outfall had been plugged, and effluent discharged to the wet well was periodically pumped out and disposed of at the SWSC plant. By 1998, the building 46-25 drains that discharged to the wet well were removed from service.

SWMU 46-004(v) is an inactive outfall located approximately 20 ft north of former building 46-87 at TA-46. The outfall consists of a 6-in.-diameter cast-iron pipe that discharged effluent from the roof and floor drains of former building 46-87 into Cañada del Buey. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. This building was also used to store water-treatment chemicals. By the early 1990s, the floor drains in former building 46-87 had been plugged, and the outfall was receiving only discharges from the roof drains. Building 46-87 underwent D&D in December 2001.

SWMU 46-004(x) is an outfall located approximately 30 ft north of building 46-31 at TA 46. The outfall consists of a 6-in.-diameter pipe that receives effluent from roof drains in building 46-31. The outfall

pipe extends approximately 1 ft beyond the steep canyon slope and discharges to a 1 to 2-ft-wide drainage that stretches to the toe of the slope of Cañada del Buey. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive run-off from SWMU 46-006(d).

SWMU 46-008(f) is a paved storage area located next to the southeast corner of building 46-31 at TA-46. During a 1986 site visit, four drums of oil, which could have been product or waste oil, were observed at this location.

1000.6.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-004(a2)	Outfall associated with Building 46-31	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC
46-004(u)	Outfall from Building 46-87	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC
46-004(v)	Outfall from Building 46-87	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC
46-004(x)	Outfall from Building 46-31	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC
46-006(d)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC
46-008(f)	Storage area	Co-located, Overlapping	Shared	•	•	•	PCBs PEST SVC

Substantially Identical Determination

Sites grouped within this SMA are areas of potential soil contamination that discharged to a common drainage area north of TA-46. They share a common drainage, have similar contaminants, and will discharge substantially identical effluent.

1000.6.3 Control Measures

Potential run-on to the SMA originates from the paved, developed area along the southern portion of the SMA.

Subsections to 1000.6.3 list all control measures used to control pollutant sources identified in Section 1000.6.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.6.4.

1000.6.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C006 01 01 0008	Seed and Mulch - Seed and Wood Mulch			•	
C006 01 06 0007	Seed and Mulch - Erosion Control Blankets		•	•	
C006 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
C006 02 02 0005	Established Vegetation - Forested/Needle Cast			•	
C006 03 01 0006	Berms - Earthen		•		•
C006 04 06 0009	Channel/Swale - Rip Rap	•		•	

Seed and Mulch (C006-01-01-0008)

This application of seed and mulch is located in the northern portion of the SMA and surrounds the berm and sampler. It was applied to mitigate erosion in the area. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Erosion Control Blankets (C006-01-06-0007)

These erosion control blankets are associated with the berm at the northern end of the SMA and function to limit erosion of the berm. Used to temporarily stabilize and

protect disturbed soil from raindrop impact and surface erosion, to increase infiltration, to decrease compaction and soil crusting, to conserve soil moisture, and to promote vegetation establishment. Erosion control blankets are used in place of mulch on areas of high velocity run-off and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

Established Vegetation (C006-02-01-0001, -02-0005)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

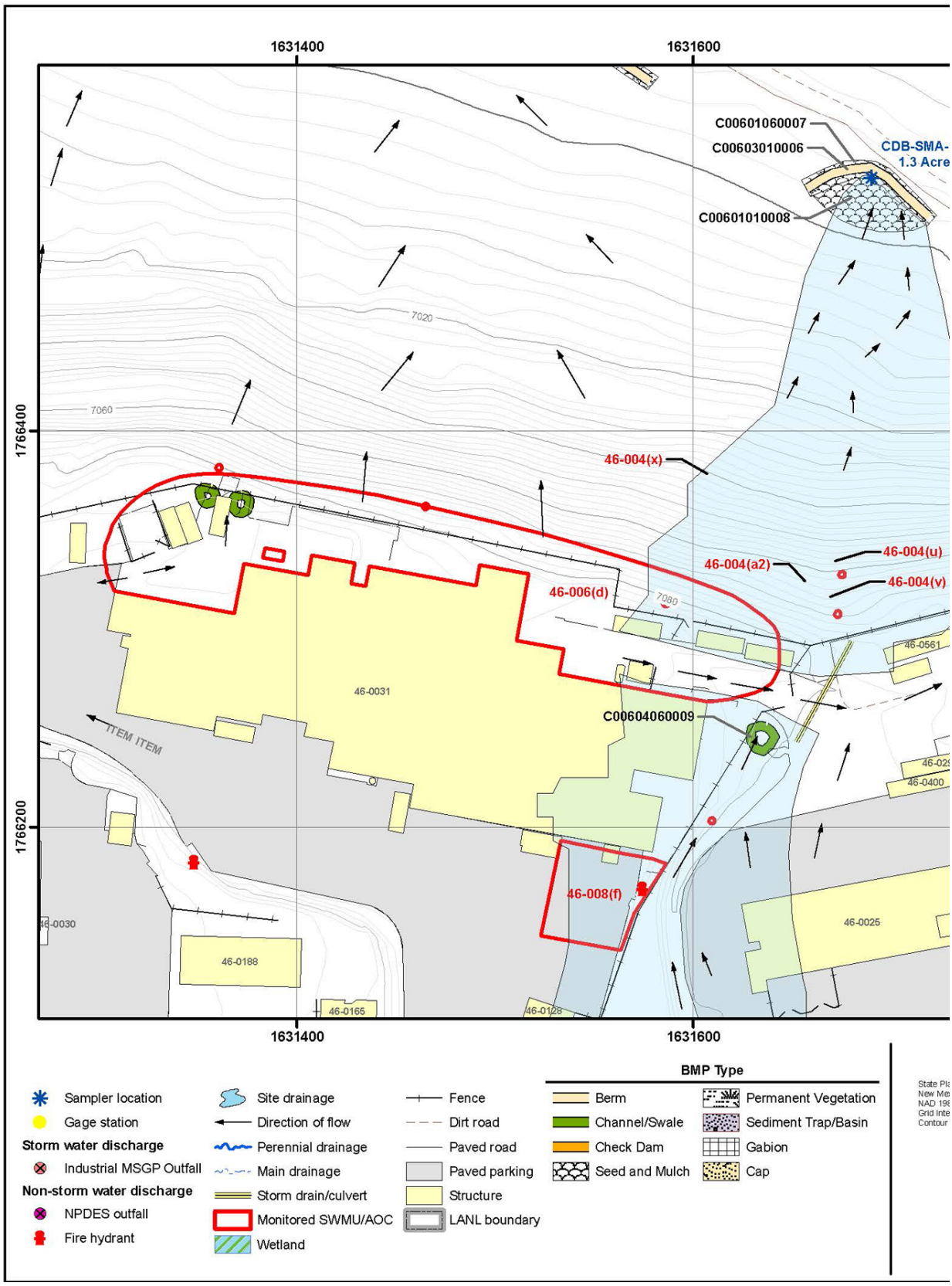
Earthen Berms (C006-03-01-0006)

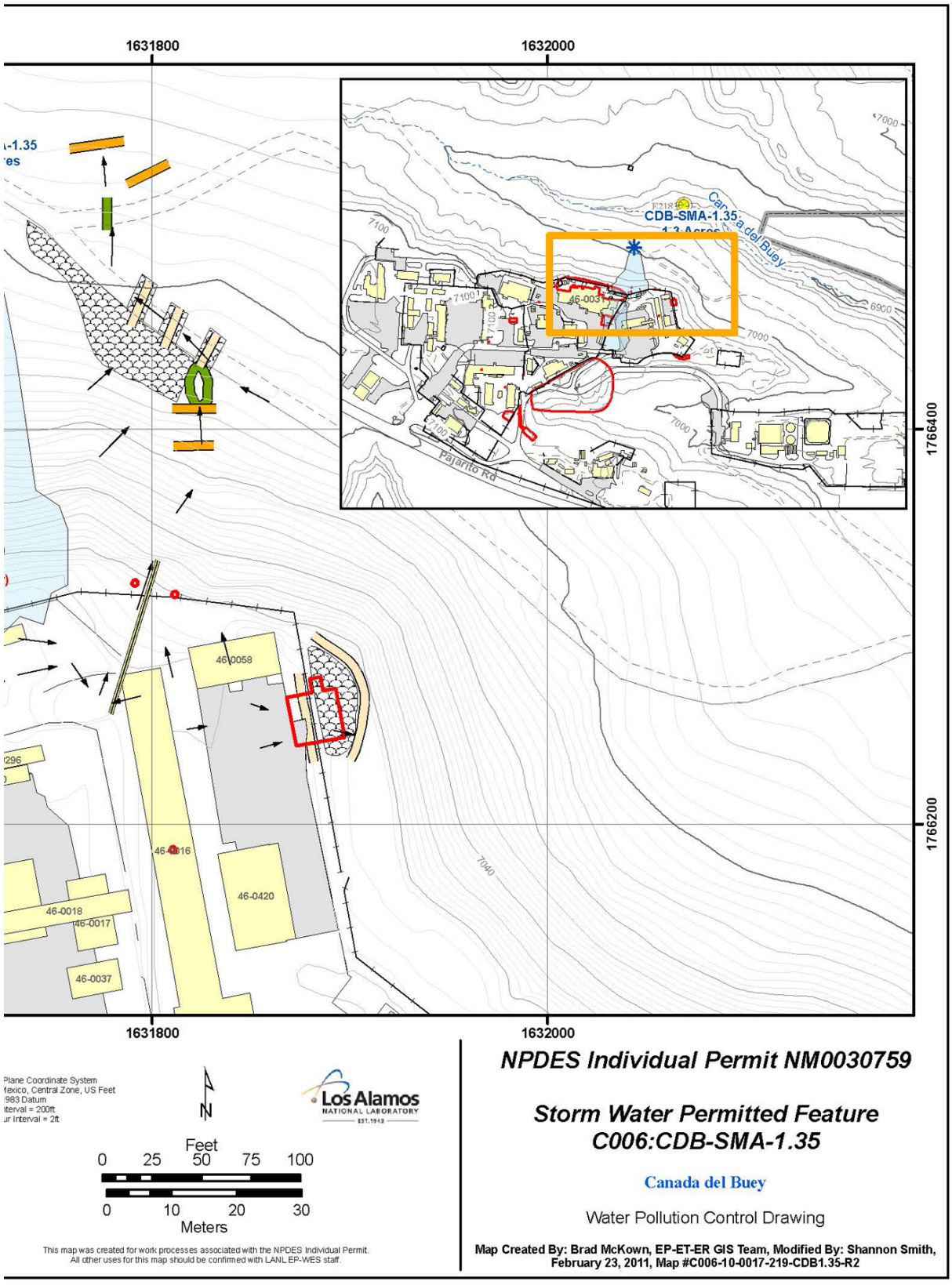
This berm is located in the northern portion of the SMA north of the sampler. Is is used to control run-off from the area. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications

Rip Rap (C006-04-06-0009)

This rip rap is located on the eastern side of building 46-0031, inside the drainage channel. It is used to control run-on from the paved areas. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

1000.6.4 Project Map




1631800
1632000
1766400
1766200
CDB-SMA-1.35
Canada del Buey
Pajarito Rd
46-0058
46-0016
46-0420
46-0018
46-0017
46-0037
7040
7100
7000
6900
Plane Coordinate System
Mexico, Central Zone, US Feet
983 Datum
nterval = 200ft
ur Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST.1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C006:CDB-SMA-1.35
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C006-10-0017-219-CDB1.35-R2

1000.6.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) PEST (2), SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.6.6 Corrective Action Status

The Sites associated with CDB-SMA-1.35 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.7 CDB-SMA-1.54

1000.7.1 Area Description

1000.7.2 Potential Pollutant Sources

1000.7.2.1 Historical Industrial Activity Areas

1000.7.3 Control Measures

1000.7.4 Project Map

1000.7.5 Storm Water Monitoring Plan and Schedule

1000.7.6 Corrective Action Status



1000.7 CDB-SMA-1.54

1000.7.1 Area Description

CDB-SMA-1.54 is located in upper Cañada del Buey. The SMA is on the steep north facing slope of Cañada del Buey. Run-off flows north to the main drainage of the canyon north of the SMA. To the east and west of the PF are steep canyon walls. The southern boundary is at the top of the north facing slope. Run-off is influenced by developed areas of TA-46 located on the mesa top south of the SMA.

1000.7.2 Potential Pollutant Sources

1000.7.2.1 Historical Industrial Activity Areas

There are three historical industrial activity areas associated with PF C007, CDB-SMA-1.54, Sites 46-004(h), 46-004(q) and 46-006(d).

SWMU 46-004(h) consists of an area of potential soil contamination associated with exhaust emissions from stacks on building 46-16 and inactive outfall from an industrial drainline in building 46-16 at TA-46. Work in building 46-16 that generated exhaust emissions involved experiments conducted with uranium-loaded graphite and tests of uranium fuel rods as part of the Rover Program between the late 1950s and early 1970s. The outfall component of SWMU 46-004(h) consists of an inactive 6-in.-diameter cast-iron pipe that received effluent from building floor drains and discharged to an outfall north of building 46-16 into Cañada del Buey. In 1995, floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant.

SWMU 46-004(q) is an inactive outfall located approximately 40 ft north of building 46-58 at TA-46. The outfall consists of a 6 in.-diameter cast-iron pipe that discharged into Cañada del Buey. The source of the discharge to the outfall is not known.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a,b,c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive run-off from SWMU 46-006(d).

1000.7.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-004(h)	Drains and Exhaust System	Co-located, Overlapping	Shared	•	•	•	PCBs PEST
46-004(q)	Outfall	Co-located, Overlapping	Shared	•	•	•	PCBs PEST
46-006(d)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs PEST

Substantially Identical Determination

Sites grouped within this SMA are areas of potential soil contamination associated with structures on the north-east edge of TA-46. They share a common drainage, have similar contaminants, and will discharge substantially identical effluent.

1000.7.3 Control Measures

The majority of run-on contributions from the paved and developed areas near building 46-0016 are diverted to the east away from the SMA. There is potential run-on from the unpaved access road crossing the northern area of the SMA. Existing controls serve to mitigate both run-on and run-off from this SMA.

Subsections to 1000.7.3 list all control measures used to control pollutant sources identified in Section 1000.7.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.7.4.

1000.7.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C007 01 01 0013	Seed and Mulch - Seed and Wood Mulch			•	
C007 01 06 0010	Seed and Mulch - Erosion Control Blankets			•	
C007 01 06 0011	Seed and Mulch - Erosion Control Blankets			•	

1000.7.3.1 Control Measures for Historical Industrial Activity Areas (continued)

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C007 01 06 0012	Seed and Mulch - Erosion Control Blankets			•	
C007 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
C007 03 01 0007	Berms - Earthen		•		•
C007 03 01 0008	Berms - Earthen		•		•
C007 03 01 0009	Berms - Earthen	•			•
C007 04 05 0014	Channel/Swale - Water Bar			•	
C007 04 06 0006	Channel/Swale - Rip Rap		•	•	
C007 06 02 0015	Check Dam - Log		•		•
C007 06 02 0016	Check Dam - Log		•		•
C007 06 02 0017	Check Dam - Log		•		•
C007 06 02 0018	Check Dam - Log		•		•

Seed and Mulch (C007-01-01-0013)

Seed and mulch was applied in the northern end of the SMA around the berms and along the southern side of the unpaved access road in order to prevent erosion of the area. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Erosion Control Blankets (C007-01-06-0010, 0011, -0012)

Each of the three berms in the northern portion of the SMA have been covered with erosion control blankets in order to protect the berms from erosion. Used to temporarily stabilize and protect disturbed soil from raindrop impact and surface

erosion, to increase infiltration, to decrease compaction and soil crusting, to conserve soil moisture, and to promote vegetation establishment. Erosion control blankets are used in place of mulch on areas of high velocity run-off and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

Established Vegetation (C007-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Berms (C007-03-01-0007,-0008, -0009)

This is a series of three earthen berms located in the northern portion of the SMA near the unpaved access road. Two of the berms are in place to control run-off from the SMA and the third is used to divert run-on from the road away from the SWMU. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Water Bar (C007-04-05-0014)

The water bar is located across the unpaved access road south and to the east of the sampler. Its purpose is to limit erosion on the road. A diversion dam constructed across a road or trail to remove and disperse surface run-off in a manner that adequately protects the soil resource and limits sediment transportation.

Rip Rap (C007-04-06-0006)

This rip rap is located to the east of the seed and mulch area and north of the log check dams. It is in place to restrict run-off and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

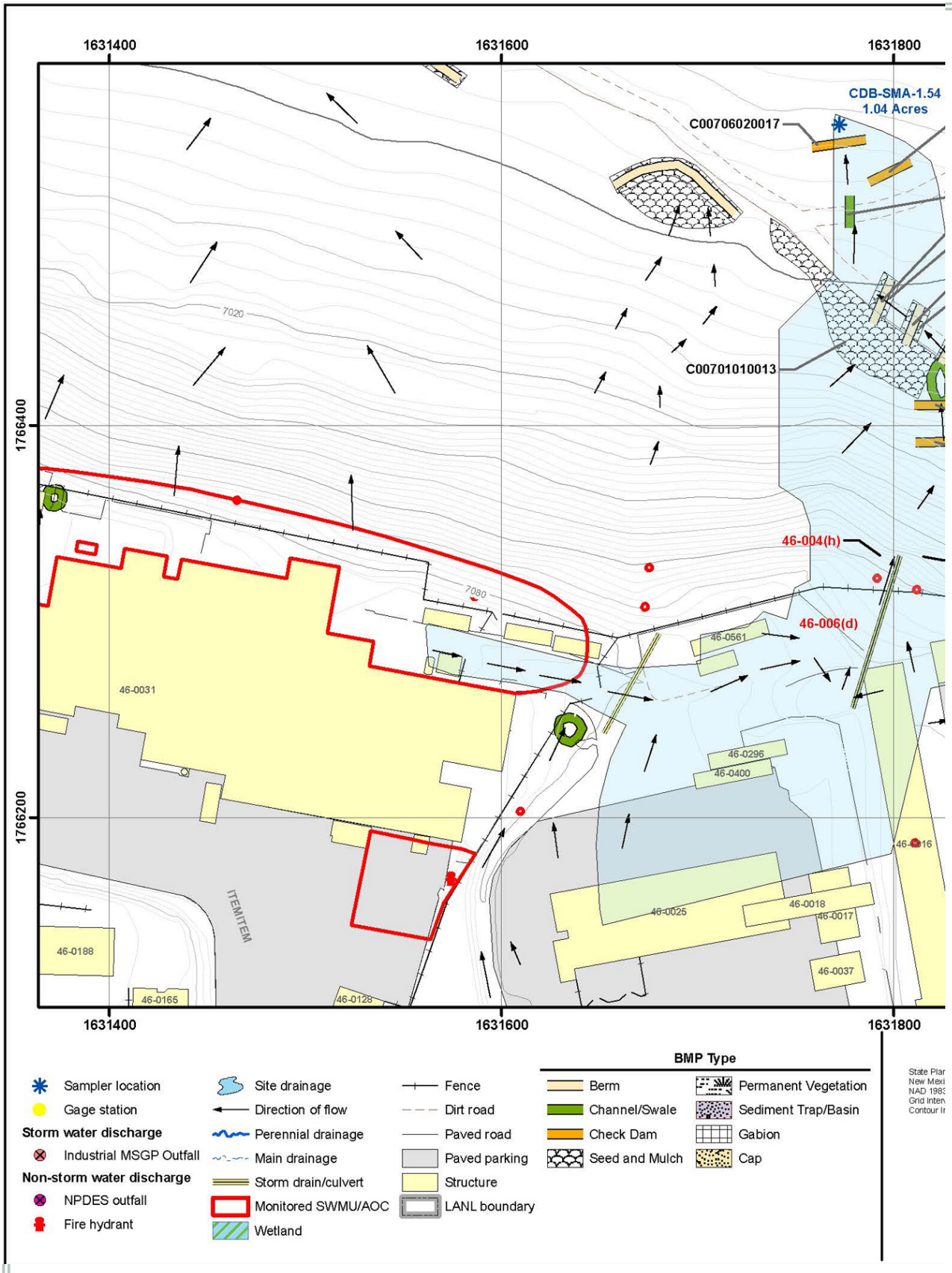
Check Dam - Southern (C007-06-02-0015, -0016)

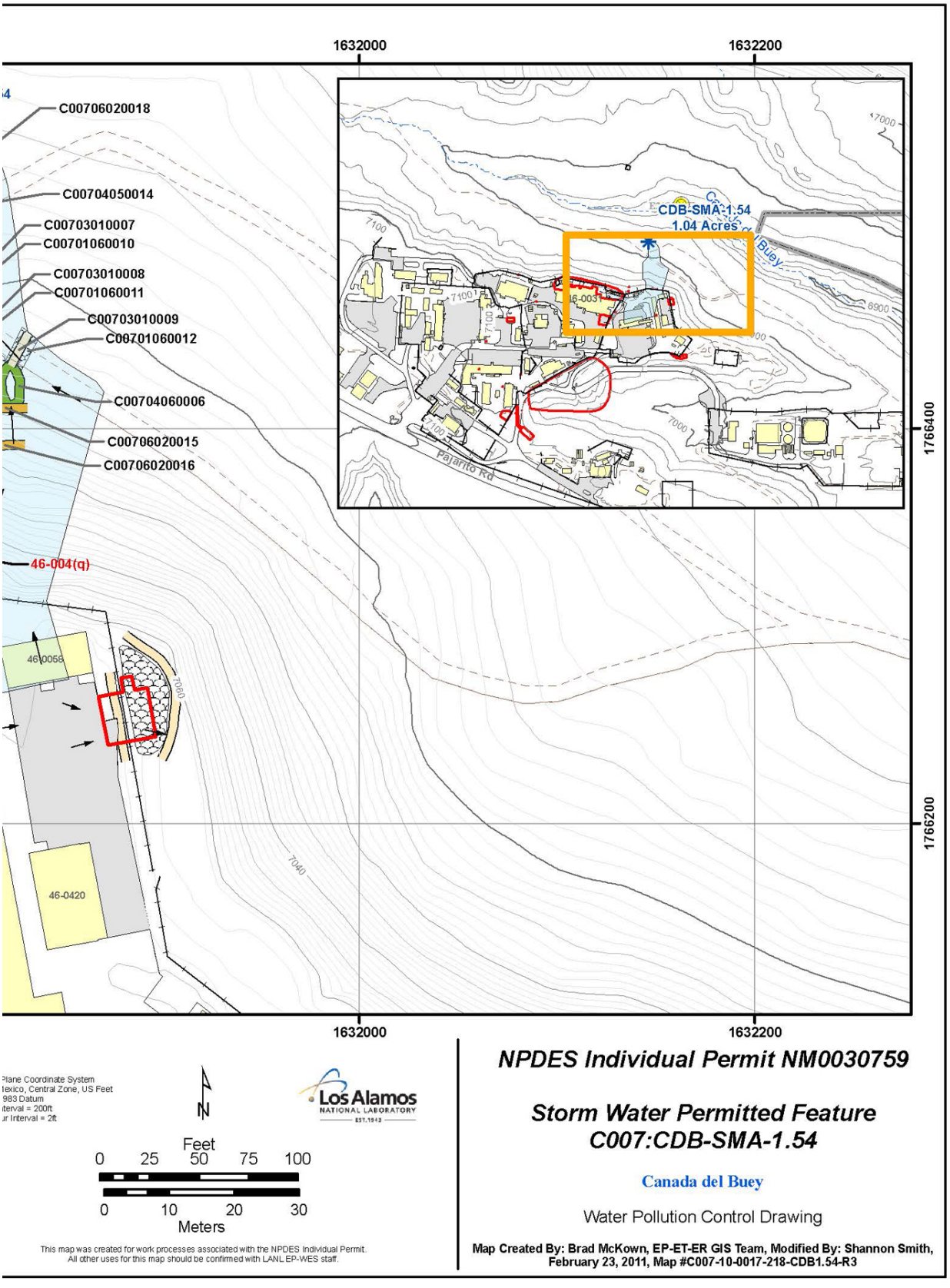
This is a series of two log check dams located in the drainage channel near the base of the canyon slope. They are used to control run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Check Dam - Northern (C007-06-02-0017, -0018)

This is a series of two log check dams located in the northern portion of the SMA just south of the sampler. They are used to restrict run-off in the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.7.4 Project Map




1632000
1632200
1766400
1766200
C00706020018
C00704050014
C00703010007
C00701060010
C00703010008
C00701060011
C00703010009
C00701060012
C00704060006
C00706020015
C00706020016
46-004(q)
46-0058
46-0420
CDB-SMA-1.54
1.04 Acres
Canada del Buey
Pajarito Rd
7100
7000
6900
7060
7040
Plane Coordinate System
lexico, Central Zone, US Feet
983 Datum
terval = 200ft
ur Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST. 1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C007:CDB-SMA-1.54
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C007-10-0017-218-CDB1.54-R3

1000.7.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) PEST (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.7.6 Corrective Action Status

The Sites associated with CDB-SMA-1.54 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.8 CDB-SMA-1.55

1000.8.1 Area Description

1000.8.2 Potential Pollutant Sources

1000.8.2.1 Historical Industrial Activity Areas

1000.8.3 Control Measures

1000.8.4 Project Map

1000.8.5 Storm Water Monitoring Plan and Schedule

1000.8.6 Corrective Action Status



1000.8 CDB-SMA-1.55

1000.8.1 Area Description

CDB-SMA-1.55 is located in upper Cañada del Buey. The SMA is on a gradual northeast facing slope of Cañada del Buey. Run-off flows east down this slope to the main drainage of the canyon. A dirt access road is on the northern boundary of the SMA. To the east and west of the SMA are steep canyon walls. The southern boundary is at the top of the slope. Run-off is influenced by developed areas of TA-46 located on the mesa top west of the SMA.

1000.8.2 Potential Pollutant Sources

1000.8.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF C008, CDB-SMA-1.55, Site 46-003(e).

SWMU 46-003(e) is a septic system consisting of a septic tank (structure 46-66), a siphon tank (structure 46-67), a distribution box (structure 46-68), and a drain field at TA-46. Septic tank 46-66, located approximately 20 ft east of building 46-58 outside the TA-46 perimeter fence, served the restroom facility, shower, water cooler, janitorial sink, and mechanical room floor drain in building 46-58, which contained office space, a laboratory, a machine shop, and an equipment room. The septic system was removed from service in approximately 1972 to 1973, and its drainline was rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-66 was emptied, filled, and left in place.

1000.8.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-003(e)	Septic system	Discrete Location, No overlap	Individual	•		•	

1000.8.3 Control Measures

The primary run-on source for this SMA is from roof drains associated with building 46-0016 and paved area around the building.

Subsections to 1000.8.3 list all control measures used to control pollutant sources identified in Section 1000.8.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.8.4.

1000.8.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C008 01 01 0011	Seed and Mulch - Seed and Wood Mulch			•	
C008 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
C008 03 01 0010	Berms - Earthen		•		•
C008 03 12 0009	Berms - Rock	•			•

Seed and Wood Mulch (C008-01-01-0011)

Seed and wood mulch has been applied between the fence line and the earthen berm in order to help control erosion on the slope. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (C008-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

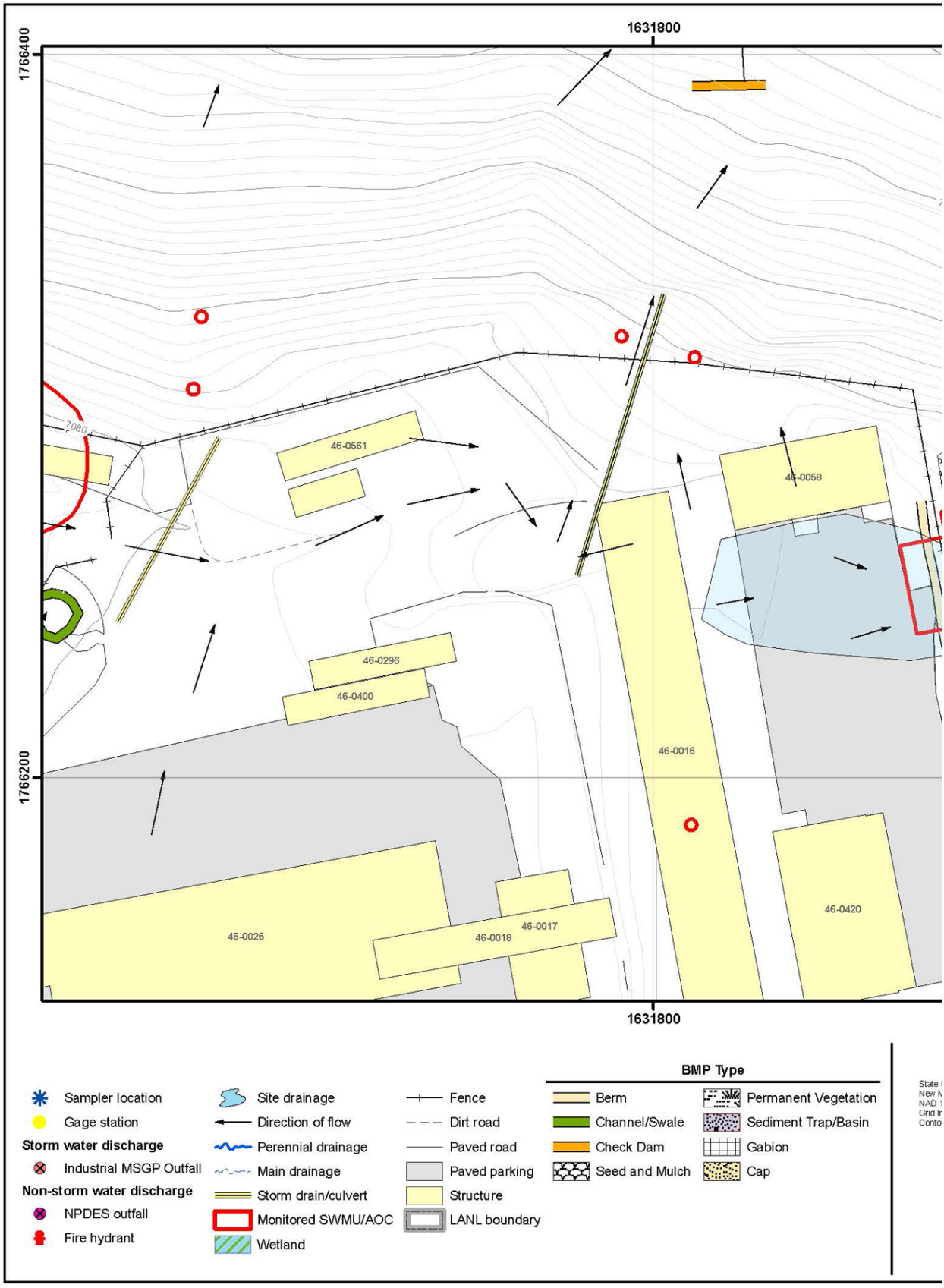
Earthen Berm (C008-03-01-0010)

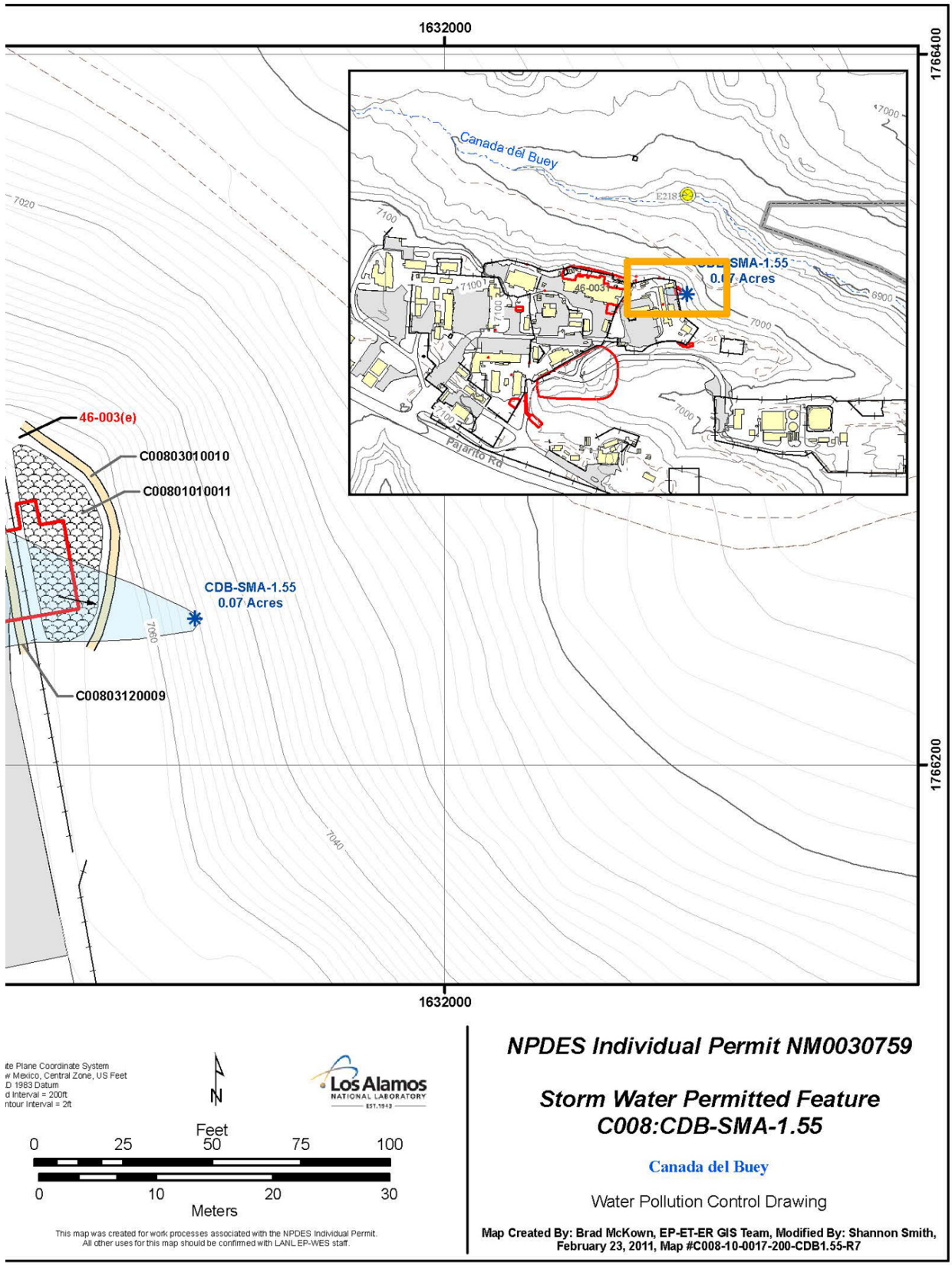
This berm is located above the sampler along the edge of the mesa top, It is used to help manage storm water run-off from the slope above. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Berm (C008-03-12-0009)

This berm is located between the paved parking area and the fence line. It is in place to help control storm water run-on from the paved area. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

1000.8.4 Project Map




1632000
1766400
1766200
1632000
Canada del Buey
Pajarito Rd
E218
46-003(e)
C00803010010
C00801010011
CDB-SMA-1.55
0.07 Acres
C00803120009
7020
7100
7000
6900
7060
7040
ite Plane Coordinate System
w Mexico, Central Zone, US Feet
D 1983 Datum
d Interval = 200ft
ntour Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST. 1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C008:CDB-SMA-1.55
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
February 23, 2011, Map #C008-10-0017-200-CDB1.55-R7

1000.8.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.8.6 Corrective Action Status

The Site associated with CDB-SMA-1.55 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.9 CDB-SMA-1.65

1000.9.1 Area Description

1000.9.2 Potential Pollutant Sources

1000.9.2.1 Historical Industrial Activity Areas

1000.9.3 Control Measures

1000.9.3.1 Control Measures for Historical Industrial Activity Areas

1000.9.4 Project Map

1000.9.5 Storm Water Monitoring Plan and Schedule

1000.9.6 Corrective Action Status



1000.9 CDB-SMA-1.65

1000.9.1 Area Description

CDB-SMA-1.65, is located in the lower portion of upper Cañada del Buey. Run off from the SMA flows southeast to a small tributary canyon of Cañada del Buey before reaching the canyon further east.

1000.9.2 Potential Pollutant Sources

1000.9.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF C009, CDB-SMA-1.65, Site 46-003(b).

SWMU 46-003(b) is a septic system consisting of a septic tank (structure 46-22), a distribution box (structure 46-29), associated drainline, and drain field located at TA-46. Septic tank 46-22 and its drain field, located approximately 50 ft south of building 46-77, served the restroom facilities in building 46-17. This building housed a generator that charged batteries for the Rover Program. The septic system was removed from service in approximately 1992 to 1993, and drainlines that discharged to SWMU 46-003(b) were rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-22 was emptied, filled, and left in place. The drainlines that previously served SWMU 46-003(b) were rerouted to the SWSC plant in the early 1990s and are currently active.

1000.9.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
46-003(b)	Septic system	Discrete Location, No overlap	Individual	•		•	

1000.9.3 Control Measures

Paved areas to the north and northwest are the potential source of run-on at this Permitted Feature. Run-on from the paved areas is diverted and controlled by the channel and rip rap at the southeast corner of the SMA.

Subsections to 1000.9.3 list all control measures used to control pollutant sources identified in Section 1000.9.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.9.4.

1000.9.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C009 03 06 0003	Berms - Straw Wattles		•		•
C009 04 01 0002	Channel/Swale - Earthen	•		•	
C009 04 06 0001	Channel/Swale - Rip Rap	•		•	

Straw Wattles (C009-03-06-0003)

These wattles are located to north of the SMA along the southern boundary of the unpaved access road. They are in place to mitigate run-off from the SMA. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

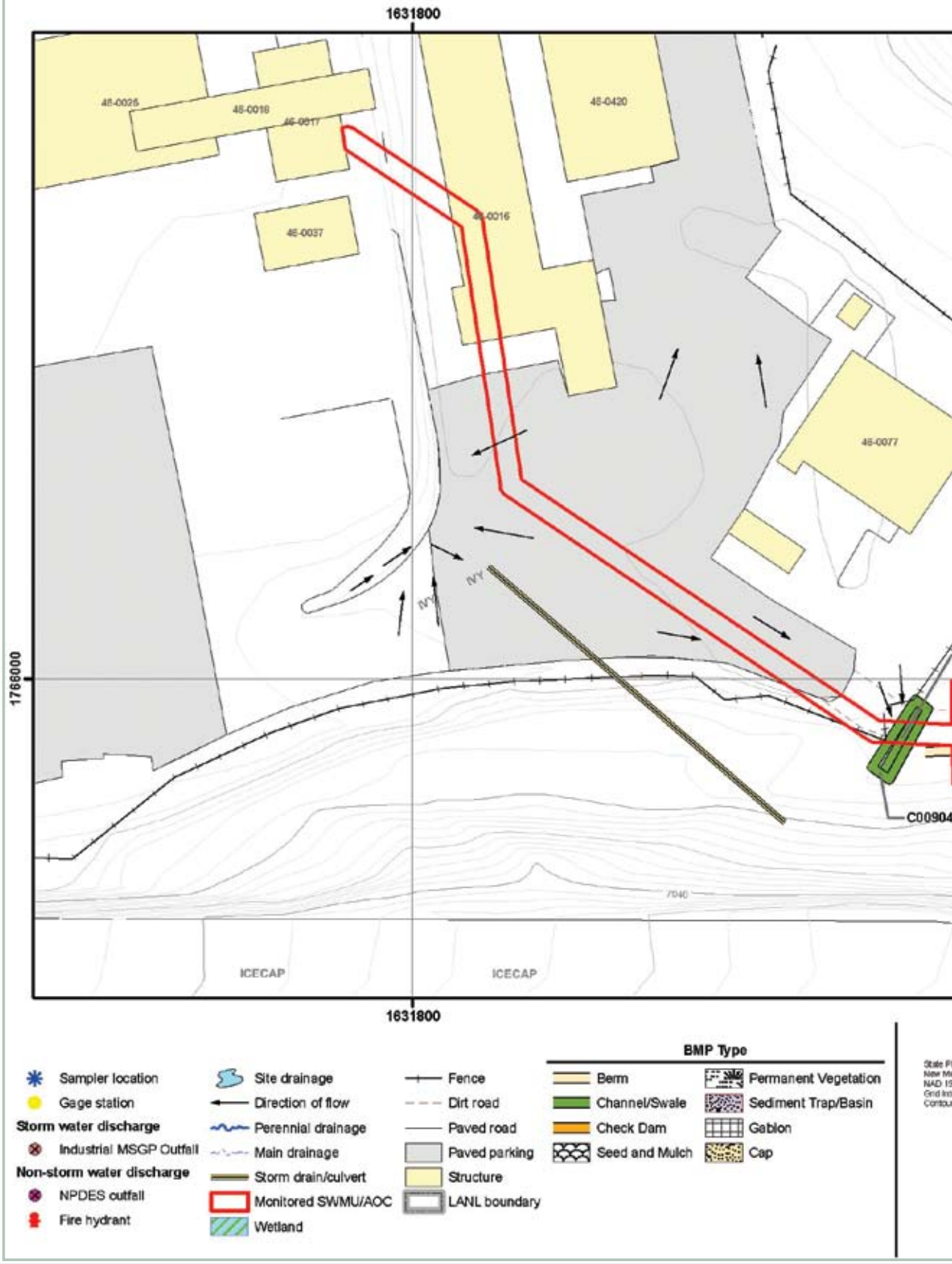
Earthen Channel (C009-04-01-0002)

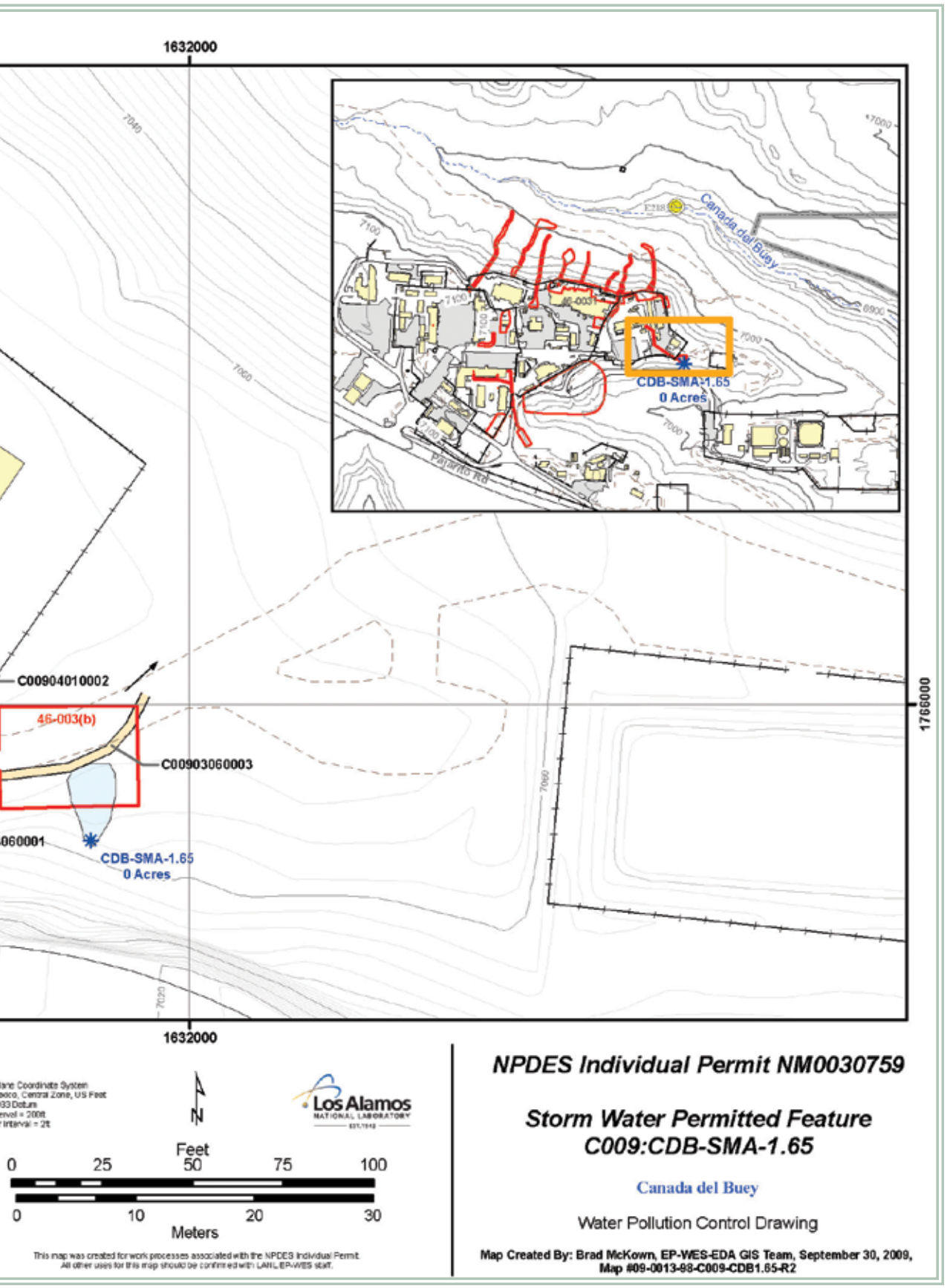
This channel is located west of the SMA near the fence line. It is used to divert run-on away from the SMA. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Rip Rap (C009-04-06-0001)

This rip rap is located to the west of the SMA adjacent to the fence line. It is used to control run-on from the paved area. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

1000.9.4 Project Map




1632000
1766000
CDB-SMA-1.65
0 Acres
Canada del Buey
Pajarito Rd
C00904010002
46-003(b)
C00903060003
CDB-SMA-1.65
0 Acres
1632000
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL/EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C009:CDB-SMA-1.65
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-WES-EDA GIS Team, September 30, 2009,
Map #09-0013-98-C009-CDB1.65-R2

1000.9.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.9.6 Corrective Action Status

The Site associated with CDB-SMA-1.65 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.10 CDB-SMA-4

1000.10.1 Area Description

1000.10.2 Potential Pollutant Sources

1000.10.2.1 Historical Industrial Activity Areas

1000.10.3 Control Measures

1000.10.3.1 Control Measures for Historical Industrial Activity Areas

1000.10.4 Project Map

1000.10.5 Storm Water Monitoring Plan and Schedule

1000.10.6 Corrective Action Status



1000.10 CDB-SMA-4

1000.10.1 Area Description

CDB-SMA-4 is located in lower Cañada del Buey. The mesa top component of the SMA is flat and highly developed. Storm water flows north to a steep north-facing slope of Cañada del Buey. To the east and west of the SMA are steep canyon walls. There is a paved impervious area along the southern boundary.

1000.10.2 Potential Pollutant Sources

1000.10.2.1 Historical Industrial Activity Areas

There are three historical industrial activity areas associated with PF C010, CDB-SMA-4, Sites 54-017, 54-018 and 54-020.

SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. Pits 11, 14, 23, and 24 were never excavated. This site is included in Module VIII of LANL's Hazardous Waste Facility Permit. Pits 1 through 24 were operational between 1959 and 1980 and received radioactive, mixed, and TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 24 are located in the eastern portion of Area G with volumes ranging from 1,371 to 56,759 cubic yards. Once filled, the pits were covered with 3.3 feet of consolidated crushed tuff and four inches of topsoil, and reseeded with native grasses.

SWMU 54-018 consists of disposal pits 25 through 33 and 35 through 37. Only pit 29 (although no longer in use) is considered a regulated unit until RCRA closure is certified and approved by NMED. This site is included in Module VIII of LANL's Hazardous Waste Facility Permit. 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, gloveboxes, asbestos, and lab waste and range in volume from 20,957 to 59,930 cubic yards. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. Once filled, the pits were covered with 3.3 feet of consolidated crushed tuff and four inches of topsoil, and reseeded with native grasses.

SWMU 54-020 consists of TA-54 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 were operational 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, hazardous and mixed waste. The shafts range in size from one to eight feet in diameter and 25 to 65 feet deep, and are located throughout the eastern portion of Area G. Disposal shafts were typically filled with waste to within three feet of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

1000.10.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
54-017	Disposal Pits (MDA G)	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
54-018	Disposal Pits (MDA G)	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
54-020	MDA G	Co-located, Overlapping	Shared	•	•	•	PCBs Dioxin SVC

Substantially Identical Determination

Sites grouped within this SMA are associated with historical waste management activities. They have similar contaminants, share a common drainage, and will discharge substantially identical effluent.

1000.10.3 Control Measures

There is the potential for run-on contribution from paved areas on the east and west sides of the project area. Run-off is possible from the paved roads and the paved areas around the existing structures.

Subsections to 1000.10.3 list all control measures used to control pollutant sources identified in Section 1000.10.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.10.4.

1000.10.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C010 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
C010 04 02 0005	Channel/Swale - Concrete/Asphalt		•	•	
C010 04 06 0007	Channel/Swale - Rip Rap		•	•	
C010 05 01 0004	Sediment Traps and Basins - Sediment Trap		•		•
C010 06 01 0006	Check Dam - Rock		•		•

1000.10.3.1 Control Measures for Historical Industrial Activity Areas (continued)

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
C010 06 01 0009	Check Dam - Rock	•			•
C010 06 01 0010	Check Dam - Rock	•			•
C010 06 01 0011	Check Dam - Rock	•			•

Established Vegetation (C010-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Concrete/Asphalt Channel/Swale (C010-04-02-0005)

This swale is located east of structure 54-0153 and is in place to control run-off from the area. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Rip Rap (C010-04-06-0007)

This rip rap is located near the dog leg in the fence line and is used in conjunction with the sediment trap to control run-off from the area. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Sediment Trap (C010-05-01-0004)

This sediment trap is located near the dog leg in the fence line and is used in conjunction with the rip rap to control run-off from the area. Sediment traps and detention basins are used primarily for sediment control and secondarily for run-off control. Sediment traps perform the same function as sediment basins but are typically smaller in size and do not have pipe outlets.

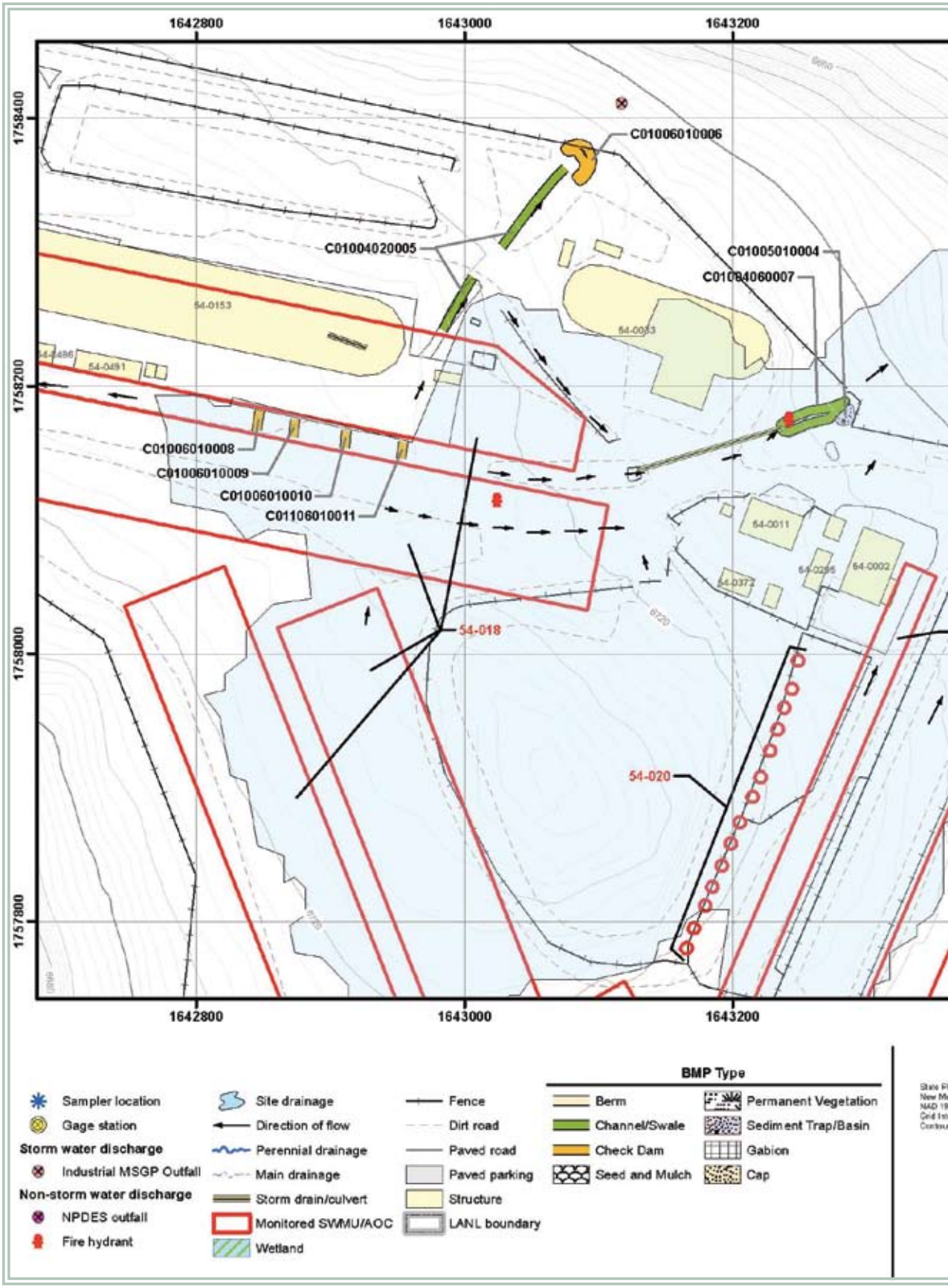
Rock Check Dam (C010-06-01-0006)

This rock check dam is located near the canyon edge at the channel outlet. It is used to mitigate run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams - West (C010-06-01-0008, -0009, -0010, -0011)

This is a series of four check dams on the western side of the SMA used to control run-on and sediment. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.10.4 Project Map



1643400
1643600
1643800
1644000
1758400
1758200
1758000
1757800
CDB-SMA-4
7.58 Acres
Canada del Buey
54-0220
54-0009
54-017
54-0291
MESITA DEL BUEY
54-0375
Los Alamos
NATIONAL LABORATORY
N
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
C010:CDB-SMA-4
Canada del Buey
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #C010-10-0017-141-CDB4-R3

1000.10.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) Dioxin (2), SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.10.6 Corrective Action Status

The Sites associated with CDB-SMA-4 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.11 M-SMA-1

1000.11.1 Area Description

1000.11.2 Potential Pollutant Sources

1000.11.2.1 Historical Industrial Activity Areas

1000.11.2.2 Public Influences

1000.11.3 Control Measures

1000.11.3.1 Control Measures for Public Influences

1000.11.4 Project Map

1000.11.5 Storm Water Monitoring Plan and Schedule

1000.11.6 Corrective Action Status



1000.11 M-SMA-1

1000.11.1 Area Description

M-SMA-1 is located in a developed area of TA-03. The northern and western boundaries of the SMA are located in the highly developed area of TA-03 and are heavily influenced by paving and related engineered controls. The southern boundary is Pajarito road. The eastern boundary is in the developed area of TA-03 and contain the headwaters of Upper Mortandad Canyon. The receiving waters are along this eastern boundary.

1000.11.2 Potential Pollutant Sources

1000.11.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M001, M-SMA-1, Sites 03-050(a) and 03-054(e).

SWMU 03-050(a) is an area of potential soil contamination associated with the exhaust emissions from 24 active stacks on the roof of building 03-0029. Building 03-0029, the CMR Building, was built in 1961 and houses an irradiated-fuel examination facility and analytical chemistry operations that involve handling radioactive materials containing uranium, plutonium, iodine, mixed fission products, and tritium. High-efficiency particulate air (HEPA), Aerosolve 95, and charcoal filters are used to remove radioactive particulates from stack effluent gas.

SWMU 03-054(e) is an outfall located in upper Mortandad Canyon. The outfall typically discharges a steady, low-volume flow of effluent that originates from several sources at the CMR Building (03-0029). These sources include drainage from roofs over the west wing, where towers vent filtered exhaust, and surface water run-off from the asphalt area around the building.

SWMU 03-054(e) also received effluent from an unintentional one-time release in 1974 from an industrial waste manhole (AOC C-03-006). The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 and 1000 gal. of RLW. The overflow spilled to the surrounding paved area, traveled north along Diamond Drive, flowed into the storm sewer through a storm drain grate, and ultimately discharged into upper Mortandad Canyon through the SWMU 03-054(e) outfall. A small dam was built in the streambed at the base of the canyon to contain the effluent. Subsequent cleanup action, based on residual radioactive contamination cleanup levels of 25 pCi/g, removed approximately 142 ft3 of contaminated soil from Mortandad Canyon.

1000.11.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-050(a)	Soil contamination from TA-3 exhaust emissions	Co-located, Overlapping	Shared	•	•	•	PCBs
03-054(e)	Outfall from Building 3-29	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites 03-050(a) and 03-054(e) are both associated with the historical operation of Building 03-29, constructed in 1952. Because of the similarity in operations, common drainage pathway, and similarity in contaminants, these Sites will discharge substantially identical effluent.

1000.11.2.2 Public Influences

All boundaries of the SMA are accessible to the public. Pedestrian traffic in the area primarily consists of those who are working in the area.

1000.11.3 Control Measures

There is significant run-on at this Permitted Feature. The run-on originates on the numerous paved areas, roads and parking lots, in the area, as well as from roof drainage from area buildings.

Subsections to 1000.11.3 list all control measures used to control pollutant sources identified in Section 1000.11.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.11.4.

1000.11.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M001 02 01 0007	Established Vegetation - Grasses and Shrubs			•	
M001 02 02 0005	Established Vegetation - Forested/Needle Cast			•	
M001 07 01 0001	Gabions - Gabions	•			•
M001 07 01 0006	Gabions - Gabions		•		•

Established Vegetation
(M001-02-01-0007, -02-0005)
Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

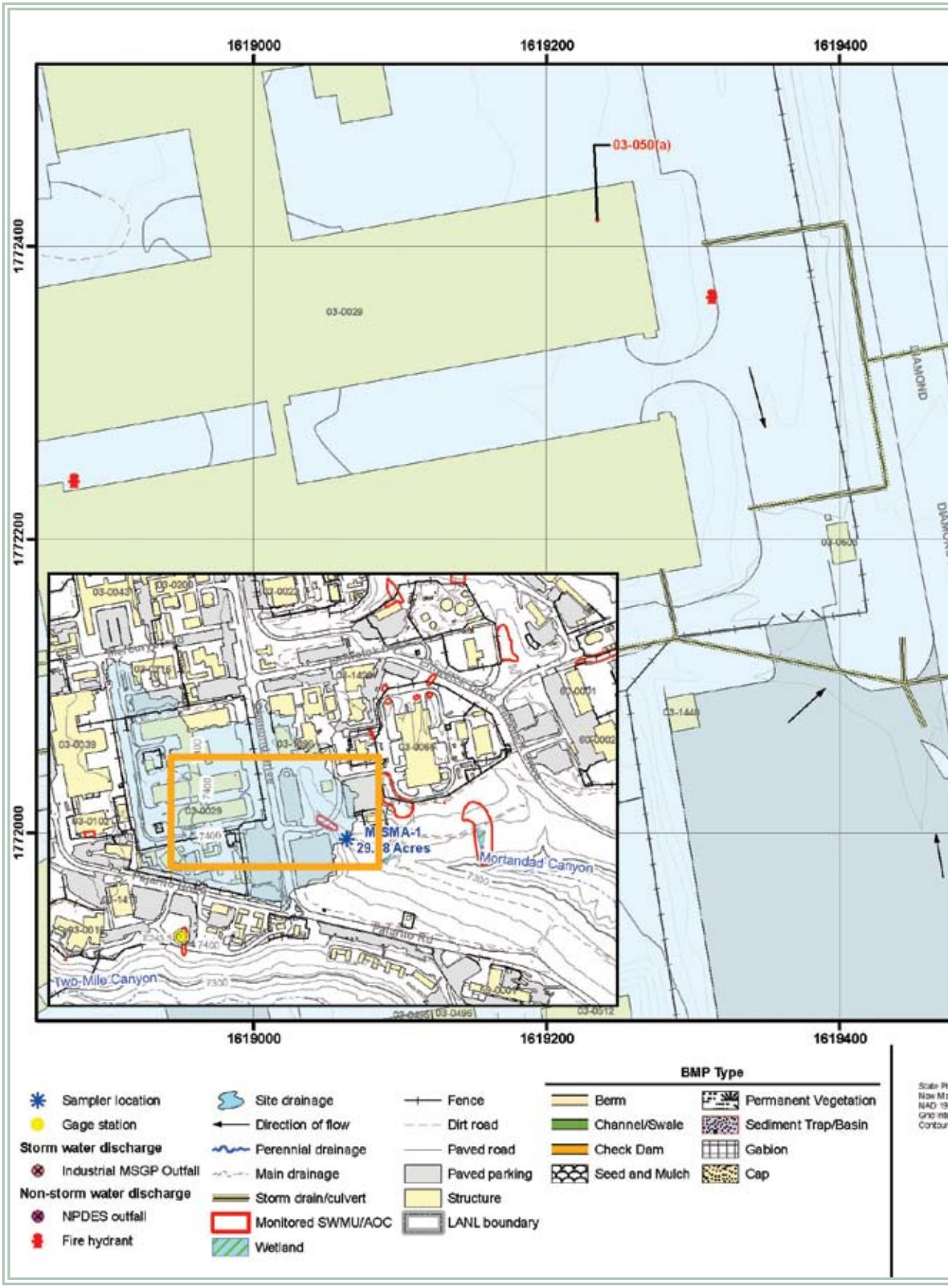
Northern Gabions
(M001-07-01-0001)
This gabion is located on the north side of Sigma Road in the drainage channel flowing under the road. It is in place to control run-on from the paved areas above. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

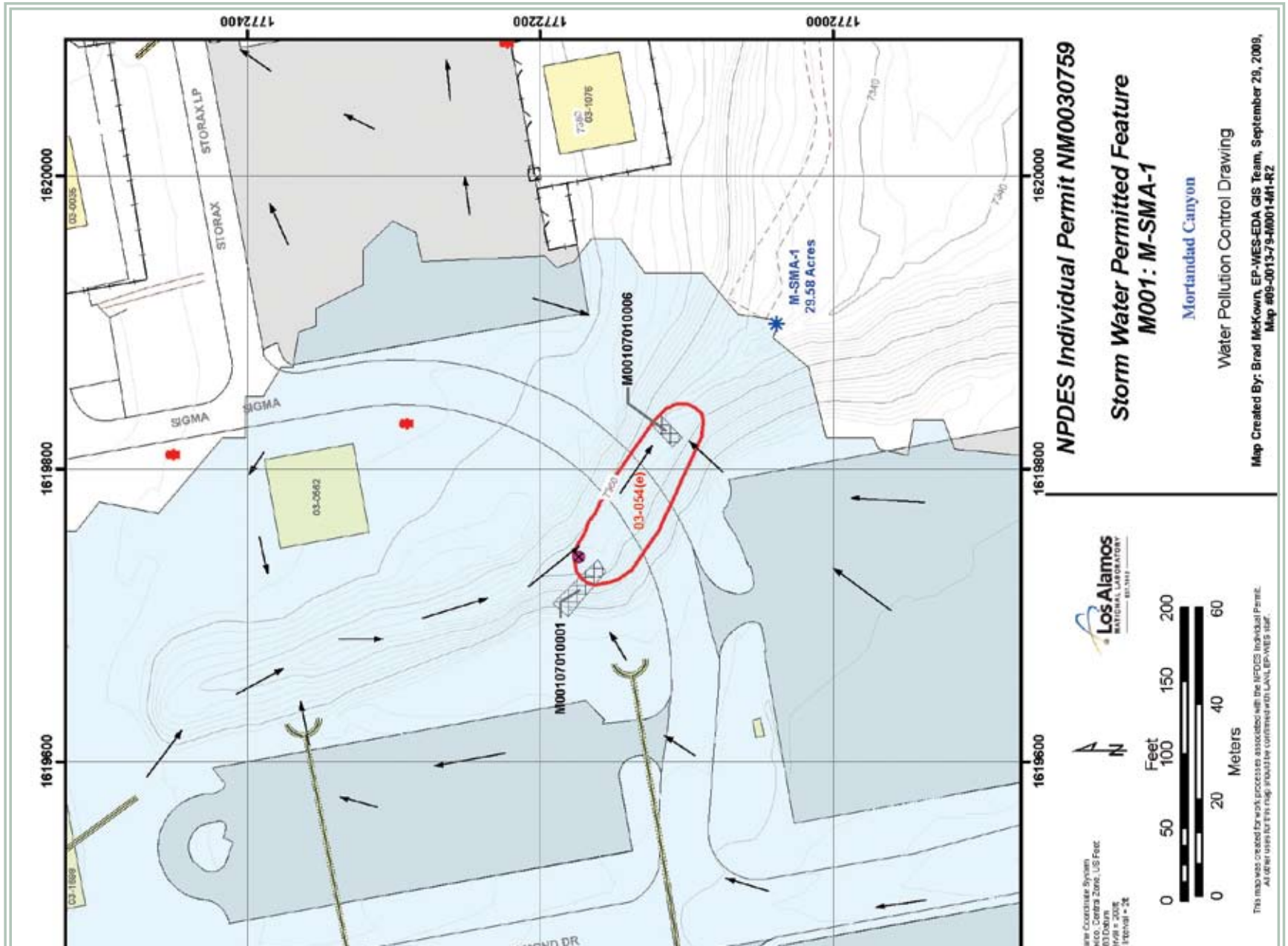
Southern Gabions
(M001-07-01-0006)
This gabion is located on the south side of Sigma Road in the drainage channel flowing under the road. It is in place to control run-off from the SMA. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

1000.11.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF M001, M-SMA-1. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.11.4 Project Map




NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M001: M-SMA-1
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-WES-EDA GIS Team, September 29, 2009,
Map #09-0013-79-M0014#1-R2
M-SMA-1
29.58 Acres
M00107010006
M00107010001
03-054(e)
STORAX LP
STORAX
SIGMA
SIGMA
03-0682
03-1676
03-0035
03-1689
1772400
1772200
1772000
1620000
1619800
1619600
Los Alamos
NATIONAL LABORATORY
Feet
Meters
0
50
100
150
200
0
20
40
60

1000.11.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.11.6 Corrective Action Status

The Sites associated with M-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.12 M-SMA-1.2

1000.12.1 Area Description

1000.12.2 Potential Pollutant Sources

1000.12.2.1 Historical Industrial Activity Areas

1000.12.3 Control Measures

1000.12.4 Project Map

1000.12.5 Storm Water Monitoring Plan and Schedule

1000.12.6 Corrective Action Status



1000.12 M-SMA-1.2

1000.12.1 Area Description

M-SMA-1.2 is located in the developed area of TA-03. The southern boundary is on a south facing slope of the head of Upper Mortandad Canyon. The northern, eastern boundary, and western boundaries are influenced by development in the headwaters. Storm water flows from the developed areas to the receiving waters along the southeastern edge of the SMA. There is an unpaved access road that crosses through the monitored area.

1000.12.2 Potential Pollutant Sources

1000.12.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M002, M-SMA-1.2, Site 03-049(a).

SWMU 03-049(a) is a currently permitted NPDES outfall (03A022) located south of the Sigma Building (03-0066). The outfall formerly discharged treated cooling water from a former cooling tower (structure 03-0127), which served the Sigma Building, and continues to discharge run-off from six roof drains on the Sigma Building. The cooling tower operated from1960 to 1999. From 1984 to 1990, the outfall also received discharge from rinse tanks associated with the electroplating operation in the Sigma Building. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to reduce contaminant buildup, trace amounts of metals, acids, cyanide, and depleted uranium were introduced into the rinse water. The NPDES permit allowed discharge of 4680 gal./d of treated cooling water and 24,000 gal./d of electroplating rinse water. Between 1990 and 1999, the outfall received treated cooling water and roof-drain run-off. The outfall currently discharges roof-drain run-off to upper Mortandad Canyon.

1000.12.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-049(a)	Outfall from cooling tower 3-127 and Building 3-66	Co-located, Overlapping	Individual	•		•	

1000.12.3 Control Measures

Run-on results from overland sheet flow, an unpaved access road, and the permitted outfall associated with 03-049(a). There is significant run-on to the Permitted Feature from the storm drain and paved areas above the area.

Subsections to 1000.12.3 list all control measures used to control pollutant sources identified in Section 1000.12.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.12.4.

1000.12.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M002 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M002 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
M002 03 06 0006	Berms - Straw Wattles	•			•
M002 04 06 0008	Channel/Swale - Rip Rap	•		•	
M002 06 01 0003	Check Dam - Rock		•		•
M002 06 01 0004	Check Dam - Rock		•		•

Established Vegetation (M002-02-01-0001, -02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles (M002-03-06-0006)

These wattles are installed just below the access road to control road run on to the SWMU. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rip Rap (M002-04-06-0008)

The rip rap was installed in the northern end of the drainage area to help control run-off and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

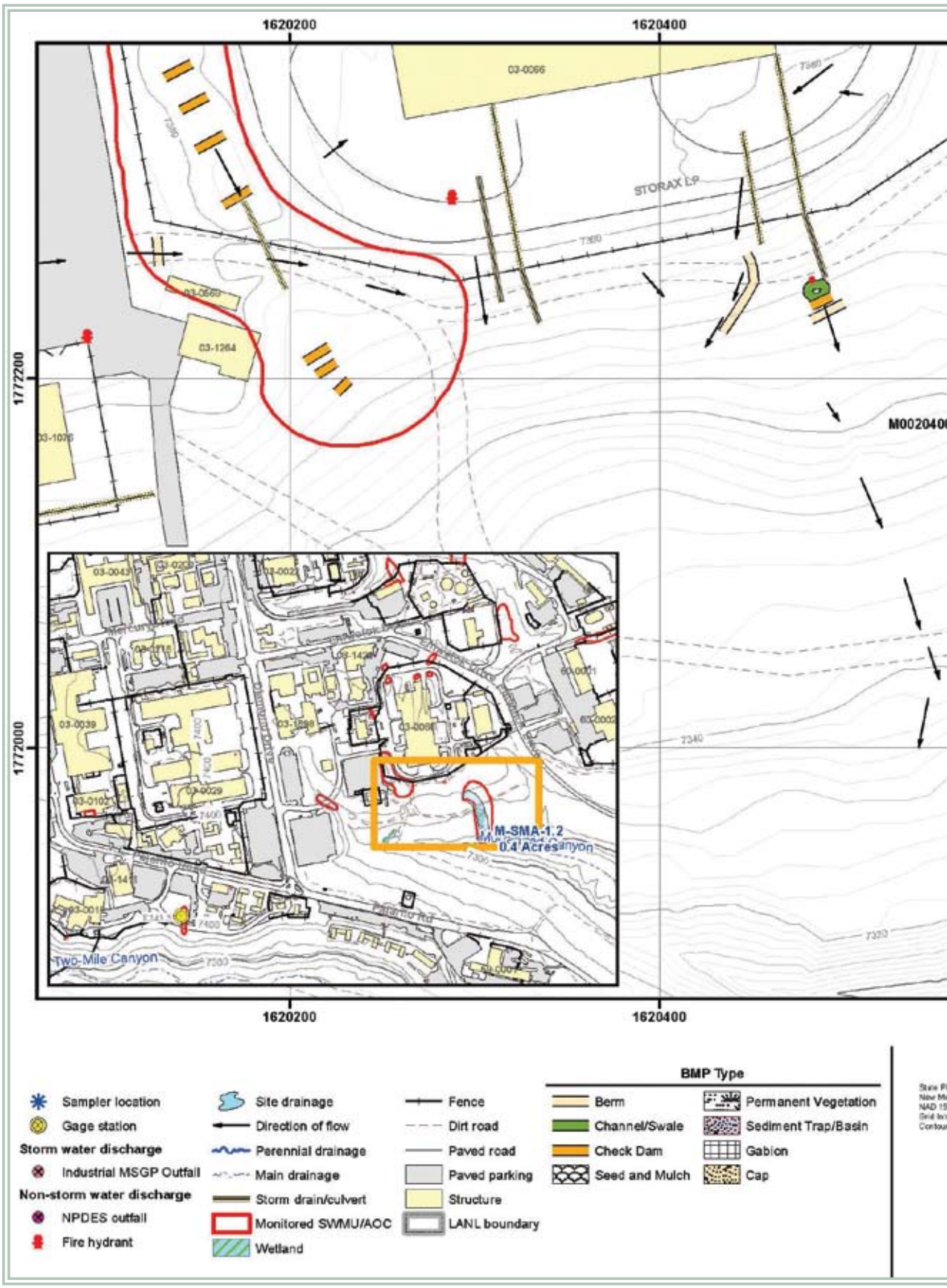
Northern Check Dam (M002-06-01-0003)

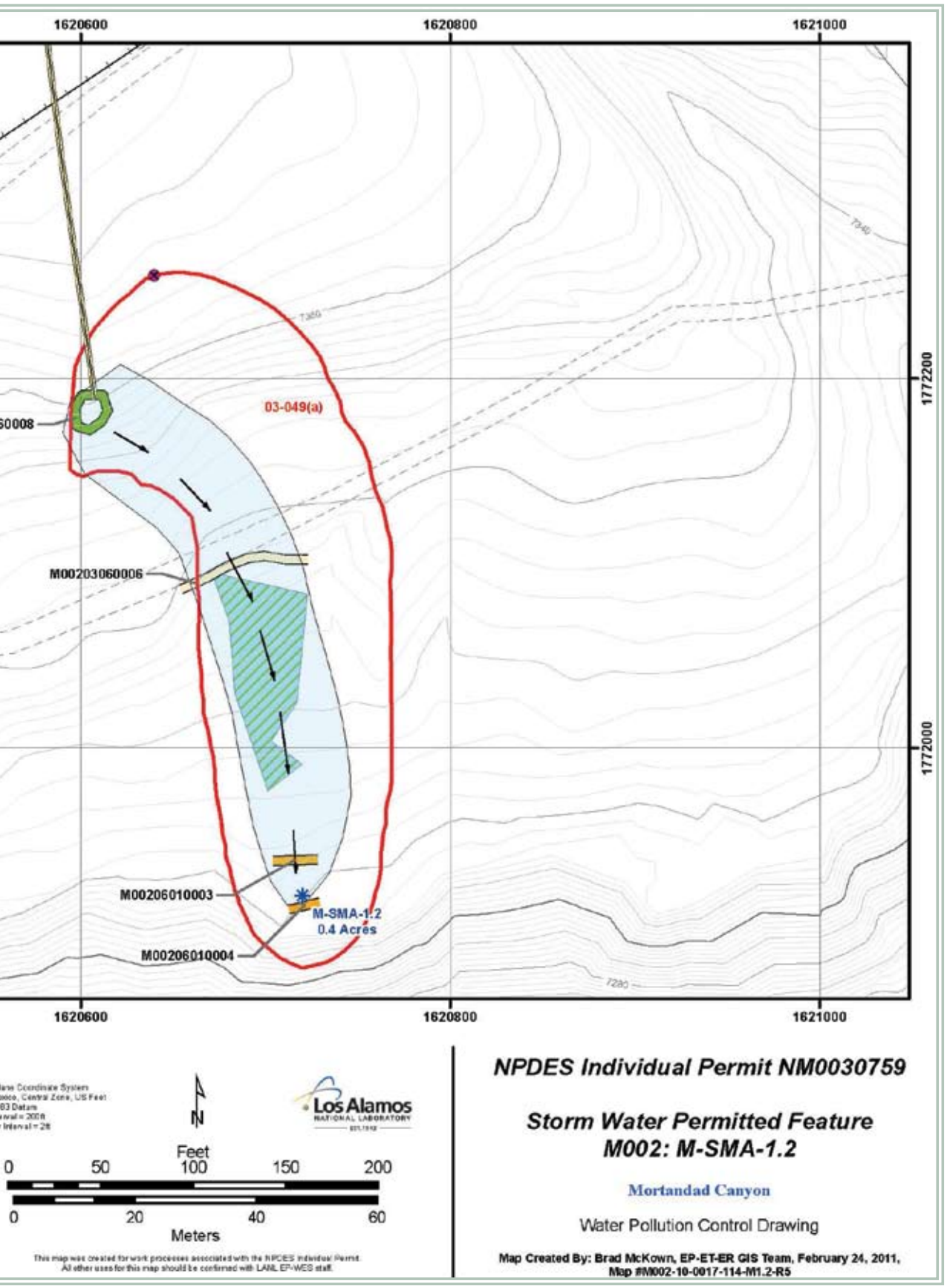
Installed at the southern end of the drainage area, north of check dam 0004. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Southern Check Dam
(M002-06-01-0004)

Installed at the southern tip of the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.12.4 Project Map




1620600
1620800
1621000
1772200
1772000
03-049(a)
M00203060006
M00206010003
M00206010004
M-SMA-1.2
0.4 Acres
7360
7340
7280
N
Feet
0
50
100
150
200
0
20
40
60
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M002: M-SMA-1.2
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, February 24, 2011,
Map #M002-10-0017-114-M1.2-R5
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.

1000.12.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.12.6 Corrective Action Status

The Site associated with M-SMA-1.2 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.13 M-SMA-1.21

1000.13.1 Area Description

1000.13.2 Potential Pollutant Sources

1000.13.2.1 Historical Industrial Activity Areas

1000.13.3 Control Measures

1000.13.4 Project Map

1000.13.5 Storm Water Monitoring Plan and Schedule

1000.13.6 Corrective Action Status



1000.13 M-SMA-1.21

1000.13.1 Area Description

M-SMA-1.21 is located in the developed area of TA-03. The southern boundary is on a south facing slope of the head of Upper Mortandad Canyon. The northern, eastern boundary, and western boundaries are influenced by development in the headwaters. Storm water flows from the developed areas to the receiving waters along the southeastern edge of the SMA. There is an unpaved access road that crosses through the monitored area.

1000.13.2 Potential Pollutant Sources

1000.13.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M002A, M-SMA-1.21, Site 03-049(e).

SWMU 03-049(e) is identified in the 1990 SWMU report as an area located south of the Sigma Building (03-0066) that was potentially contaminated by an outfall pipe of unknown origin. The 1990 SWMU report also states that the outfall discharged to Mortandad Canyon. Subsequent investigation of the Sigma Building determined that three of the building's roof drains connect to a single pipe and discharge to the outfall area of SWMU 03-049(e).

1000.13.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-049(e)	Outfall	Discrete Location, No overlap	Individual	•		•	

1000.13.3 Control Measures

Run-on from the storm drain and culvert converge with the channel created from outfall from 03-049(e). A diversion berm is diverting culvert run on to the west of the SMA and the outfall associated with 03-049(e). SWMU 03-049(e) is the outfall which captures roof drainage associated with building #66.

Subsections to 1000.13.3 list all control measures used to control pollutant sources identified in Section 1000.13.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.13.4.

1000.13.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M002A 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M002A 03 02 0002	Berms - Base Course	•			•
M002A 03 12 0005	Berms - Rock		•		•
M002A 04 06 0003	Channel/Swale - Rip Rap		•	•	
M002A 06 01 0004	Check Dam - Rock		•		•

Established Vegetation (M002A-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Western Berms(M002A-03-02-0002)

Installed to the west of 03-049(e). A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Berms (M002A-03-12-0005)

Installed north of the sampler. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

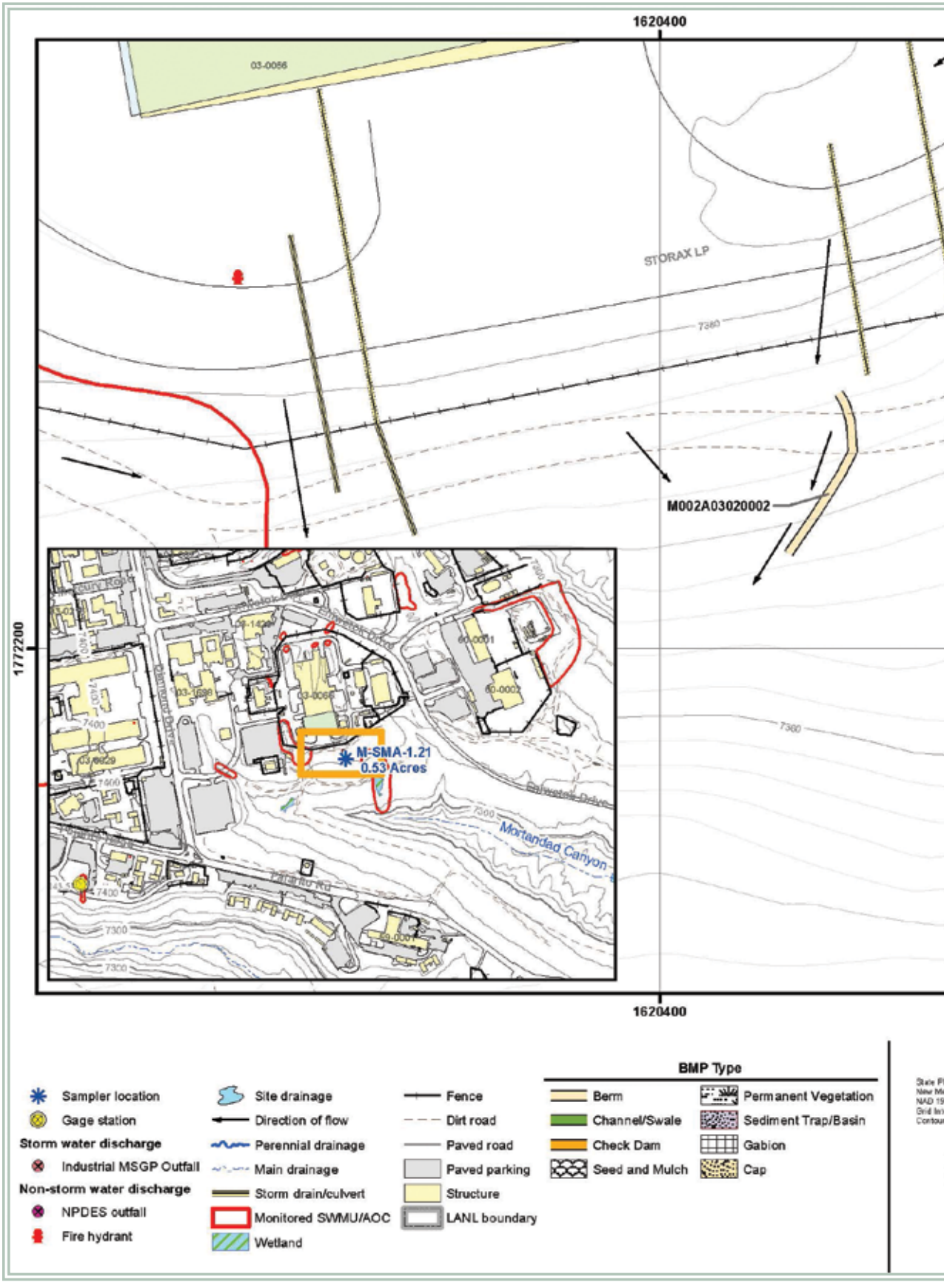
Northern Rip Rap (M002A-04-06-0003)

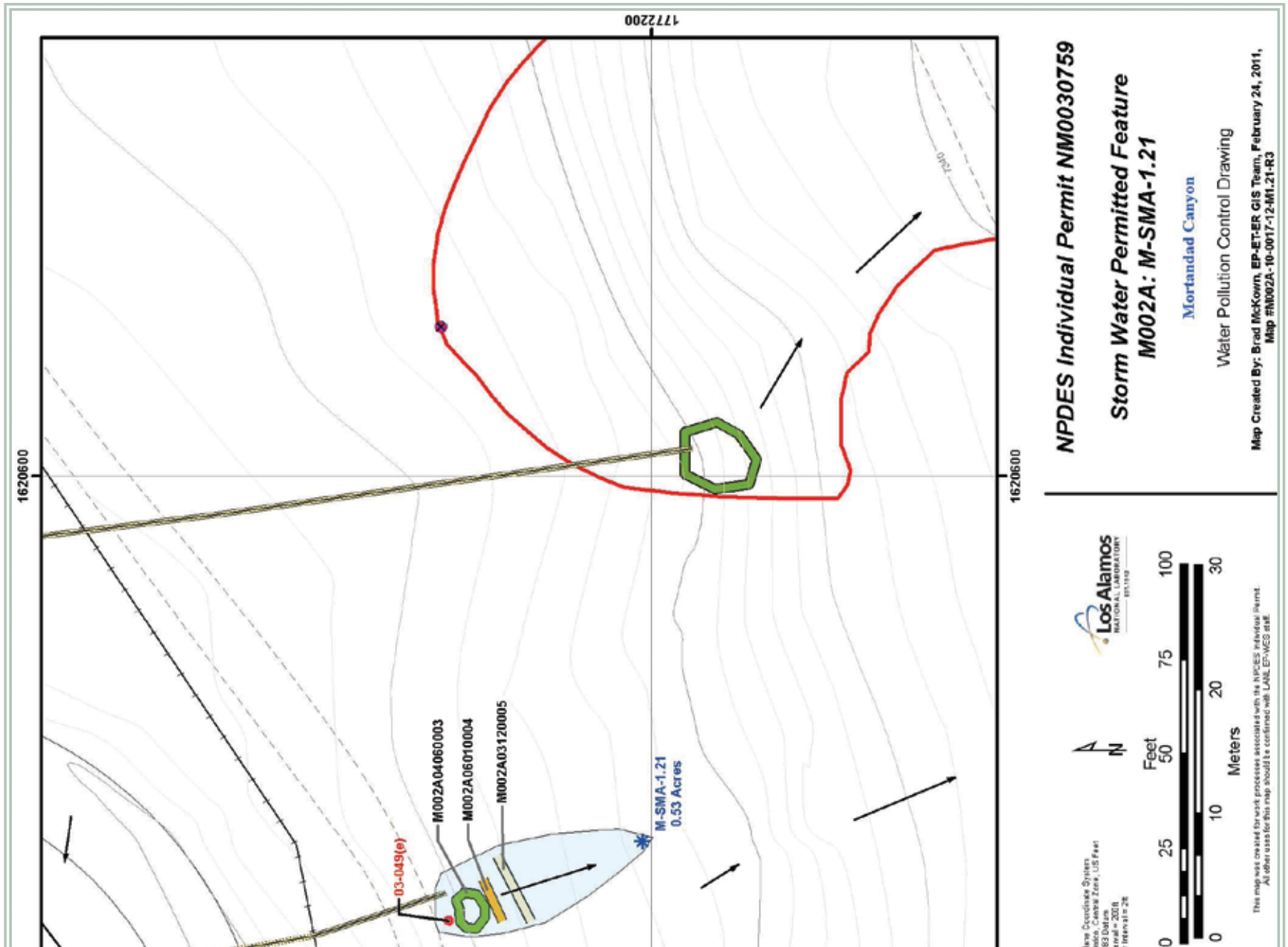
The rip rap was installed at the northern end of the site drainage, directly south of 03-049(e). Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam (M002A-06-01-0004)

Installed in roughly the center of the site drainage, south of rip rap -0003. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.13.4 Project Map




1772200
1620600
1620600
M002A04060003
M002A06010004
M002A03120005
03-049(e)
M-SMA-1.21
0.53 Acres
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M002A: M-SMA-1.21
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, February 24, 2011,
Map #M002A-10-0017-12-M1.21-R3
Los Alamos
NATIONAL LABORATORY
N
Feet
0
25
50
75
100
Meters
0
10
20
30

1000.13.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.13.6 Corrective Action Status

The Site associated with M-SMA-1.21 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.14 M-SMA-1.22

1000.14.1 Area Description

1000.14.2 Potential Pollutant Sources

1000.14.2.1 Historical Industrial Activity Areas

1000.14.3 Control Measures

1000.14.4 Project Map

1000.14.5 Storm Water Monitoring Plan and Schedule

1000.14.6 Corrective Action Status



1000.14 M-SMA-1.22

1000.14.1 Area Description

M-SMA-1.22 is located in the developed area of TA-03. The southern boundary is on a south facing slope of the head of Upper Mortandad Canyon. The northern, eastern boundary, and western boundaries are influenced by development in the headwaters. Storm water flows from the developed areas to the receiving waters along the southeastern edge of the SMA. There is an unpaved access road that crosses through the monitored area.

1000.14.2 Potential Pollutant Sources

1000.14.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M002B, M-SMA-1.22, Site 03-045(h).

SWMU 03-045(h) consists of a cooling tower outlet pipe that discharged to a storm drain at the north perimeter of the TA-03 Sigma Complex security fence, approximately 50 ft north of a cooling tower (structure 03-0187). The cooling tower outlet pipe is a former National Pollutant Discharge Elimination System– (NPDES-) permitted outfall (03A024) that was removed from the NPDES permit on August 1, 2007. This outlet pipe discharged treated cooling water onto a small area of ground surface, which drained into a buried corrugated metal storm drain that trended northeast of structure 03-0187, where it eventually combined with storm water run-off from surrounding areas. The drainage continued northeast and joined a channel north of Eniwetok Drive, which ultimately drained into Sandia Canyon. The cooling tower outlet pipe was active from 1953 to the late 1980s. The pipe was reactivated in early 1995 and remained active until it was plugged in February 1997.

Routine cooling water treatment began in 1968. Treatment included biocides and fungicides to reduce algae growth and chelating agents (such as ethylenediaminetetraacetic acid [EDTA]) to inhibit corrosion. The potential contamination resulting from the northward flow of the discharge from the cooling water outlet pipe into Sandia Canyon was investigated as part of the Upper Sandia Canyon Aggregate Area investigation report.

In addition, it is possible that the buried corrugated storm drain into which the cooling tower outlet pipe drained may not have been able to handle the large flow of storm water that results during sporadic and heavy storm events. Should this have occurred, the overflow would have drained due south across asphalt pavement to a drainage located to the southwest of building 03-0066. This drainage discharges into upper Mortandad Canyon.

1000.14.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-045(h)	Outfall from cooling tower 3-187	Co-located, Overlapping	Individual	•		•	

1000.14.3 Control Measures

Run-on enters the area from the storm drain and culvert. There is significant run-on to the Permitted Feature from the storm drain and paved areas above the area.

Subsections to 1000.14.3 list all control measures used to control pollutant sources identified in Section 1000.14.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.14.4.

1000.14.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M002B 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M002B 04 05 0002	Channel/Swale - Water Bar	•		•	
M002B 06 01 0003	Check Dam - Rock		•		•
M002B 06 01 0004	Check Dam - Rock		•		•
M002B 06 01 0005	Check Dam - Rock		•		•
M002B 06 01 0006	Check Dam - Rock		•		•
M002B 06 01 0007	Check Dam - Rock		•		•
M002B 06 01 0008	Check Dam - Rock		•		•
M002B 06 01 0009	Check Dam - Rock		•		•

Established Vegetation (M002-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of

existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Water Bar
(M002B-04-05-0002)

The water bar is located across the unpaved access road east of the paved parking area. It is being used to help control run-on from the paved areas. A diversion dam constructed across a road or trail to remove and disperse surface run-off in a manner that adequately protects the soil resource and limits sediment transportation.

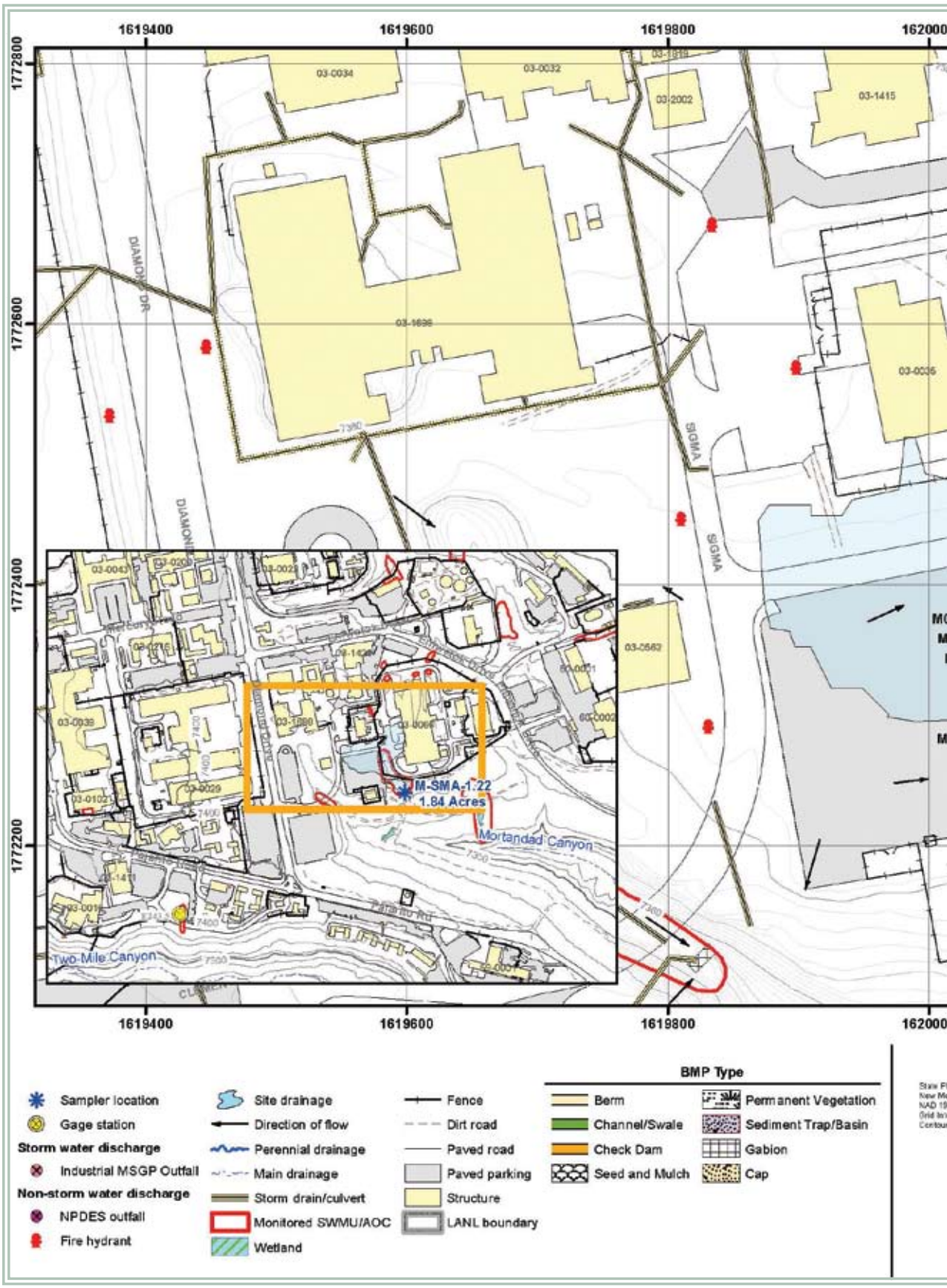
Rock Check Dams - South
(M002B-06-01-0003, -0004, -0005)

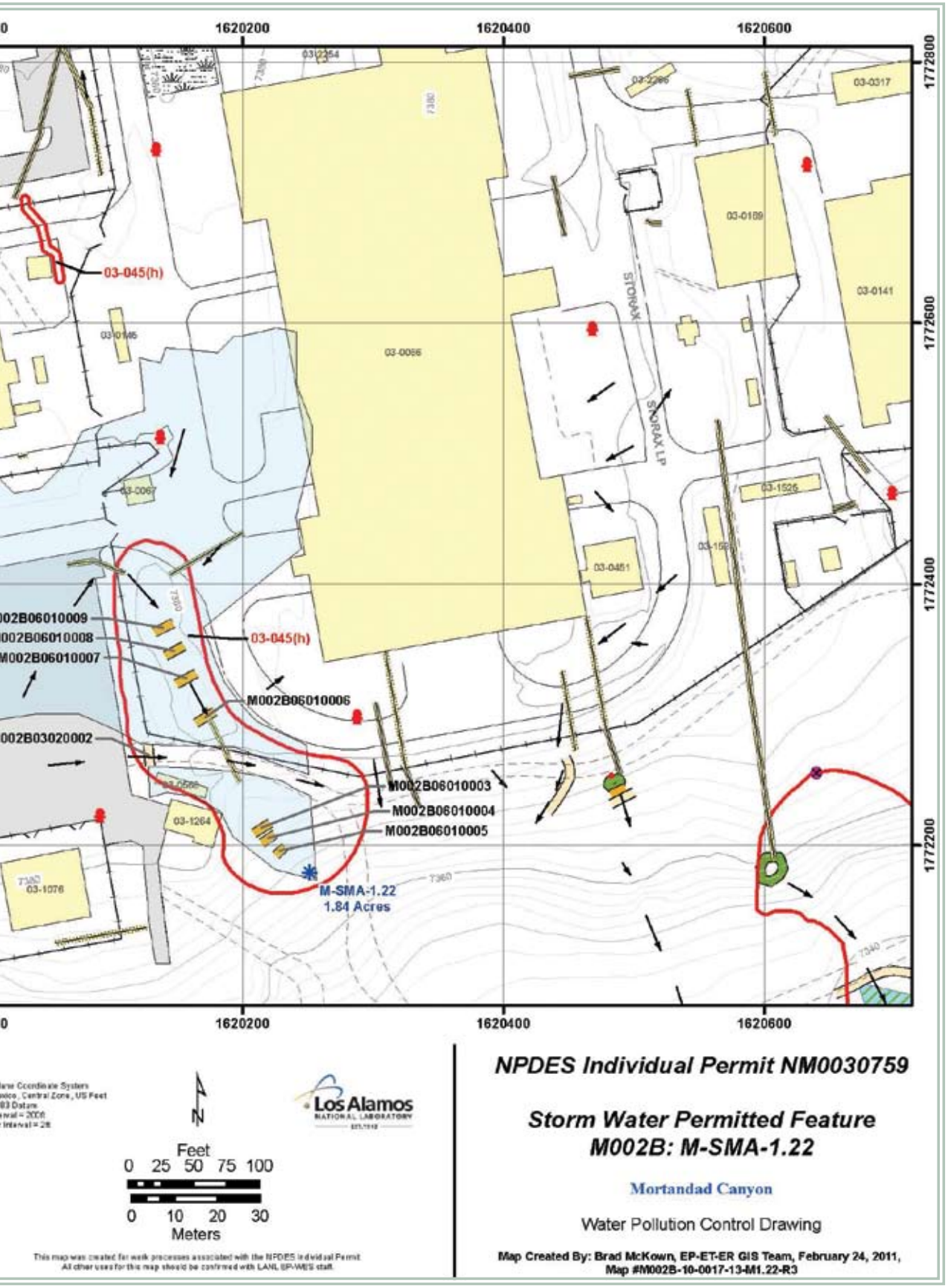
This is a series of three check dams located in the drainage above the sampler. They are in place to help mitigate storm water run-off from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams
(M002B-06-01-0006, -0007, -0008, -0009)

This is a series of four rock check dams that are located in the drainage between the fence line and the paved road. They are used to help control run-off from the paved areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.14.4 Project Map




1620200
1620400
1620600
1772800
1772600
1772400
1772200
03-045(h)
03-0317
03-0189
03-0141
03-0146
03-0066
03-0067
03-1525
03-0451
STORAX
STORAX LP
M002B06010009
M002B06010008
M002B06010007
M002B06010006
M002B03020002
M002B06010003
M002B06010004
M002B06010005
03-1264
03-1076
M-SMA-1.22
1.84 Acres
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M002B: M-SMA-1.22
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, February 24, 2011,
Map #M002B-10-0017-13-M1.22-R3

1000.14.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.14.6 Corrective Action Status

The Site associated with M-SMA-1.22 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.15 M-SMA-3

1000.15.1 Area Description

1000.15.2 Potential Pollutant Sources

1000.15.2.1 Historical Industrial Activity Areas

1000.15.3 Control Measures

1000.15.4 Project Map

1000.15.5 Storm Water Monitoring Plan and Schedule

1000.15.6 Corrective Action Status



1000.15 M-SMA-3

1000.15.1 Area Description

M-SMA-3 is located within the developed area of TA-48 and access to the area is controlled. The northern boundary is undeveloped. Further north are the receiving waters of Mortandad Canyon. The southern boundary is influenced by structures and developed areas in TA-48. The eastern boundary is influenced by the developed mesa top area in TA-48. The western boundary is influenced by the developed mesa top area in TA-48. There is an unpaved access road that runs across the monitored area. Storm water flows from these developed areas, north to the receiving waters.

1000.15.2 Potential Pollutant Sources

1000.15.2.1 Historical Industrial Activity Areas

There are three historical industrial activity areas associated with PF M003, M-SMA-3, Sites 48-001, 48-005 and 48-007(c).

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-0001 and surface and near-surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-0001 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-0001 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. According to the RFI work plan, monitoring data are available for stack FE54 beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, primarily cesium-137, cerium-144, and strontium-90.

SWMU 48-005 consists of segments of inactive RLW lines at TA-48 and an associated outfall. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the WWTP plant at TA-45 (Consolidated Unit 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were decommissioned but remained in place. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984. SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence. The remaining waste lines are all 3 in. diameter cast iron pipe and consist of a 200 ft section of line 34 running west from building 48-0001, a 300 ft section of line 36 that runs south from the north wing of building 48-0001, and a 50 ft section of line 38 that runs south from building 48-0001. These lines, located at depths of 10 to 11 ft bgs, were not removed because they lie beneath structures, roadways, or utilities. The remaining sections of lines 34 and 36 were surveyed for radioactivity during line-removal activities. Line 34 was found to have low levels of alpha activity, and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed. SWMU 48-005 also includes an outfall on the edge of Mortandad Canyon north of building 48-0001 that

was the discharge point of line 37. Line 37 was connected to sumps in the north basement of building 48-0001 and was completely removed in 1981.

SWMU 48-007(c) is an outfall that previously received discharges from nine floor drains, a trench drain, and six roof drains at building 48-0001. This outfall is located north of building 48-0001 and discharges into Mortandad Canyon. Former sources of discharge to the floor drains included floor washings, backflow preventers, drainage and condensate from a vacuum pump, steam condensate, a boiler drain, a fire drain, and a water-heater pressure-relief valve. This outfall previously operated as an NPDES-permitted outfall (131 EPA 04A) but was removed from the NPDES permit on January 14, 1998, because industrial wastewater discharges were discontinued. Currently, this outfall receives only storm water.

1000.15.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
48-001	Air exhaust system	Co-located, Overlapping	Shared	•	•	•	PCBs
48-005	Waste lines	Co-located, Overlapping	Shared	•	•	•	PCBs
48-007(c)	Outfall from Building 48-1	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Site 48-001 is soil contamination from deposition of stack emissions. The deposition was over a broad area and is thought to have impacted surface and near surface soils. Site 48-005 and 48-007(c) were former outfalls that both discharged north of Building 48-0001. Because of the shared drainage and similarity of contaminants, these Sites will discharge substantially identical effluent.

1000.15.3 Control Measures

Run-on enters this Permitted Feature from the paved access road and parking areas above the sampler. Flow from the access road intersects the SMA and discharges off the mesa west of the SMA boundary. There is a rip rap below the 24 inch culvert that serves as outlet protection.

Subsections to 1000.15.3 list all control measures used to control pollutant sources identified in Section 1000.15.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.15.4.

1000.15.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M003 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
M003 03 12 0009	Berms - Rock	•			•
M003 03 12 0010	Berms - Rock	•			•
M003 03 12 0011	Berms - Rock	•			•
M003 04 05 0005	Channel/Swale - Water Bar	•		•	
M003 04 06 0001	Channel/Swale - Rip Rap		•	•	
M003 04 06 0008	Channel/Swale - Rip Rap	•		•	
M003 06 01 0007	Check Dam - Rock		•		•

Established Vegetation (M003-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rock Berms (M003-03-12-0009, -0010, -0011)

This is a series of three berms that are located in the unpaved area north of structure 48-0027. They are being used to help control run-on in the area. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Water Bar (M003-04-05-0005)

This water bar was installed on the dirt track west of the outfall to help control run-on and prevent erosion. A diversion dam constructed across a road or trail to remove and disperse surface run-off in a manner that adequately protects the soil resource and limits sediment transportation.

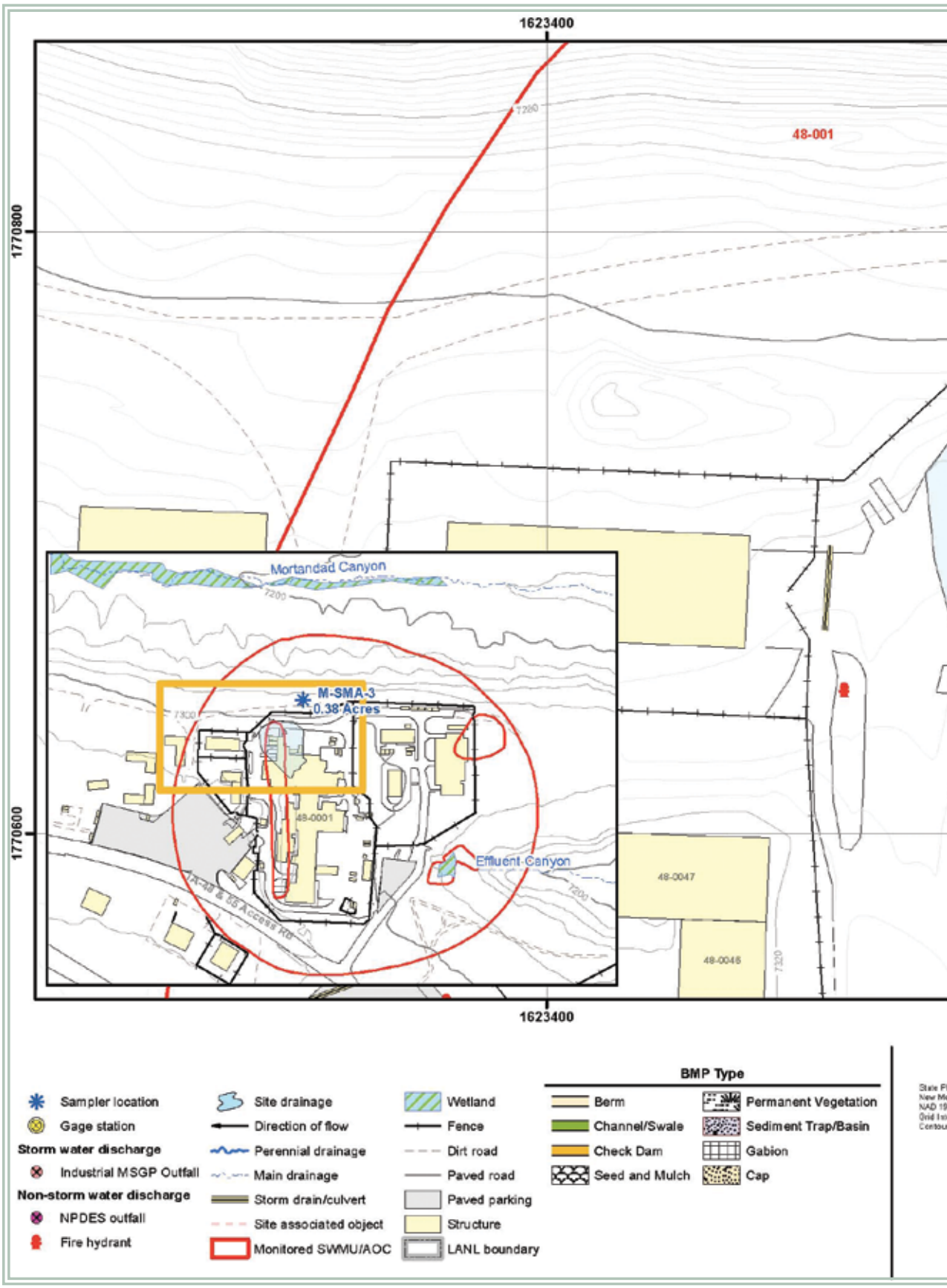
Rip Rap (M003-04-06-0001)

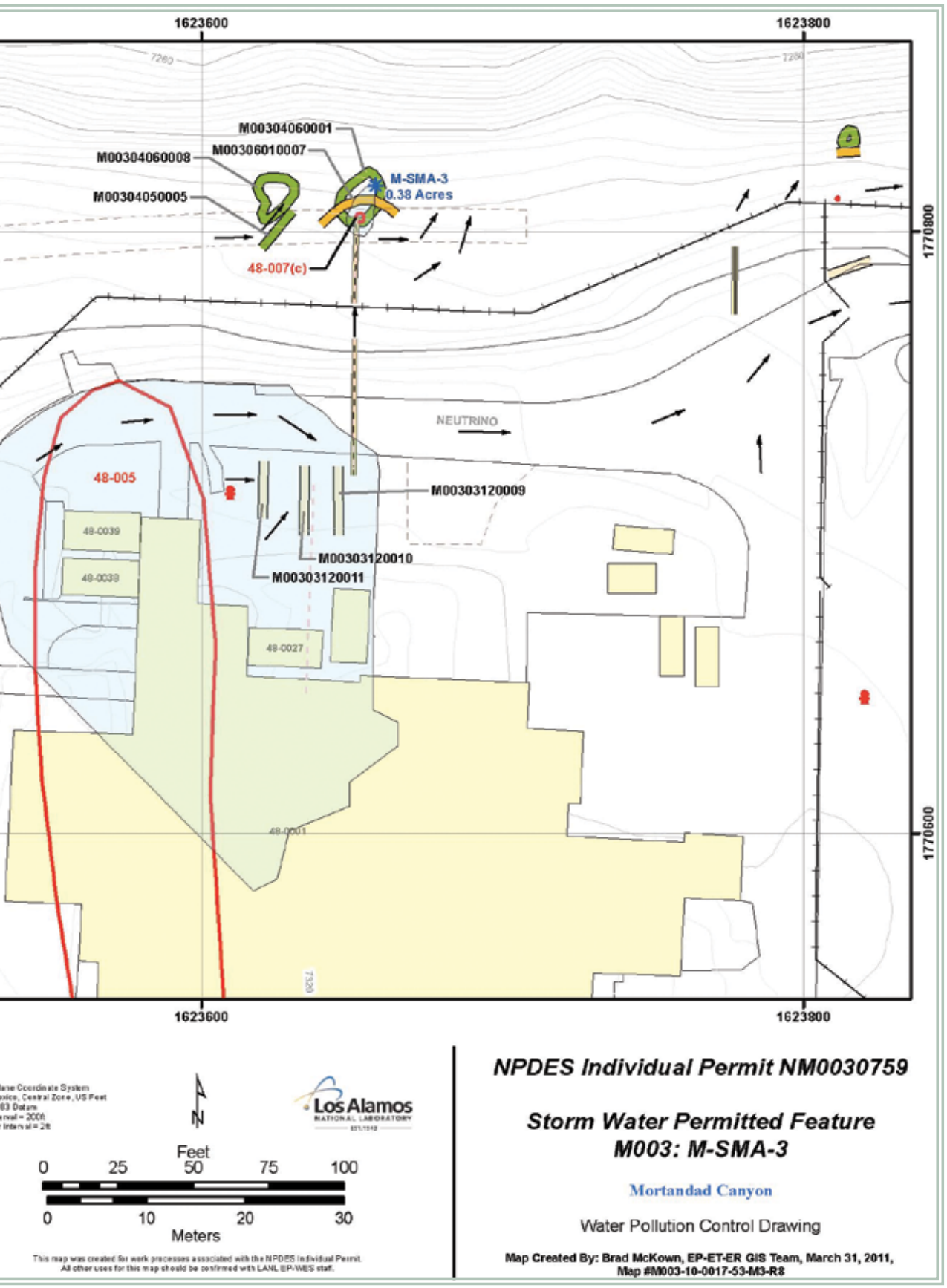
The rip rap is located near the dirt access road at the northern end of the SMA, below the 24 inch culvert, and is minimizing erosion from the culvert run-off. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap - West
(M003-04-06-0008)
This rip rap is located west of the sampler near the edge of the mesa top. It is used to help mitigate storm water run-on and help prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam
(M003-06-01-0007)
This check dam is located just below, north of, the sampler. It is in place to assist with run-off control. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.15.4 Project Map




1623600
1623800
1770800
1770600
M00304060001
M00304060008
M00306010007
M00304050005
M-SMA-3
0.38 Acres
48-007(c)
NEUTRINO
48-005
M00303120009
M00303120010
M00303120011
48-0039
48-0039
48-0027
48-0001
7260
7280
7320
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M003: M-SMA-3
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 31, 2011,
Map #M003-10-0017-53-M3-R8

1000.15.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.15.6 Corrective Action Status

The Sites associated with M-SMA-3 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.16 M-SMA-3.1

1000.16.1 Area Description

1000.16.2 Potential Pollutant Sources

1000.16.2.1 Historical Industrial Activity Areas

1000.16.3 Control Measures

1000.16.4 Project Map

1000.16.5 Storm Water Monitoring Plan and Schedule

1000.16.6 Corrective Action Status



1000.16 M-SMA-3.1

1000.16.1 Area Description

M-SMA-3.1 is located within the secure TA-48 and access to the area is controlled. The northern boundary of the project area is undeveloped and located on the south facing slope of Mortandad Canyon. The southern boundary is within the developed area of TA-48. This boundary may be influenced by paved areas on the northern edge of TA-48. The eastern boundary is on undeveloped mesa edge of TA-48. The western boundary is on undeveloped mesa edge of TA-48. Storm water flows from the developed area north to the receiving waters.

1000.16.2 Potential Pollutant Sources

1000.16.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M004, M-SMA-3.1, Sites 48-001 and 48-007(b).

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-0001 and surface and near-surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-0001 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-0001 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. According to the RFI work plan, monitoring data are available for stack FE54 beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, primarily cesium-137, cerium-144, and strontium-90.

SWMU 48-007(b) is an outfall that formerly discharged noncontact cooling water used to cool a magnet and laser housed in the main radiochemistry laboratory (building 48-0001). This outfall is located north of building 48-0001 and formerly discharged up to 4300 gal./d of cooling water. Water discharged from the outfall flowed into Mortandad Canyon. This outfall formerly operated as an NPDES-permitted outfall (016 EPA 04A) but was removed from the NPDES permit on September 19, 1997, because industrial wastewater discharges were discontinued. Presently, the outfall receives only storm water.

1000.16.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
48-001	Air exhaust system	Co-located, Overlapping	Shared	•	•	•	PCBs
48-007(b)	Outfall from Building 48-1	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Site 48-001 is soil contamination from deposition of stack emissions. The deposition was over a broad area and is thought to have impacted surface and near surface soils. Site 48-007(b) is a formerly permitted NPDES outfall. Because of the shared drainage and similarity of contaminants, these Sites will discharge substantially identical effluent.

1000.16.3 Control Measures

There is a significant run-on source at this Permitted Feature in the form of a five inch pipe located at the outfall. The existing curb along the northern edge of the paved access road above the area prevents run-on from the road and other parking areas. There are no run-on impacts from access roads at this SMA.

Subsections to 1000.16.3 list all control measures used to control pollutant sources identified in Section 1000.16.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.16.4.

1000.16.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M004 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M004 03 04 0006	Berms - Asphalt	•			•
M004 04 06 0005	Channel/Swale - Rip Rap		•	•	
M004 06 01 0004	Check Dam - Rock		•		•

Established Vegetation (M004-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as

grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Asphalt Berm
(M004-03-04-0006)

The berm is located on the northern edge of the paved access road northwest of building 48-0028. It is in place to direct run-on to the east, away from the SMA. An asphalt berm is a temporary containment control constructed of asphalt.

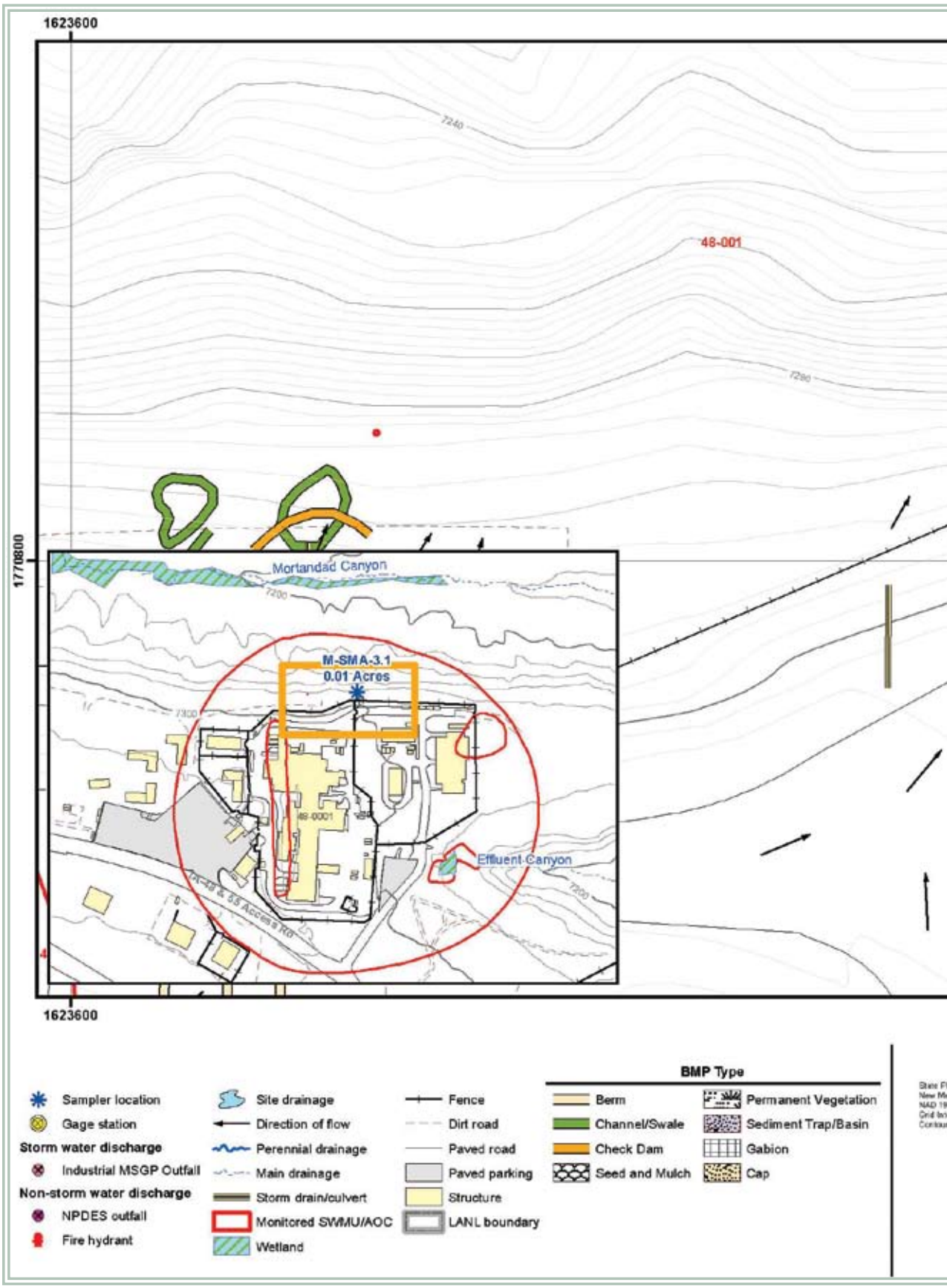
Rip Rap
(M004-04-06-0005)

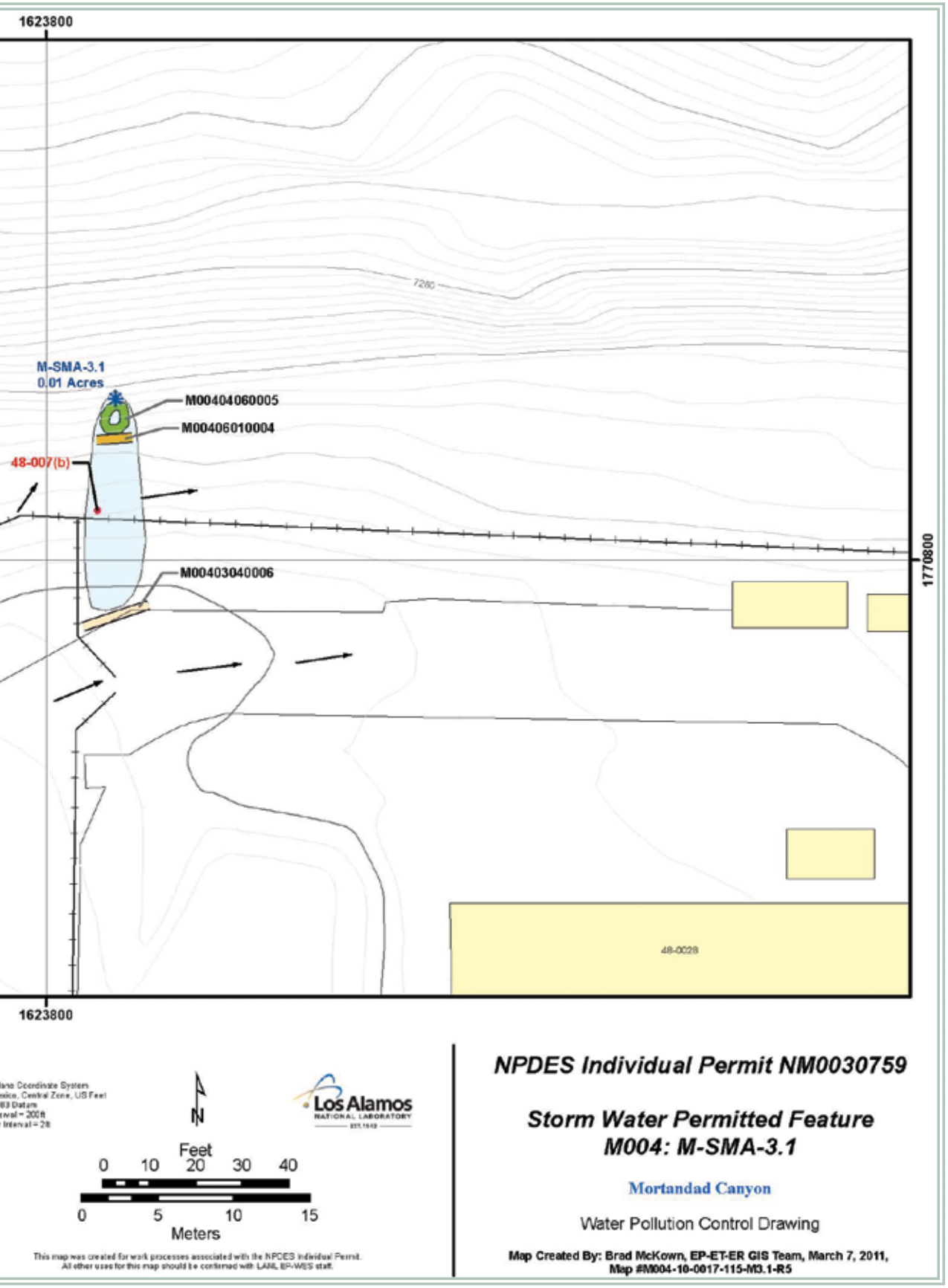
This rip rap is located just north of the fence line on the slope above the sampler. It is in place to help control run-off and prevent erosion of the slope. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam
(M004-06-01-0004)

This rock check dam is located immediately south of the sampler. It is used to help mitigate storm water run-off from the slope and reduce sediment transport. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.16.4 Project Map




1623800
7260
M-SMA-3.1
0.01 Acres
M00404060005
M00406010004
48-007(b)
M00403040006
1770800
48-0028
1623800
N
Feet
0 10 20 30 40
0 5 10 15
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M004: M-SMA-3.1
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 7, 2011,
Map #M004-10-0017-115-M3.1-R5

1000.16.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.16.6 Corrective Action Status

The Sites associated with M-SMA-3.1 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.17 M-SMA-3.5

1000.17.1 Area Description

1000.17.2 Potential Pollutant Sources

1000.17.2.1 Historical Industrial Activity Areas

1000.17.3 Control Measures

1000.17.4 Project Map

1000.17.5 Storm Water Monitoring Plan and Schedule

1000.17.6 Corrective Action Status



1000.17 M-SMA-3.5

1000.17.1 Area Description

M-SMA-3.5 is located within the secure TA-48 and access to the area is controlled. The northern boundary of the project area is undeveloped and located on the south facing slope of Mortandad Canyon. The southern boundary is within the developed area of TA-48. This boundary may be influenced by paved areas on the northern edge of TA-48. The eastern boundary is on undeveloped mesa edge of TA-48. The western boundary is on undeveloped mesa edge of TA-48. Storm water flows from the developed area north to the receiving waters.

1000.17.2 Potential Pollutant Sources

1000.17.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M005, M-SMA-3.5, Sites 48-001 and 48-003.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-0001 and surface and near-surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-0001 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-0001 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. According to the RFI work plan, monitoring data are available for stack FE54 beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, primarily cesium-137, cerium-144, and strontium-90.

SWMU 48-003 consists of a former septic system that served TA-48 from 1957 to 1986. This septic system consisted of a septic tank (former structure 48-0005), a dosing chamber, a filter bed (former structure 48-0006), and an outfall that discharged into Mortandad Canyon. The septic tank and dosing chamber were 21 ft 7 in. long and the filter bed measured 81 ft 2 in. long × 40 ft 7 in. wide. The septic system operated until 1986, at which time the septic tank and filter bed were decommissioned and removed. A laboratory and diagnostics facility (building 48-0045) was constructed over the site of the septic tank and filter bed. After the septic system was decommissioned, sanitary wastewater from TA-48 was sent to the sanitary lagoons at TA-35 and later to the consolidated treatment plant at TA-46. Although this septic system primarily received sanitary wastewater from TA-48 facilities, the system reportedly received hazardous and radioactive materials through accidental discharges.

1000.17.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
48-001	Air exhaust system	Co-located, Overlapping	Shared	•	•	•	PCBs
48-003	Soil contamination associated with former septic system	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Site 48-001 is soil contamination from deposition of stack emissions. The deposition was over a broad area and is thought to have impacted surface and near surface soils. The septic system operated until 1986, at which time the septic tank and filter bed were decommissioned and removed (LANL 1990, 007513). A laboratory and diagnostics facility (building 48-0045) was constructed over the site of the septic tank and filter bed. Because of the shared drainage and similarity of contaminants, these Sites will discharge substantially identical effluent.

1000.17.3 Control Measures

The roof drain from building 48-0045 has caused a gully that carries run-on to the SMA. Some sheet flow from the sparsely vegetated and bedrock exposed area southeast of the sampler.

Subsections to 1000.17.3 list all control measures used to control pollutant sources identified in Section 1000.17.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.17.4.

1000.17.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M005 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M005 03 12 0009	Berms - Rock		•		•
M005 03 12 0010	Berms - Rock		•		•
M005 03 12 0013	Berms - Rock	•			•
M005 03 12 0014	Berms - Rock	•			•
M005 04 06 0011	Channel/Swale - Rip Rap	•		•	
M005 04 06 0012	Channel/Swale - Rip Rap	•		•	
M005 06 01 0004	Check Dam - Rock	•			•
M005 06 01 0005	Check Dam - Rock	•			•
M005 06 01 0006	Check Dam - Rock		•		•
M005 06 01 0007	Check Dam - Rock		•		•
M005 06 01 0008	Check Dam - Rock		•		•

Established Vegetation (M005-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rock Berms (M005-03-12-0009, -0010)

This is a pair of rock berms that are located across the the drainage channel just south of the sampler. They are in place to help reduce storm water run-off from above. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Berms (M005-03-12-0013, -0014)

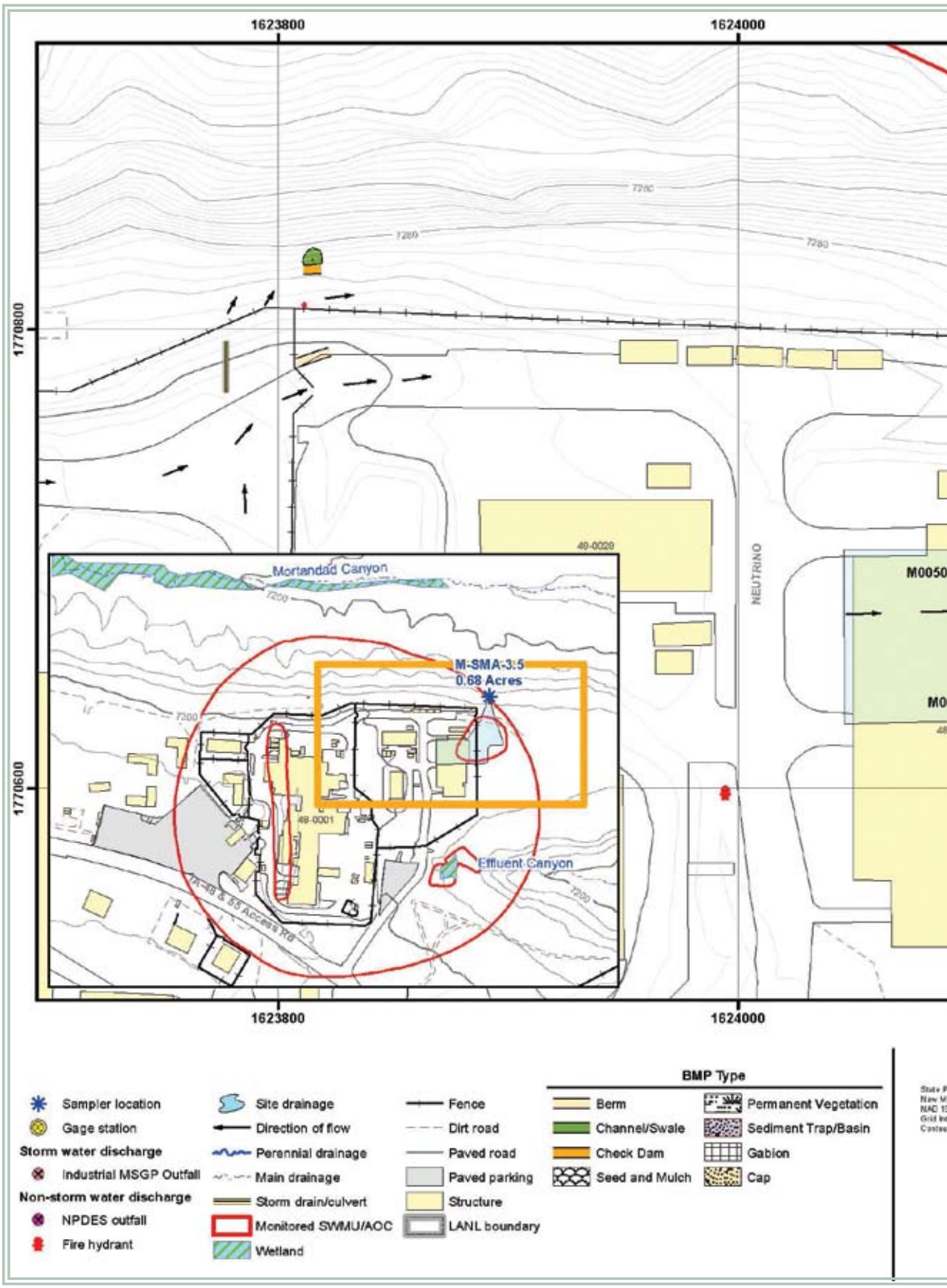
These berms are placed between building 48-0046 and the fence line in the western area of the site drainage in order to control run-on and sediment. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

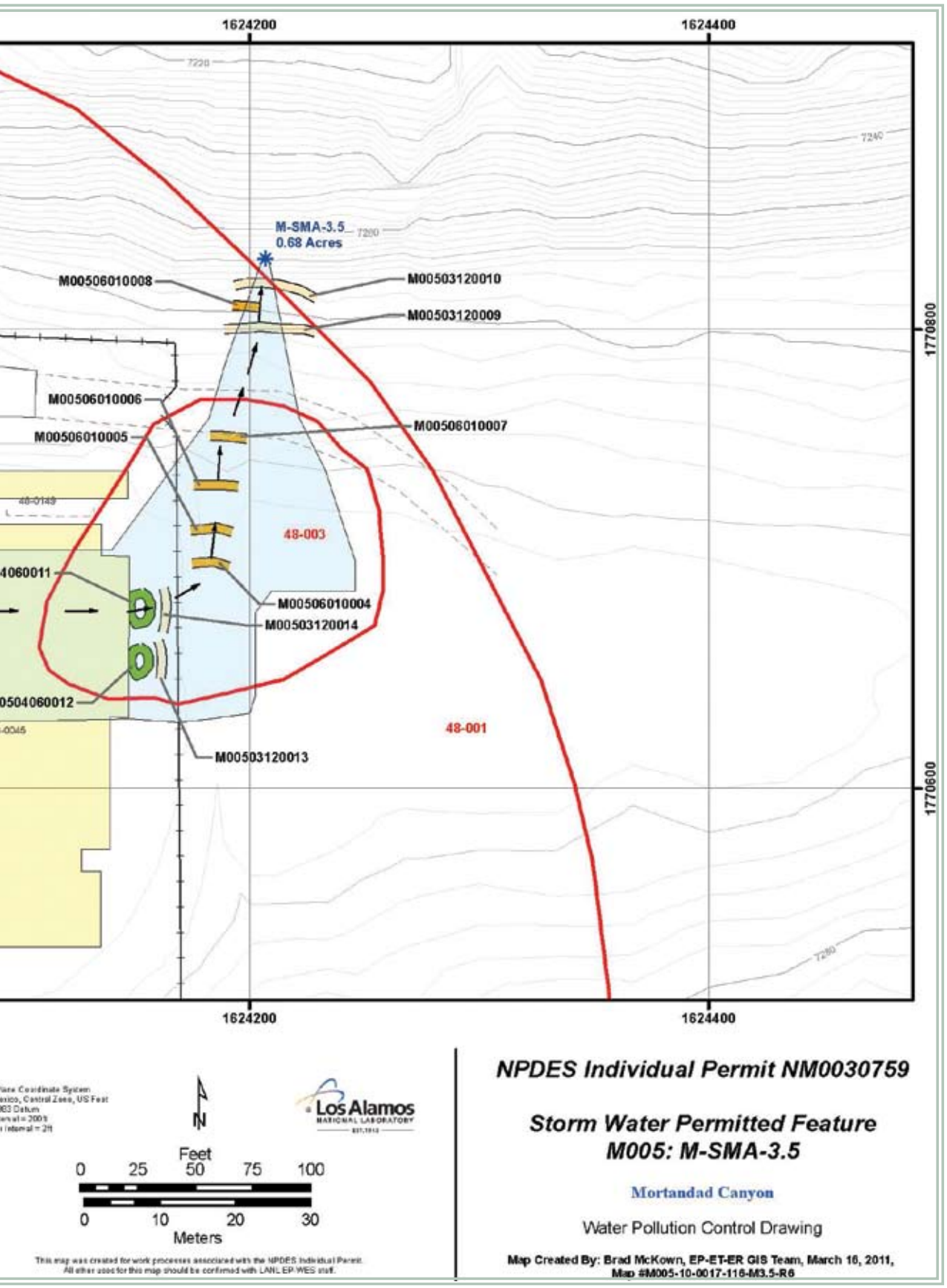
East Channel/Swale
(M005-04-06-0011, -0012)
These rip rap channel/swales are placed immediately east of building 48-0046 in order to manage run-on and control erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dams
(M005-06-01-0004, -0005)
This is a pair of check dams located east of building 48-0045 at the top of the drainage channel. They are in place to help control storm water run-on from the area roof drains. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams - Channel
(M005-06-01-0006, -0007, -0008)
This is a series of three rock check dams that are located in the drainage channel above, south of, the sampler. They are used to mitigate storm water run-off and reduce sediment loading. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.17.4 Project Map




1624200
1624400
1770800
1770600
M-SMA-3.5
0.68 Acres
M00506010008
M00503120010
M00503120009
M00506010006
M00506010005
M00506010007
48-003
M00506010004
M00503120014
48-001
M00503120013
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M005: M-SMA-3.5
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 16, 2011,
Map #M005-10-0017-116-M3.5-R6

1000.17.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.17.6 Corrective Action Status

The Site associated with M-SMA-3.5 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.18 M-SMA-4

1000.18.1 Area Description

1000.18.2 Potential Pollutant Sources

1000.18.2.1 Historical Industrial Activity Areas

1000.18.3 Control Measures

1000.18.4 Project Map

1000.18.5 Storm Water Monitoring Plan and Schedule

1000.18.6 Corrective Action Status



1000.18 M-SMA-4

1000.18.1 Area Description

M-SMA-4 is located in the secure area of TA-48 and access is controlled. The northern boundary is located on the developed administration area of TA-48. The southern boundary is the paved TA-48 and TA-55 access road. The eastern, located outside of the secured area, and western boundaries are influenced by the developed mesa top of TA-48. Further east are the receiving waters of Effluent Canyon.

1000.18.2 Potential Pollutant Sources

1000.18.2.1 Historical Industrial Activity Areas

There are five historical industrial activity areas associated with PF M006, M-SMA-4, Sites 48-001, 48-005, 48-007(a), 48-007(d) and 48-010.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory in building 48-0001 and surface and near-surface soil potentially impacted by deposition from the stack emissions. The radiochemistry laboratory in building 48-0001 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-0001 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. According to the RFI work plan, monitoring data are available for stack FE54 beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, primarily cesium-137, cerium-144, and strontium-90.

SWMU 48-005 consists of segments of inactive RLW lines at TA-48 and an associated outfall. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the WWTP plant at TA-45 (Consolidated Unit 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were decommissioned but remained in place. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984. SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence. The remaining waste lines are all 3 in. diameter cast iron pipe and consist of a 200 ft section of line 34 running west from building 48-0001, a 300 ft section of line 36 that runs south from the north wing of building 48-0001, and a 50 ft section of line 38 that runs south from building 48-0001. These lines, located at depths of 10 to 11 ft bgs, were not removed because they lie beneath structures, roadways, or utilities. The remaining sections of lines 34 and 36 were surveyed for radioactivity during line-removal activities. Line 34 was found to have low levels of alpha activity, and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed. SWMU 48-005 also includes an outfall on the edge of Mortandad Canyon north of building 48-0001 that was the discharge point of line 37. Line 37 was connected to sumps in the north basement of building 48-0001 and was completely removed in 1981.

SWMU 48-007(a), which along with SWMUs 48-007(d) and 48-010 comprises Consolidated Unit 48-007(a)-00, is an outfall formerly used to discharge treated

cooling tower blowdown from two cooling towers located on the roof of building 48-0001. This outfall is located east of building 48-0001. Up to 750 gal./h of cooling tower blowdown were discharged from the outfall. Discharge from this outfall flowed to an unlined surface impoundment, SWMU 48-010. Water used in these cooling towers was treated to control scale, corrosion, and biological growth. Additives used included Garratt Callahan (G.C.) Formula 227 L, a corrosion and scaling inhibitor, and G.C. Formula 314 T, a biocide. Specific hazardous chemicals present in these additives, if any, are not known. Approximately 60% of the water in the cooling towers was evaporated, causing the chemical additives to be concentrated in the blowdown. This outfall formerly operated as an NPDES permitted outfall (045/046 EPA 03A) but was removed from the NPDES permit on December 6, 1999, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. storm water continues to flow through the outfall.

SWMU 48-007(d), which along with SWMUs 48-007(a) and 48-010 comprises Consolidated Unit 48-007(a)-00, is an outfall formerly used to discharge noncontact cooling water that cooled a vacuum pump housed in the south end of building 48-0001. This outfall is located east of building 48-0001. Up to 4000 gal./d of cooling water was discharged from the outfall. Discharge from this outfall flowed to SWMU 48-010. This outfall formerly operated as an NPDES-permitted outfall (153 EPA 04A) but was removed from the NPDES permit on July 20, 1998, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. storm water continues to flow through the outfall.

SWMU 48-010, which along with SWMUs 48-007(a and b) comprises Consolidated Unit 48-007(a)-00, is an unlined surface impoundment that was constructed in 1978 by excavating directly into the tuff. The surface impoundment is located approximately 300 ft east of building 48-0001 and 150 ft south of building 48-0045. The surface impoundment formerly received cooling tower blowdown discharged from SWMU 48-007(a), noncontact cooling water discharged from SWMU 49-007(d), and storm water run-off from the parking lot for building 48-0045. Currently, the impoundment receives only storm water from the parking lot. A wetland has developed around the impoundment. The impoundment and surrounding wetland cover approximately 100 ft × 150 ft. SWMU 48-010 discharges to the east into a side canyon that is a tributary to Mortandad Canyon.

1000.18.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
48-001	Air exhaust system	Co-located, Overlapping	Shared	•	•	•	PCBs
48-005	Waste lines	Co-located, Overlapping	Shared	•	•	•	PCBs
48-007(a)	Outfall associated with Building 48-1	Co-located, Overlapping	Shared	•	•	•	PCBs
48-007(d)	Outfall associated with Building 48-1	Co-located, Overlapping	Shared	•	•	•	PCBs
48-010	Surface impoundment	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Site 48-001 is soil contamination from deposition of stack emissions. The deposition was over a broad area and is thought to have impacted surface and near surface soils. Sites 48-005, 48-007(a), 48-007(d), and 48-010 include two active storm water outfalls, a former outfall, and a surface impoundment that receives discharge from the outfalls. These SWMUs formerly received waste water from the main radio-chemistry laboratory in building 48-0001. Because of the shared drainage and similarity of contaminants, these Sites will discharge substantially identical effluent.

1000.18.3 Control Measures

Culverts located east of building 48-001 capture the majority of the pavement generated run-on. The culverts discharge into the channels east of Neutrino Road which empty into the wetlands, west of the sampler.

The sheet flow from the asphalt paved TA-48 access road and asphalt lined ditch west and unlined ditch to the east of this road flows to the culvert that empties into the wetland.

The man-made swales on the north side of building 48-0107 drain into the ditch where the culvert daylights to the wetland. There is some sheet flow from south of the SMA contributes to the run-on to the wetland.

Run-on from the access road flows to northeast away from the SWMU and sampler.

Subsections to 1000.18.3 list all control measures used to control pollutant sources identified in Section 1000.18.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.18.4.

1000.18.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M006 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
M006 02 02 0004	Established Vegetation - Forested/Needle Cast			•	
M006 04 06 0002	Channel/Swale - Rip Rap		•	•	
M006 04 06 0007	Channel/Swale - Rip Rap	•		•	
M006 04 06 0012	Channel/Swale - Rip Rap	•		•	
M006 06 01 0005	Check Dam - Rock	•			•
M006 06 01 0010	Check Dam - Rock	•			•
M006 06 01 0011	Check Dam - Rock	•			•
M006 07 01 0006	Gabions - Gabions	•		•	

Established Vegetation (M006-02-01-0003, -02-0004)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rip Rap (M006-04-06-0002)

This rip rap is located near the culvert outlet associated with the paved parking lot and east of the wetland area. It is used to control erosion associated with run-off from the slope above. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Southwest Rip Rap (M006-04-06-0007)

The rip rap is located near the southwest corner of the wetland area and is used to control erosion associated with run-on storm water drainage from the paved access road. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Central Rip Rap
(M006-04-06-0012)

This rip rap is located in the channel associated with the adjacent parking area. It is used as outlet protection and to control erosion and run-on in the area. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

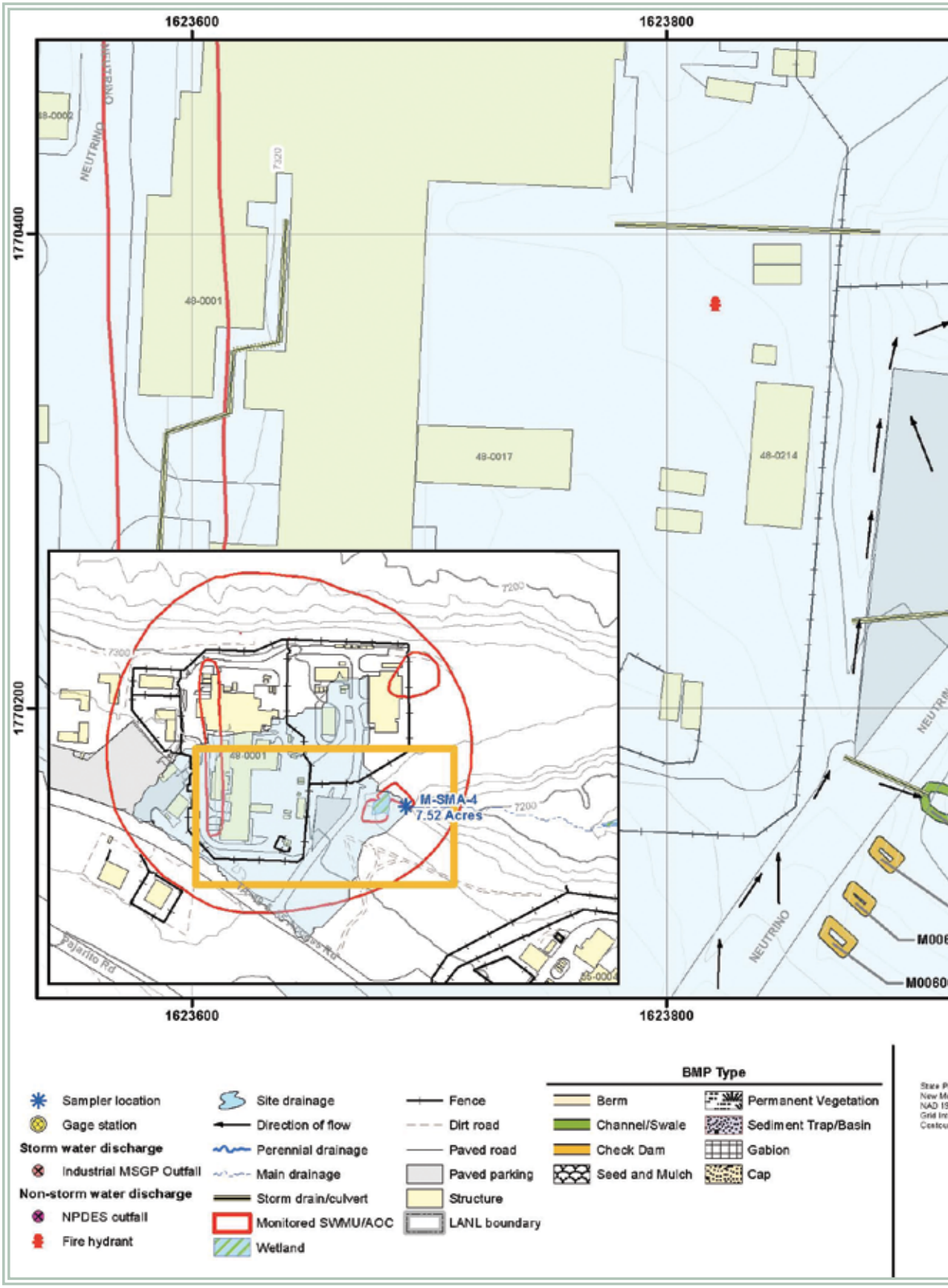
Rock Check Dams
(M006-06-01-0005, -0010, -0011)

A series of three rock check dams are located on the southeast side of the paved access road, Neutrino. They are used to control run-on from the access road and mitigate sediment transport. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Gabions
(M006-07-01-0006)

These gabions are located below the northern culvert they are used for bank stabilization to control erosion and run-on from the paved access road. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

1000.18.4 Project Map



1624000
1624200
1770400
1770200
48-007(a)
48-007(d)
48-010
48-001
M00607010006
M-SMA-4
7.52 Acres
Effluent Canyon
M00604060002
M00604060007
M00604060012
M00606010005
606010010
6010011
7260
7240
7220
N
Feet
0 10 20 30 40
0 5 10 15
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M006: M-SMA-4
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #M006-10-0017-179-M4-R5

1000.18.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.18.6 Corrective Action Status

On September 7, 2010, NMED issued a Certificate of Completion with controls for Sites 48-007(a), 48-007(d), and 48-010 [NMED 2010].

The Sites associated with M-SMA-4 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.19 M-SMA-5

1000.19.1 Area Description

1000.19.2 Potential Pollutant Sources

1000.19.2.1 Historical Industrial Activity Areas

1000.19.3 Control Measures

1000.19.3.1 Control Measures for Historical Industrial Activity Areas

1000.19.4 Project Map

1000.19.5 Storm Water Monitoring Plan and Schedule

1000.19.6 Corrective Action Status



1000.19 M-SMA-5

1000.19.1 Area Description

M-SMA-5 is located within the secure area at TA-55 and access to the area is controlled. The northern boundary is the north facing slope of Mortandad Canyon. The southern boundary is influenced by the highly developed administrative area of TA-55. The eastern boundary is influenced by the highly developed mesa top of TA-55. Further north along this boundary, the terrain is undeveloped. The western boundary is an undeveloped north facing canyon slope.

1000.19.2 Potential Pollutant Sources

1000.19.2.1 Historical Industrial Activity Areas

There are five historical industrial activity areas associated with PF M007, M-SMA-5, Sites 42-001(a), 42-001(b), 42-001(c), 42-002(a) and 42-002(b).

SWMU 42-001(a) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(b and c), 42-002(b), and 42-003 and AOC 42-002(a). SWMU 42-001(a) is the historical location of former building 42-0001 that housed the former TA-42 radioactive waste incinerator. Former building 42-0001 was a 2000 ft2 steel-frame structure covered with corrugated metal. The building contained the incinerator, a cyclone dust collector, a spray cooler, a Venturi scrubber, a filter bank, and an ash separator. Combustion products passed through an off-gas cleanup system before they were released through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two holding tanks [SWMUs 42-001(b) and 42-001(c)] located immediately north of the incinerator. Building 42-0001 and its concrete foundation were removed in 1978.

SWMU 42-001(b) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a and c), 42-002(b), and 42-003 and AOC 42-002(a). SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) that were associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at MDA G. The tank drainlines were filled with asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

SWMU 42-001(c) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a and b), 42-002(b), and 42-003 and AOC 42-002(a). SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) that were associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at MDA G. The tank drainlines were filled with asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a, b, and c), 42-

002(b), and 42-003. AOC 42-002(a) is the historical location of an indoor storage (former building 42-0001) and decontamination area. Between 1956 and 1969, the main floor of former building 42-0001 was used to store and decontaminate equipment.

SWMU 42-002(b) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a, b, and c) and 42-003 and AOC 42-002(a). SWMU 42-002(b) is the location of a historical outdoor decontamination area. Objects (such as vehicles) that were too large to decontaminate inside building 42-0001 were decontaminated at the end of the asphalt driveway located west and north of building 42-0001. Wash water from decomtamination activities flowed down the embankment on the northwest side of the parking lot. Potentially contaminated soil in that area was not addressed during the 1978 decontamination and decommissioning (D&D) activities.

1000.19.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
42-001(a)	Soil contamination from former Incinerator Building 42-1	Co-located, Overlapping	Shared	•	•	•	PCBs
42-001(b)	Soil contamination from former Ash storage tank	Co-located, Overlapping	Shared	•	•	•	PCBs
42-001(c)	Soil contamination from former Ash storage tank	Co-located, Overlapping	Shared	•	•	•	PCBs
42-002(a)	Soil contamination from former Vacublaster and storage area	Co-located, Overlapping	Shared	•	•	•	PCBs
42-002(b)	Soil contamination from former Decontamination area	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

These Sites are associated with the former TA-42 radioactive waste incinerator that operated in 1951 and 1952. From 1957 to 1969, this incinerator facility was used to

store and decontaminate radioactively contaminated equipment. By 1970, all operations were discontinued, and all combustibles were removed from the building. The facility was decommissioned in 1977, and the site was decontaminated in 1978 (LANL 1990, 007513). Because of the shared drainage, similarity of contaminants, and the extensive remediation in the area, these Sites will discharge substantially identical effluent.

1000.19.3 Control Measures

Besides the outfall, the TA-55 Facility south of the security fence does not contribute run-on to the Permitted Feature.

Run-on from the NPDES outfall, the areas east of building 55-0066, and the access road that bisects the Permitted Feature is diverted to the channel just east of 42-002(b) and discharges away from the SMA boundary and sampler to the west.

Subsections to 1000.19.3 list all control measures used to control pollutant sources identified in Section 1000.19.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.19.4.

1000.19.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M007 02 01 0004	Established Vegetation - Grasses and Shrubs			•	
M007 02 02 0006	Established Vegetation - Forested/Needle Cast			•	
M007 02 03 0014	Established Vegetation - Vegetative Buffer Strip		•	•	
M007 03 06 0015	Berms - Straw Wattles	•			•
M007 04 01 0013	Channel/Swale - Earthen	•		•	
M007 04 02 0012	Channel/Swale - Concrete/Asphalt	•		•	
M007 04 06 0001	Channel/Swale - Rip Rap	•		•	
M007 04 06 0008	Channel/Swale - Rip Rap	•		•	
M007 06 01 0002	Check Dam - Rock		•		•
M007 06 01 0007	Check Dam - Rock	•			•

Established Vegetation (M007-02-01-0004, -02-0006)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Permanent Vegetation - Vegetative Buffer Strip (M007-02-03-0014)

The vegetative buffer strip is associated with the swale east of the SMA proper and reduces the velocity of the storm water run-off, controlling erosion. A vegetative buffer strip is a gently sloping area of vegetative cover that run-off water flows through before entering a stream, storm sewer, or other conveyance. The buffer strip may be an undisturbed strip of natural vegetation or it can be a graded and planted area. Vegetation buffer strips are more defined areas of permanent vegetation, often incorporated into developed areas, which act to protect soils from erosion.

Berms - Straw Wattles (M007-03-06-0015)

Installed northwest of building 55-066. Straw wattles help to stabilize slopes by shortening the slopelength and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Earthen Channel (M007-04-01-0013)

The earthen channel is located north of the unpaved access road and west of the SMA footprint. It controls run-on from the road and prevents erosion of the slope. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Asphalt Swale (M007-04-02-0012)

This asphalt swale is located along the northwestern portion of the SMA. It is being used to divert run-on from the paved areas above to the west away from the sampler location. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Western Rip Rap (M007-04-06-0001)

The rip rap is located southwest of building 55-0066 and within the channel north of 42-002(a). It is in place to control erosion and run-on from the paved areas above. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Eastern Rip Rap (M007-04-06-0008)

This rip rap is located west of the paved parking lot adjacent to building 55-0066. It is used to control erosion and divert run-on from the parking area. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Northern Check Dam (M007-06-01-0002)

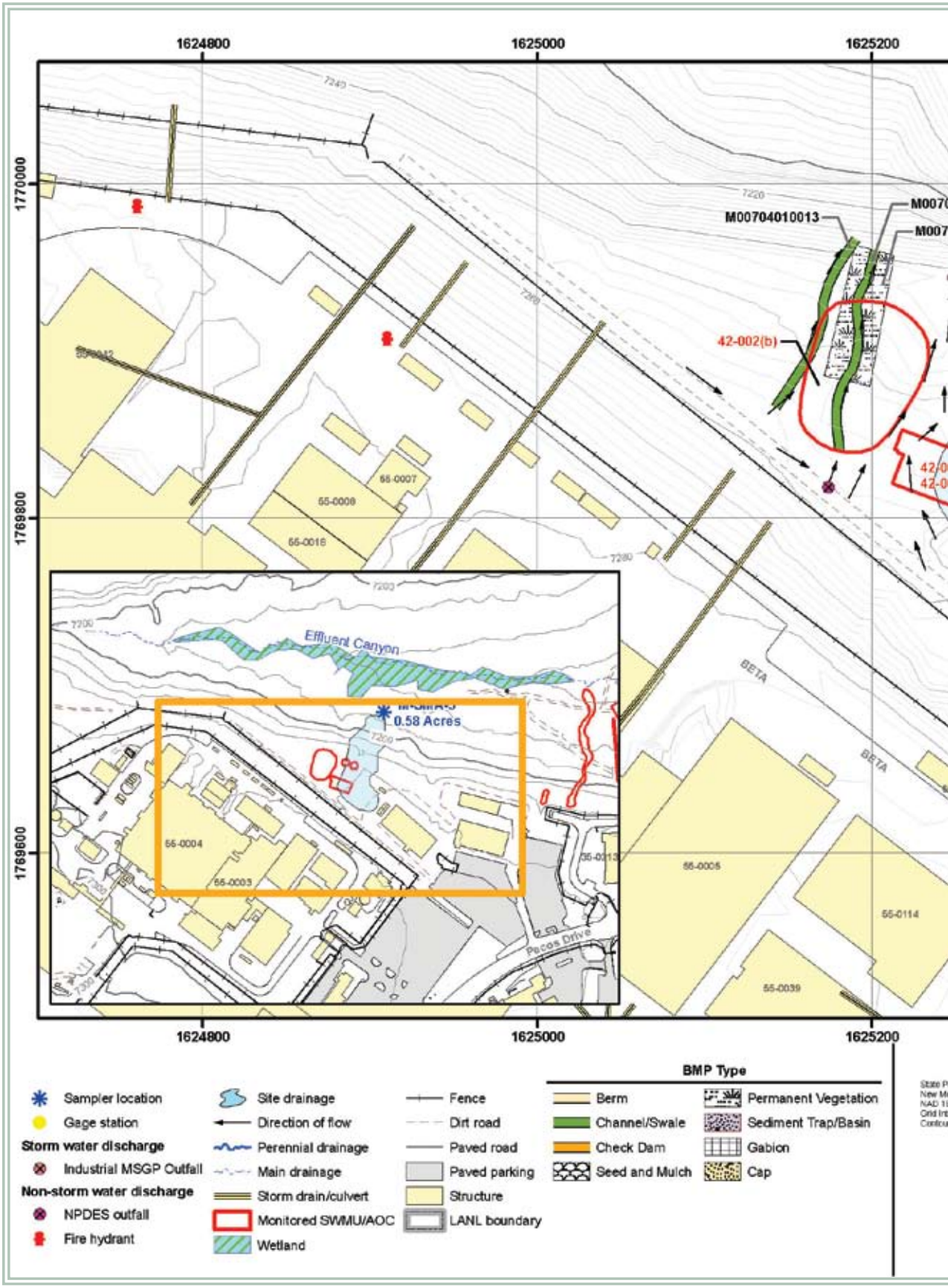
This check dam is located adjacent to and south of the sampler at the northern tip of the SMA. It is used to control sedimentation and run-off from the

Permitted Feature. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Southern Rock Check Dam (M007-06-01-0007)

This check dam is located in the channel north of 42-002(a). It is in place to control erosion and run-on from the paved areas to the south. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.19.4 Project Map



1625400
1625600
1770000
1769800
1769600
M00706010002
M-SMA-5
0.58 Acres
M00704060001
42-001(b)
42-001(c)
M00706010007
M00703060015
M00704060008
55-0259
55-0066
55-0313
55-0029
7180
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WEB staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M007: M-SMA-5
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, Modified By: Shannon Smith,
August 18, 2010, Map #M007-10-0017-133-M5-R5

1000.19.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.19.6 Corrective Action Status

The Sites associated with M-SMA-5 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.20 M-SMA-6

1000.20.1 Area Description

1000.20.2 Potential Pollutant Sources

1000.20.2.1 Historical Industrial Activity Areas

1000.20.3 Control Measures

1000.20.4 Project Map

1000.20.5 Storm Water Monitoring Plan and Schedule

1000.20.6 Corrective Action Status



1000.20 M-SMA-6

1000.20.1 Area Description

M-SMA-6 is located within TA-35 and access to the area is controlled. The northern boundary is on the slope of Mortandad Canyon. The main canyon drainage is approximately 150 feet further to the north. The southern boundary is the security fence of TA-55. The eastern boundary is Pecos Drive, a paved access road to TA-35. The western boundary is developed parking and administrative area of TA-55. Storm water flows from the developed areas along the southern boundary, north and west towards the receiving waters.

1000.20.2 Potential Pollutant Sources

1000.20.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M008, M-SMA-6, Site 35-016(h).

AOC 35-016(h) consists of three storm drains located north of building 35-0213. The storm drains were installed in 1979 to handle storm water run-off from roof drains of building 35-0213, run-off from the nearby parking lot, and discharge from a water deionizer in building 35-0213. The drain from the water deionizer was rerouted to the RLW drain system in the mid-1990s and no longer discharges to the storm water system.

The storm drain that handles the run-off from roof drains is located on the north side of building 35-0213. The storm drain that used to handle discharge from the water deionizer is located on the northeast side of building 35-0213. This storm drain currently handles only storm water run-off from the area around building 35-0213. The third storm drain that handles storm water from the nearby parking lot is located northwest of building 35-0213. All three storm drains discharge into Mortandad Canyon.

1000.20.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(h)	Storm drains and Outfall associated with Building 35-213	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.20.3 Control Measures

This SMA is influenced by paved areas and the associated engineered controls. There is also a new sediment basin which controls paved run on before it is discharged into the channel.

Subsections to 1000.20.3 list all control measures used to control pollutant sources identified in Section 1000.20.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.20.4.

1000.20.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M008 01 06 0015	Seed and Mulch - Erosion Control Blankets			•	
M008 02 01 0004	Established Vegetation - Grasses and Shrubs			•	
M008 02 02 0005	Established Vegetation - Forested/Needle Cast			•	
M008 04 06 0001	Channel/Swale - Rip Rap	•		•	
M008 04 06 0014	Channel/Swale - Rip Rap			•	
M008 05 02 0016	Sediment Traps and Basins - Sediment Basin	•			•
M008 06 01 0007	Check Dam - Rock	•			•
M008 06 01 0008	Check Dam - Rock		•		•
M008 06 01 0009	Check Dam - Rock		•		•
M008 06 01 0010	Check Dam - Rock		•		•
M008 06 01 0011	Check Dam - Rock		•		•
M008 06 01 0012	Check Dam - Rock		•		•
M008 07 02 0013	Gabions - Gabion Blanket		•	•	
M008 08 03 0002	Cap - Asphalt	•		•	

Erosion Control Blankets (M008-01-06-0015)

Erosion Control Blankets are located east of the rip rap to help control erosion on the slope. Used to temporarily stabilize and protect disturbed soil from raindrop impact and surface erosion, to increase infiltration, to decrease compaction and soil crusting, to conserve soil moisture, and to promote vegetation establishment. Erosion control blankets are used in place of mulch on areas of high velocity run-off and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

Established Vegetation (M008-02-01-0004, -02-0005)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of

existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rip Rap - East (M008-04-06-0001)

The rip rap is an outlet protection located below the culvert on the north side of the access road. It is used to control erosion and run-on to the area. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap (M008-04-06-0014)

This rip rap is located east of the access road in the drainage channel north of the sediment basin. It is being used to help control erosion in the channel. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Sediment Basin (M008-05-02-0016)

The sediment basin is located east of structure 55-0313, west of the fence line. It is is place to help mitigate storm water run-on from the paved areas. Sediment basins are used to detain sediment and run off and release it at a reduced rate through a controlled outlet structure. Sediment traps and detention basins are used primarily for sediment control and secondarily for run-off control.

Rock Check Dam (M008-06-01-0007)

This check dam is located east of the SMA and southwest of building 35-0455. It is place to help control run-on to the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dams (M008-06-01-0008, -0009, -0010, -0011, -0012)

This is a series of five check dams located below, north and east of, the sampler. They are used to help mitigate run-off form the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

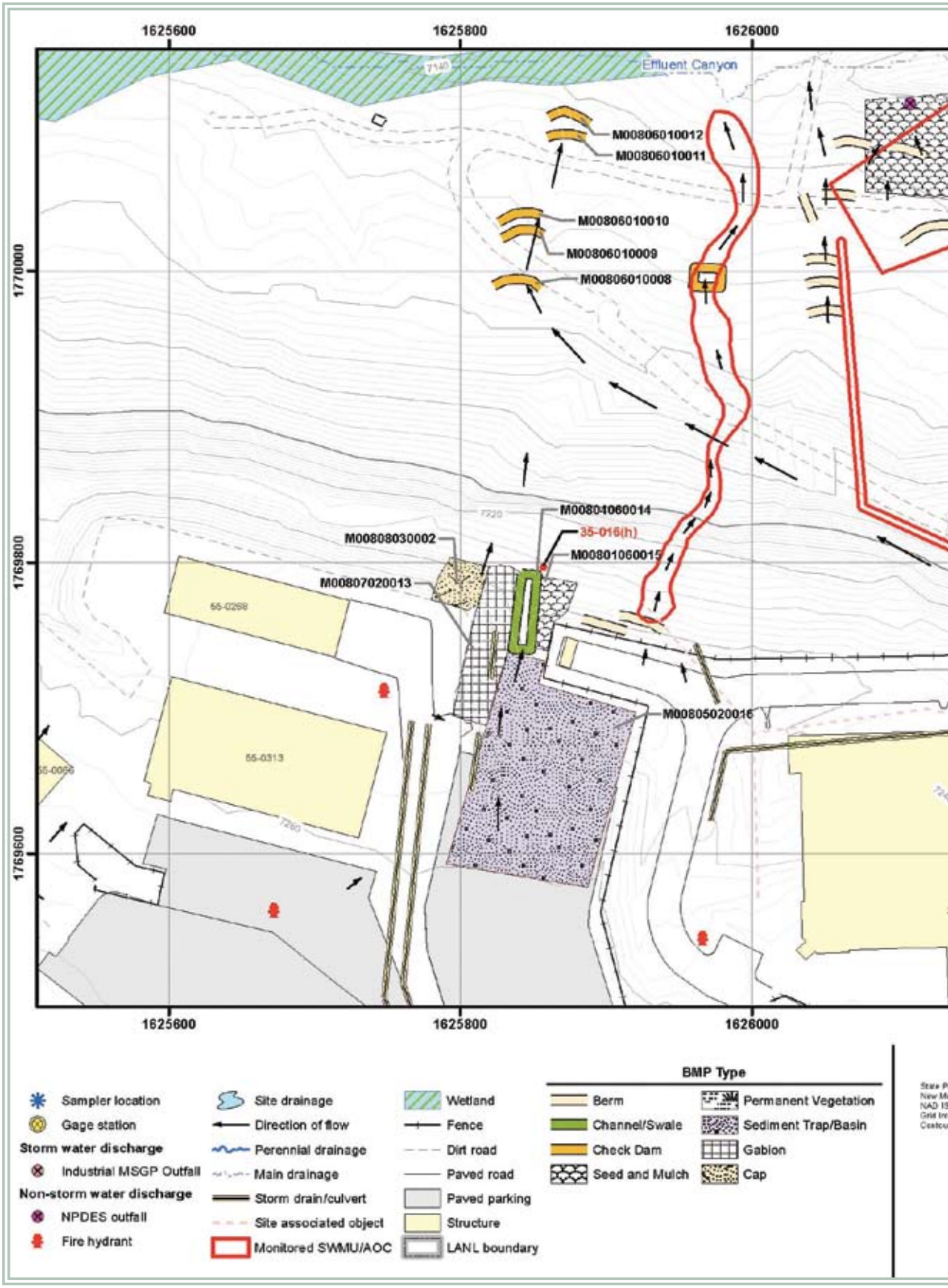
Gabion Blanket (M008-07-02-0013)

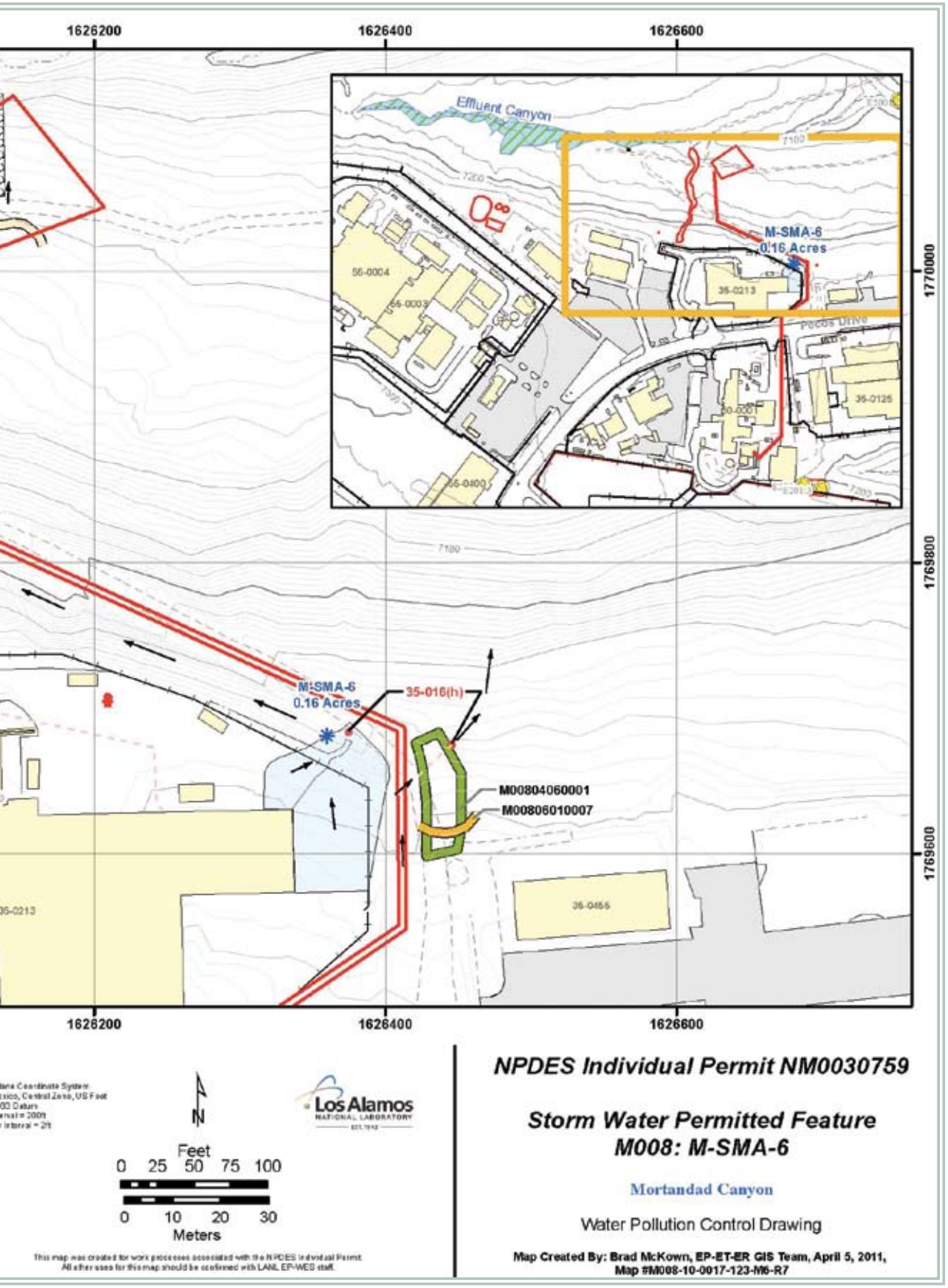
This gabion is located east of structure 55-0268 at the head of the channel near the edge of the mesa top. It is in place to help control run-off and prevent erosion. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions and gabion blankets are used for erosion control when they are used to line a channel or swale.

Asphalt/Concrete Cap (M008-08-03-0002)

This cap is located at the eastern end of building 55-0268. An asphalt cap consists of properly applied asphalt paving material generally two inches or greater in depth. Generally used to cap potential surface contamination areas occurring on existing paved areas. This category of storm water control includes earth, rock and asphalt caps.

1000.20.4 Project Map




1626200
1626400
1626600
1770000
1769800
1769600
Effluent Canyon
M-SMA-6
0.16 Acres
35-0213
55-0004
55-0003
55-0400
35-0125
35-0455
Pecos Drive
35-016(h)
M00804060001
M00806010007
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M008: M-SMA-6
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, April 5, 2011,
Map #M008-10-0017-123-M6-R7

1000.20.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.20.6 Corrective Action Status

The Site associated with M-SMA-6 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.21 M-SMA-7

1000.21.1 Area Description

1000.21.2 Potential Pollutant Sources

1000.21.2.1 Historical Industrial Activity Areas

1000.21.3 Control Measures

1000.21.4 Project Map

1000.21.5 Storm Water Monitoring Plan and Schedule

1000.21.6 Corrective Action Status



1000.21 M-SMA-7

1000.21.1 Area Description

M-SMA-7 is located within TA-35 and access to the area is controlled. The northern boundary is an unpaved access road on the slope of Mortandad Canyon. The main canyon drainage is further to the north. The southern boundary is a paved access road in TA-35. The eastern and western boundaries are on an undeveloped canyon slope. Storm water flows from the developed areas along the southern boundary, north towards the receiving waters.

1000.21.2 Potential Pollutant Sources

1000.21.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M009, M-SMA-7, Site 35-016(g).

AOC 35-016(g) is a former NPDES outfall (04A127) established in 1979 to handle reverse-osmosis discharge and cooling tower blowdown from room 29 in building 35-0213, the Target Fabrication Facility. The outfall was removed from the NPDES permit in September 1997. The former NPDES outfall now handles only cooling tower blowdown from the same room. The drainage runs approximately 100 ft north to its point of discharge on the south rim of Mortandad Canyon.

1000.21.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(g)	Drain and Outfall from Building 35-213	Discrete Location, No overlap	Individual	•		•	

1000.21.3 Control Measures

There is minimal run-on from the paved areas above this Permitted Feature.

Subsections to 1000.21.3 list all control measures used to control pollutant sources identified in Section 1000.21.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.21.4.

1000.21.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M009 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
M009 03 06 0004	Berms - Straw Wattles	•			•
M009 03 06 0005	Berms - Straw Wattles	•			•
M009 06 01 0003	Check Dam - Rock		•		•

Established Vegetation (M009-02-02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

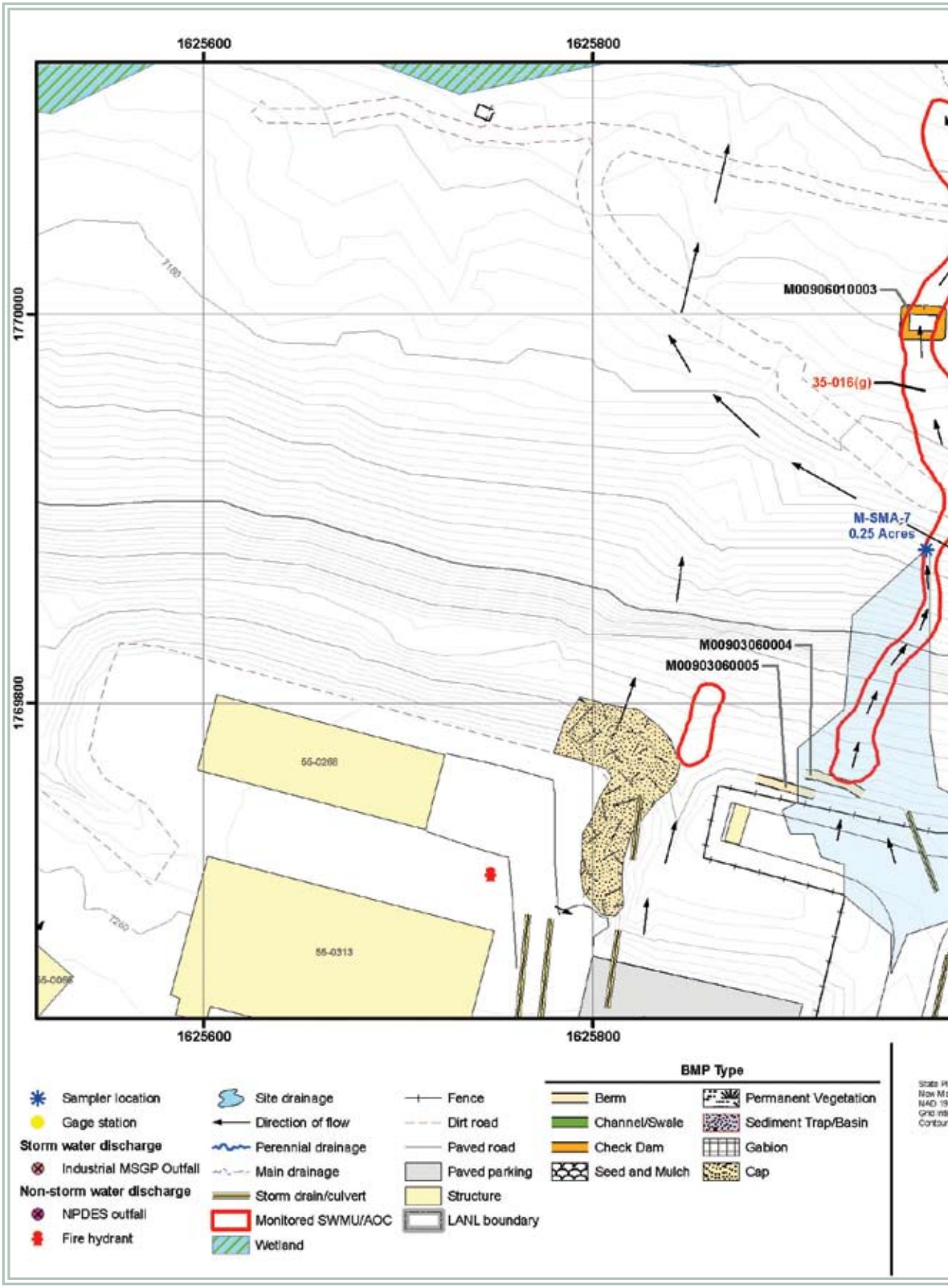
Straw Wattles (M009-03-06-0004, -0005)

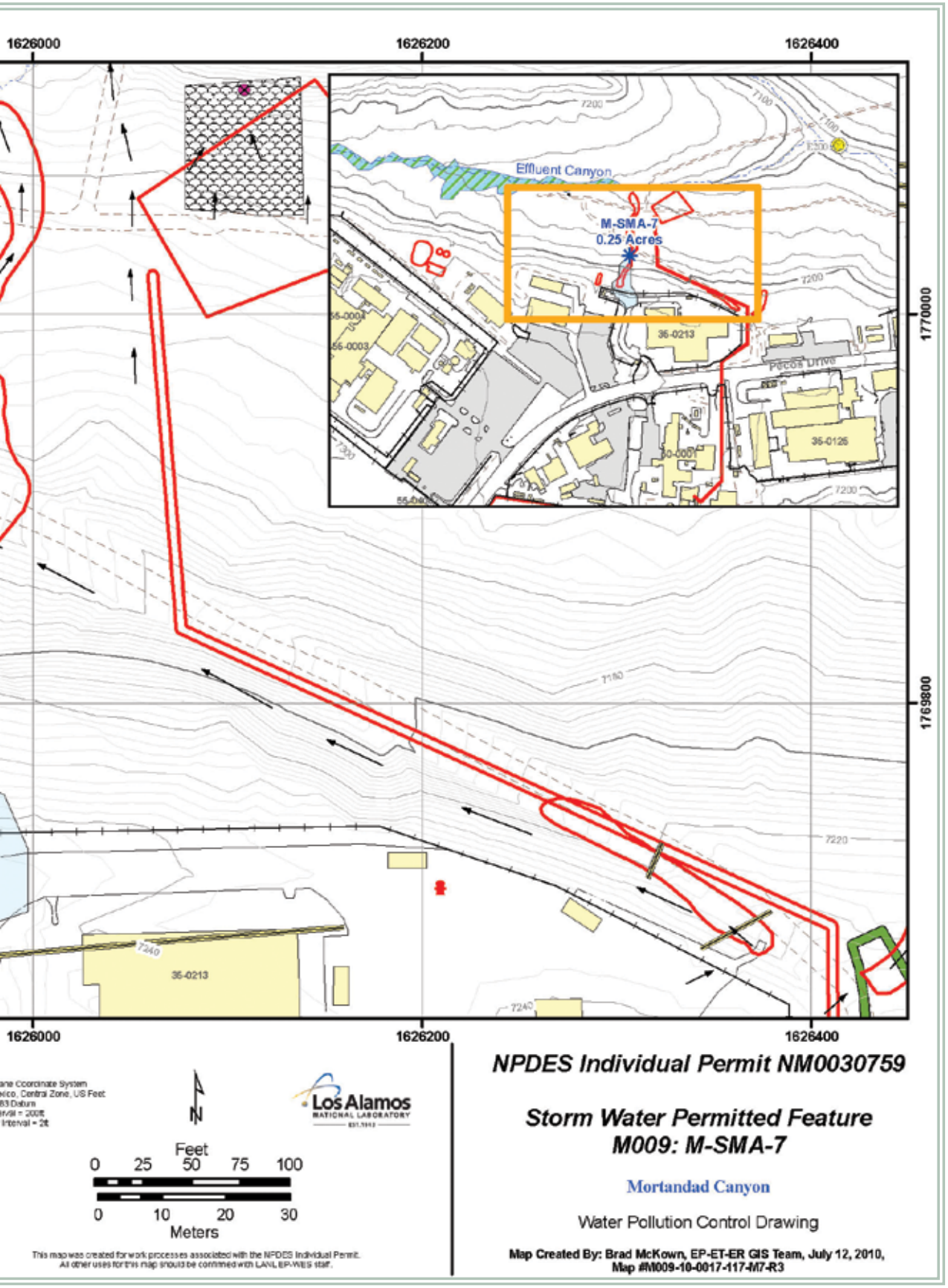
This is a pair of wattles that are located at the fence near the top of the drainage channel. They are in place to help mitigate storm water run-on from the paved areas. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rock Check Dam (M009-06-01-0003)

This rock check dam is located below the sampler in the channel running through the lower portion of the Site and is controlling sediment migration and run-off from the Site. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.21.4 Project Map




1626000
1626200
1626400
1770000
1769800
Effluent Canyon
M-SMA-7
0.25 Acres
36-0213
Pecos Drive
35-0126
55-0004
55-0003
55-0001
7200
7100
7180
7220
7240
7300
7340
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M009: M-SMA-7
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 12, 2010,
Map #M009-10-0017-117-M7-R3

1000.21.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.21.6 Corrective Action Status

The Site associated with M-SMA-7 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP

1000.22 M-SMA-7.9

1000.22.1 Area Description

1000.22.2 Potential Pollutant Sources

1000.22.2.1 Historical Industrial Activity Areas

1000.22.3 Control Measures

1000.22.4 Project Map

1000.22.5 Storm Water Monitoring Plan and Schedule

1000.22.6 Corrective Action Status



1000.22 M-SMA-7.9

1000.22.1 Area Description

M-SMA-7.9 is located within the secure area of TA-35 and access to the area is controlled. The northern boundary is the main drainage channel of Effluent Canyon. This drainage converges with Mortandad Canyon approximately 300 feet to the east. The southern boundary is developed area south of the break of the southern slope of the canyon wall. The eastern and western boundaries are undeveloped canyon slope. Storm water flows from the developed areas along the southern boundary to the receiving waters further north.

1000.22.2 Potential Pollutant Sources

1000.22.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M010, M-SMA-7.9, Site 50-006(d).

SWMU 50-006(d) consists of a drainline (structure 50-0064) and associated NPDES-permitted outfall 051 in Mortandad Canyon for treated wastewater from the RLWTF (building 50-0001). Structure 50-0064 is a 6 in. diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the TA-35 target fabrication facility (building 35-0213). In 1985, EPA Region 6 issued an administrative order to DOE requiring modification of the outfall to mitigate ongoing stream-bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and subsequently EPA Region 6 closed the order in 1986.

1000.22.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
50-006(d)	Outfall associated with Building 50-1	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.22.3 Control Measures

The unpaved road running north to south, east of the SMA, is diverting run-on to the west of the SWMU.

Subsections to 1000.22.3 list all control measures used to control pollutant sources identified in Section 1000.22.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.22.4.

1000.22.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M010 01 01 0001	Seed and Mulch - Seed and Wood Mulch			•	
M010 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M010 02 02 0003	Established Vegetation - Forested/Needle Cast			•	
M010 03 01 0004	Berms - Earthen	•			•
M010 03 01 0010	Berms - Earthen	•			•
M010 03 01 0011	Berms - Earthen	•			•
M010 03 06 0007	Berms - Straw Wattles	•			•
M010 03 06 0008	Berms - Straw Wattles		•		•
M010 03 06 0009	Berms - Straw Wattles		•		•
M010 03 12 0005	Berms - Rock	•			•
M010 03 12 0006	Berms - Rock	•			•

Wood Mulch (M010-01-01-0001)

Wood mulch has been spread across the bare areas immediately south of the sampler in order to control erosion. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (M010-02-01-0002, -02-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (M010-03-01-0004)

This earthen berm is located near the `T` in the unpaved access roads to the west of the SMA. It is diverting run-on from the road to the west of the SWMU. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Earthen Berm - East (M010-03-01-0010)

This berm is located on the southern side of the unpaved access road south of the SMA. It is being used to help control run-on from the undeveloped slope above. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Earthen Berm - South (M010-03-01-0011)

This earthen berm is located below the two rock berms south of the access road. It is helping to manage storm water run-on. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattle (M010-03-06-0007)

This wattle is located along the northern edge of the unpaved access road. It is used to help control run-on from the road. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

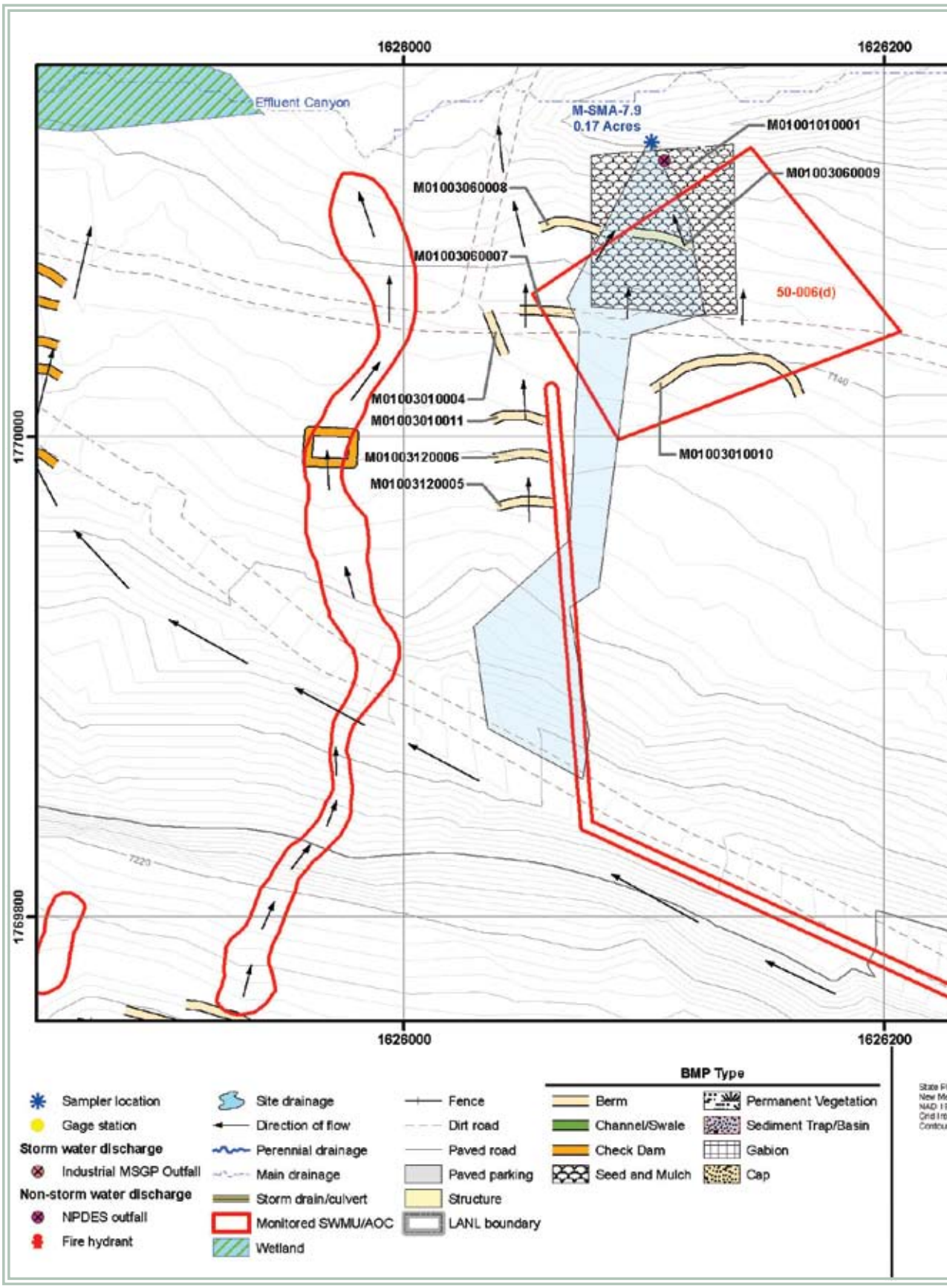
Straw Wattles (M010-03-06-0008, -0009)

This is a pair of wattles located south of the sampler across the drainage. They are used to help reduce the storm water run-off from the slope. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rock Berms (M010-03-12-0005, -0006)

This is a pair of rock berms that are located near the top of a flow path south of the sampler. They are used to help control storm water run-on from the developed area above. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

1000.22.4 Project Map



1626400
1626600
1770000
1769800
M-SMA-7.9
0.17 Acres
Effluent Canyon
35-0213
35-0125
Pecos Drive
Ten-Site Canyon
7100
7200
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M010: M-SMA-7.9
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 19, 2010,
Map #M010-10-0017-118-M7.9-R3

1000.22.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.22.6 Corrective Action Status

The Site associated with M-SMA-7.9 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.23 M-SMA-9.1

1000.23.1 Area Description

1000.23.2 Potential Pollutant Sources

1000.23.2.1 Historical Industrial Activity Areas

1000.23.3 Control Measures

1000.23.4 Project Map

1000.23.5 Storm Water Monitoring Plan and Schedule

1000.23.6 Corrective Action Status





1000.23 M-SMA-9.1

1000.23.1 Area Description

M-SMA-9.1 is located within the secured area of TA-35 and access is controlled. The northern boundary is on the north facing slope of Mortandad Canyon. The southern boundary is structures and developed mesa top area of TA-35. A portion of the eastern and western boundaries are on developed mesa top in TA-35 and the remainder is on undeveloped canyon slope. Storm water flows from the developed areas in the southern portion of the SMA, north towards the receiving waters.

1000.23.2 Potential Pollutant Sources

1000.23.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M011, M-SMA-9.1, Site 35-016(f).

AOC 35-016(f) is an active storm drain located north of the chemical laser facility (Building 35-85) on the west half of the TA-35 mesa top. The outfall consists of an 18 inch diameter CMP that discharges into a small channel cut into backfill material on the south slope of Mortandad Canyon. Documented releases, consisting of oil spills, have occurred near the source areas for the storm drain.

1000.23.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(f)	Storm drain and Outfall	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.23.3 Control Measures

The culvert/drop inlet and roof drain are diverting run-on from the buildings and paved areas above, away from the Permitted Feature. The storm drain fed by the drop inlet west of building 36-0085 discharges outside the SMA boundary above and to the east of the outfall for 35-016(f). The roof drain from 35-0189 discharges outside or to the west of the SMA and does not impact the sampler.

Subsections to 1000.23.3 list all control measures used to control pollutant sources identified in Section 1000.23.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.23.4.

1000.23.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M011 01 02 0001	Seed and Mulch - Seed and Gravel	•		•	
M011 02 02 0006	Established Vegetation - Forested/Needle Cast			•	
M011 04 04 0004	Channel/Swale - Culvert	•		•	
M011 06 01 0005	Check Dam - Rock		•		•

Seed and Gravel Mulch (M011-01-02-0001)

The seed and mulch are located in the drainage channel between buildings 35-0189 and 35-0085. They are used to control run-on at the culvert outlet preventing erosion. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (M011-02-02-0006)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

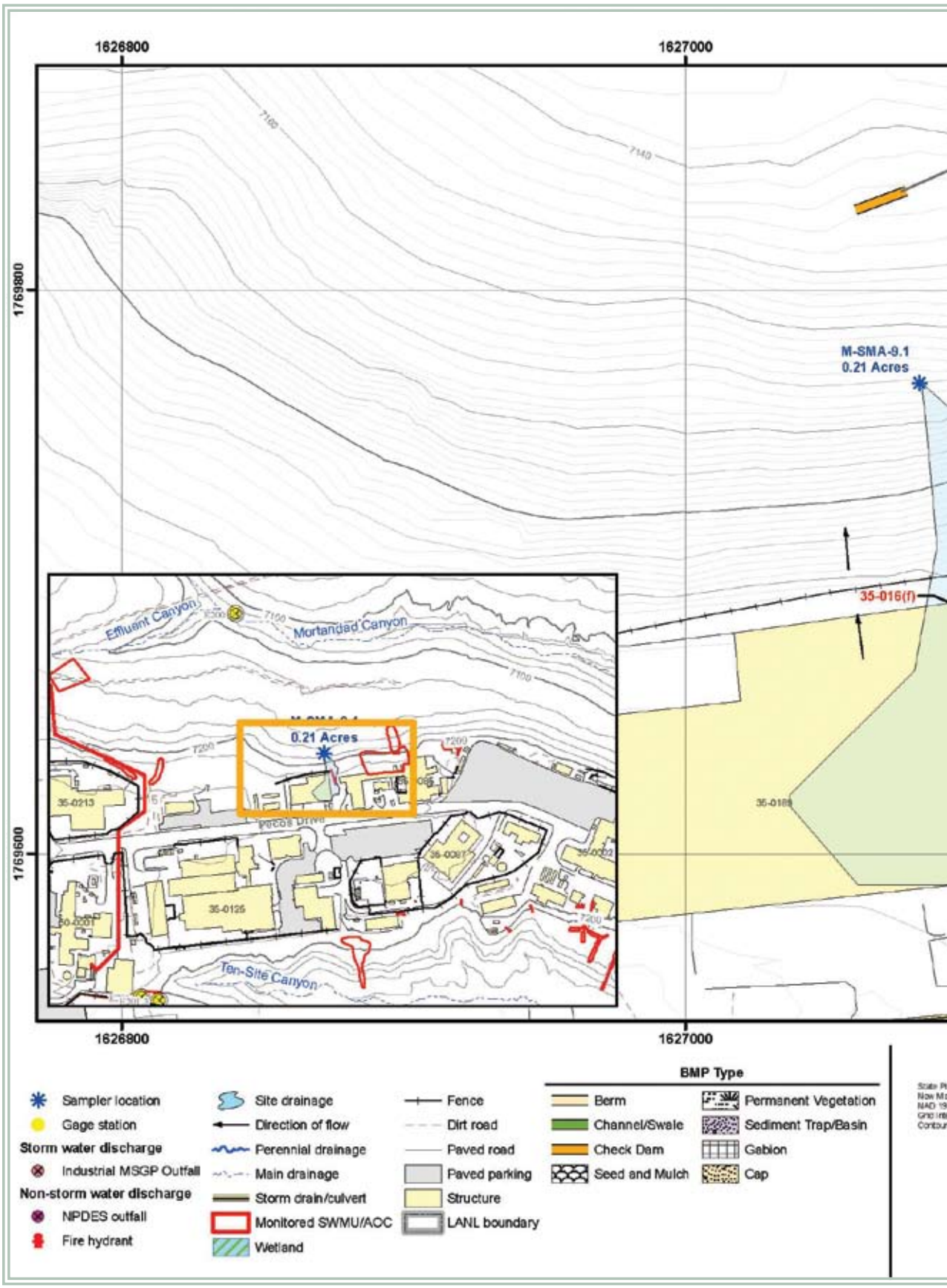
Culvert (M011-04-04-0004)

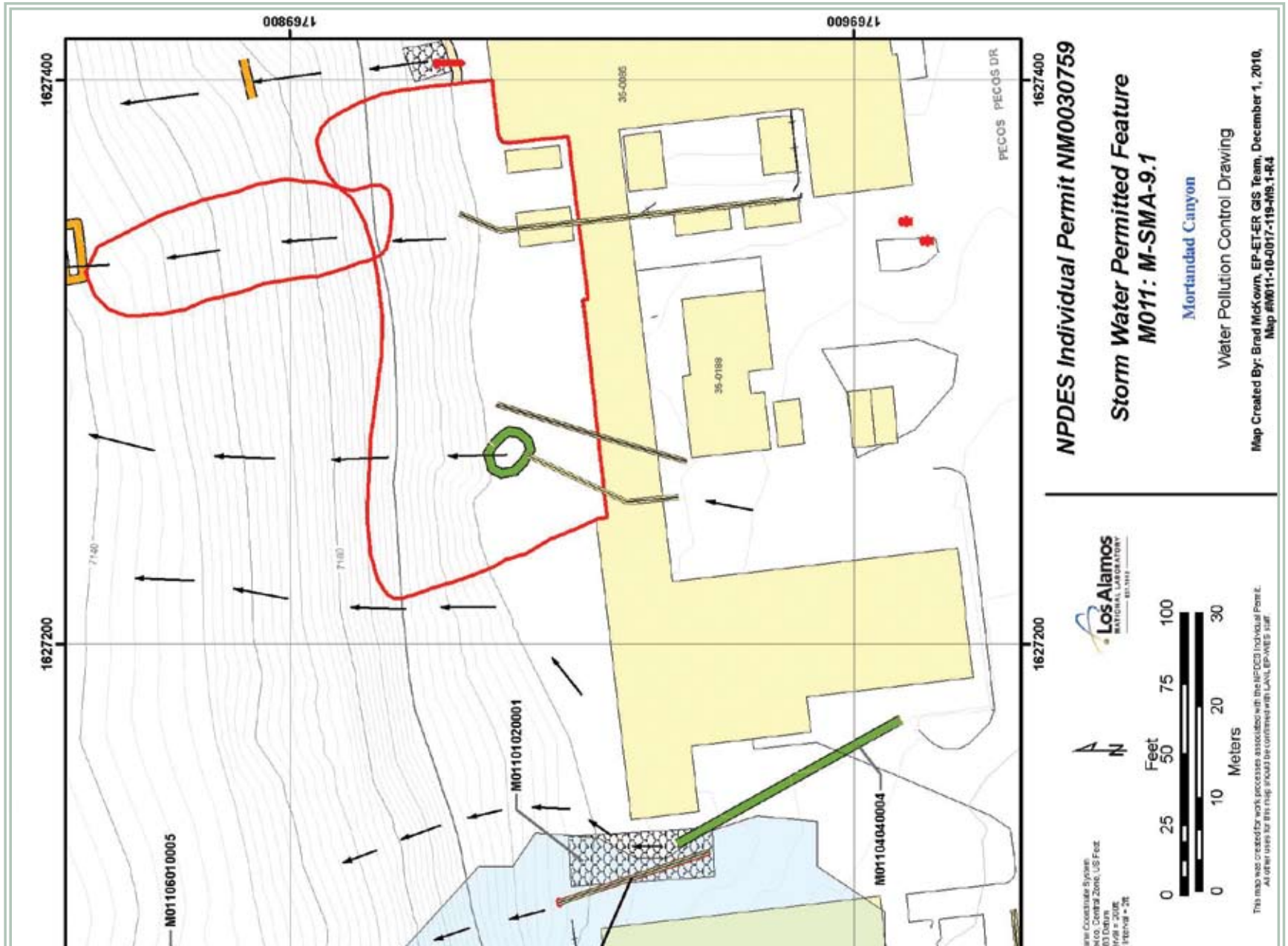
The culvert is located in the channel between buildings 36-0189 and 36-0086. It is used to divert run-on from the paved areas south of the buildings away from the Permitted Feature. A transverse and totally enclosed drain typically used under roads to divert storm water off of or away from impervious surfaces.

Rock Check Dam (M011-06-01-0005)

This check dam is located north of, below, the sampler. It is being used to help control run-off and reduce sediment transport. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.23.4 Project Map




1769800
1769600
1627400
1627200
35-0086
35-0188
PECOS
PECOS DR
7140
7160
M01106010005
M01101020001
M01104040004
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M011: M-SMA-9.1
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, December 1, 2010,
Map #M011-10-0017-119-M9.1-R4
Los Alamos
NATIONAL LABORATORY
N
Feet
0
25
50
75
100
Meters
0
10
20
30

1000.23.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.23.6 Corrective Action Status

The Site associated with M-SMA-9.1 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP

1000.24 M-SMA-10

1000.24.1 Area Description

1000.24.2 Potential Pollutant Sources

1000.24.2.1 Historical Industrial Activity Areas

1000.24.3 Control Measures

1000.24.4 Project Map

1000.24.5 Storm Water Monitoring Plan and Schedule

1000.24.6 Corrective Action Status



1000.24 M-SMA-10

1000.24.1 Area Description

M-SMA-10 is located in TA-35. The receiving waters of Mortandad Canyon are along the northern boundary of the SMA. The southern boundary is influenced by paved areas and structures within TA-35.

1000.24.2 Potential Pollutant Sources

1000.24.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M012, M-SMA-10, Sites 35-008 and 35-014(e).

SWMU 35-008 is a surface disposal area located at TA-35 and primarily comprised of construction debris. The site reportedly includes scrap metal and pipe, paint cans, a 55 gallon drum, and miscellaneous building materials refuse, including a large concrete slab, conduits, asphalt, pipe, and reinforcing rods. Debris extends from the canyon rim to the canyon floor. The surface disposal area has likely been in existence since 1977 when the nearby Chemical Laser Facility (Building 35-85) was constructed.

SWMU 35-014(e) is an area of oil-stained soil on the northern edge of Ten Site Mesa at TA-35. The stained soil may have been a result of a dielectric oil spill that occurred east of Building 35-188 when a forklift punctured an aboveground oil storage tank. The oil tank was removed before 1992. The amount of oil that was spilled is unknown. However, it was reported that the spill might have flowed northward to the mesa edge and partially down the mesa slope. Reports also suggest that oil-stained soil may have been pushed over the mesa during the cleanup of the spill. After the oil spill, an extension to Building 35-85 was built between Building 35-188 and the edge of the mesa. This building extension covers part of the area of the reported oil spill, and construction of this building extension may have included site leveling, soil stabilization, and possibly extension and stabilization of the mesa edge by backfilling with soil and rip rap materials. In April 1997, oil was visible on the slope near the edge of the mesa as dark stained soil that covered an area of backfill material about 15 x 10 ft. The occasional odor of hydrocarbons was also noted at the site. No stained soils or odors were apparent on the mesa top north of Building 35-85.

1000.24.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-008	Surface disposal site	Discrete Location, No overlap	Shared	•		•	
35-014(e)	Spill/Non-intentional release area	Co-located, Overlapping	Shared	•		•	

Substantially Identical Determination

Sites grouped within this SMA are present on a northern slope of Mortandad Canyon. Because they are co-located, have similar contaminants, and share a common drainage, they will discharge substantially identical effluent.

1000.24.3 Control Measures

The primary source of run-on to the Permitted Feature comes from two culverts that drain from the paved areas and the roof of building 35-0085. Check dams and rip rap are employed in two drainage channels to manage the associated discharge.

Subsections to 1000.24.3 list all control measures used to control pollutant sources identified in Section 1000.24.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.24.4.

1000.24.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M012 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M012 02 02 0011	Established Vegetation - Forested/Needle Cast			•	
M012 04 06 0004	Channel/Swale - Rip Rap	•			•
M012 04 06 0007	Channel/Swale - Rip Rap		•	•	
M012 04 06 0008	Channel/Swale - Rip Rap		•	•	
M012 06 01 0001	Check Dam - Rock		•		•
M012 06 01 0005	Check Dam - Rock		•		•
M012 06 01 0006	Check Dam - Rock		•		•
M012 06 01 0009	Check Dam - Rock		•		•
M012 06 01 0010	Check Dam - Rock		•		•

Established Vegetation (M012-02-01-0002, -02-0011)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent

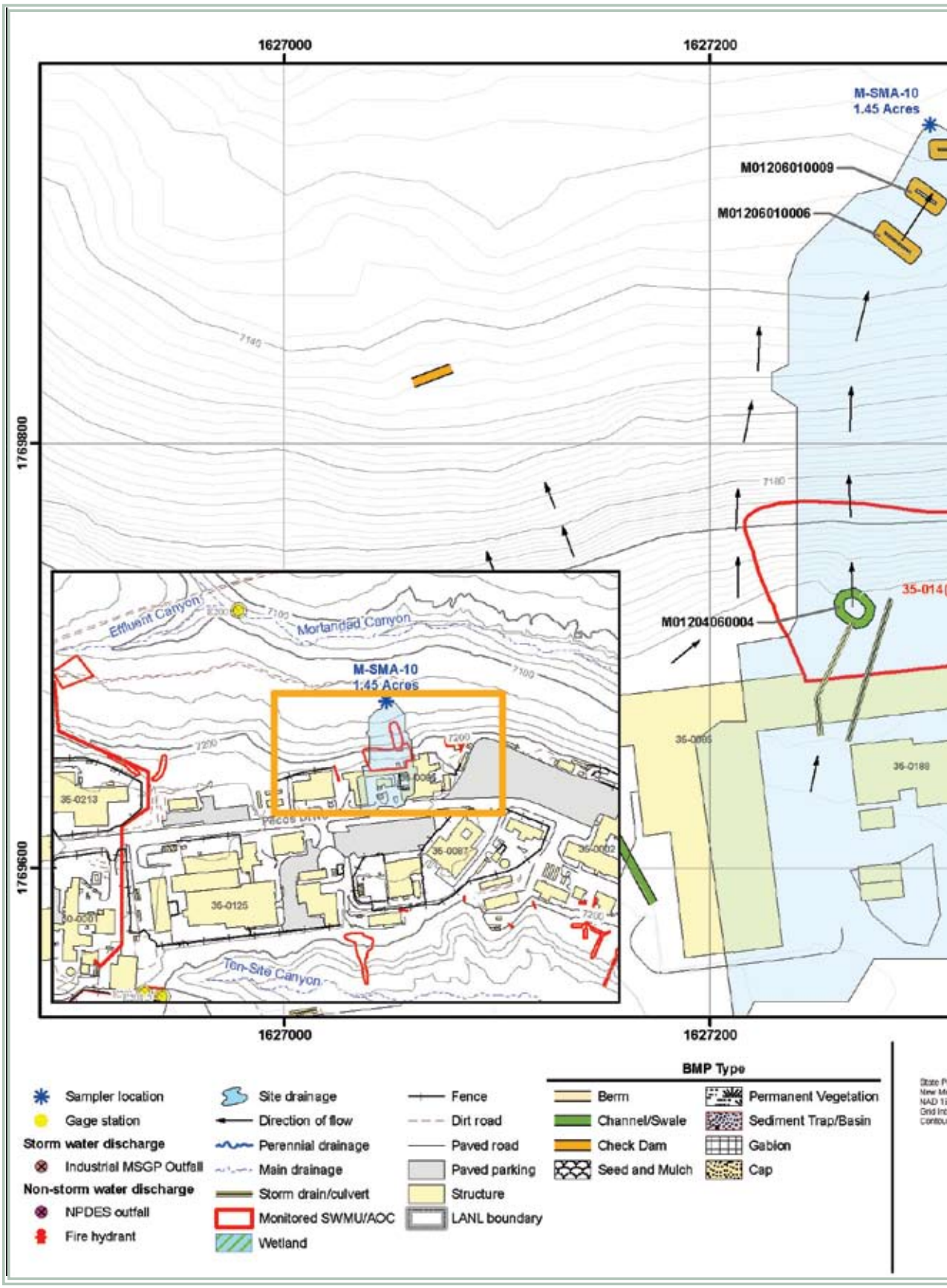
vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rip Rap
(M012-04-06-0004)
This rip rap is located under the western culvert on the edge of the mesa top. It is used to help mitigate storm water run-on from the paved areas and helps prevent erosion on the slope. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap
(M012-04-06-0007, -0008)
Rip rap lines the eastern drainage channel between the check dams to reduce the velocity of storm water run-off discharge and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam
(M012-06-01-0001, -0005, -0006, -0009, -0010)
A series of rock check dams is located in the drainage channels above the sampler. They are in place to control run-off and sediment migration. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.24.4 Project Map



1627400
1627600
M01206010010
M01204060008
M01206010001
M01204060007
M01206010005
35-008
35-0472
35-0249
PECOS
PECOS DR
7140
7160
7220
1769800
1769600
1627400
1627600
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other users for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M012: M-SMA-10
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 12, 2010,
Map #M012-10-0017-120-M10-R3

1000.24.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.24.6 Corrective Action Status

The Sites associated with M-SMA-10 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.25 M-SMA-10.01

1000.25.1 Area Description

1000.25.2 Potential Pollutant Sources

1000.25.2.1 Historical Industrial Activity Areas

1000.25.3 Control Measures

1000.25.4 Project Map

1000.25.5 Storm Water Monitoring Plan and Schedule

1000.25.6 Corrective Action Status



1000.25 M-SMA-10.01

1000.25.1 Area Description

M-SMA-10.1 is located in TA-35. The receiving waters of Mortandad Canyon are along the northern boundary of the SMA. The southern boundary is influenced by roof drainage from area structure 35-0085.

1000.25.2 Potential Pollutant Sources

1000.25.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M012A, M-SMA-10.01, Site 35-016(e).

AOC 35-016(e) is an inactive outfall established at TA-35 in 1977 to discharge non-contact cooling water from the chemical laser facility (Building 35-85). This outfall is a formerly NPDES permitted outfall. The outfall consists of two adjacent 2 inch diameter steel pipes, insulated with fiberglass and wrapped with protective aluminum coating, that originate from cooling towers on the roof of Building 35-85. The outfall is located north of Building 35-85 on the rim of Mortandad Canyon and discharged to the steep slope found there. The volume of water released is not documented, but significant erosion has taken place below the outfall.

1000.25.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(e)	Drain and Outfall from Building 35-85	Discrete Location, No overlap	Individual	•		•	

1000.25.3 Control Measures

The primary source of run-on to the Permitted Feature comes from sheet flow that drains from the paved areas and the roof of building 35-0085.

Subsections to 1000.25.3 list all control measures used to control pollutant sources identified in Section 1000.25.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.25.4.

1000.25.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M012A 01 01 0002	Seed and Mulch - Seed and Wood Mulch			•	
M012A 03 06 0004	Berms - Straw Wattles	•			•
M012A 06 01 0003	Check Dam - Rock		•		•

Seed and Mulch (M012A-01-01-0002)

Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

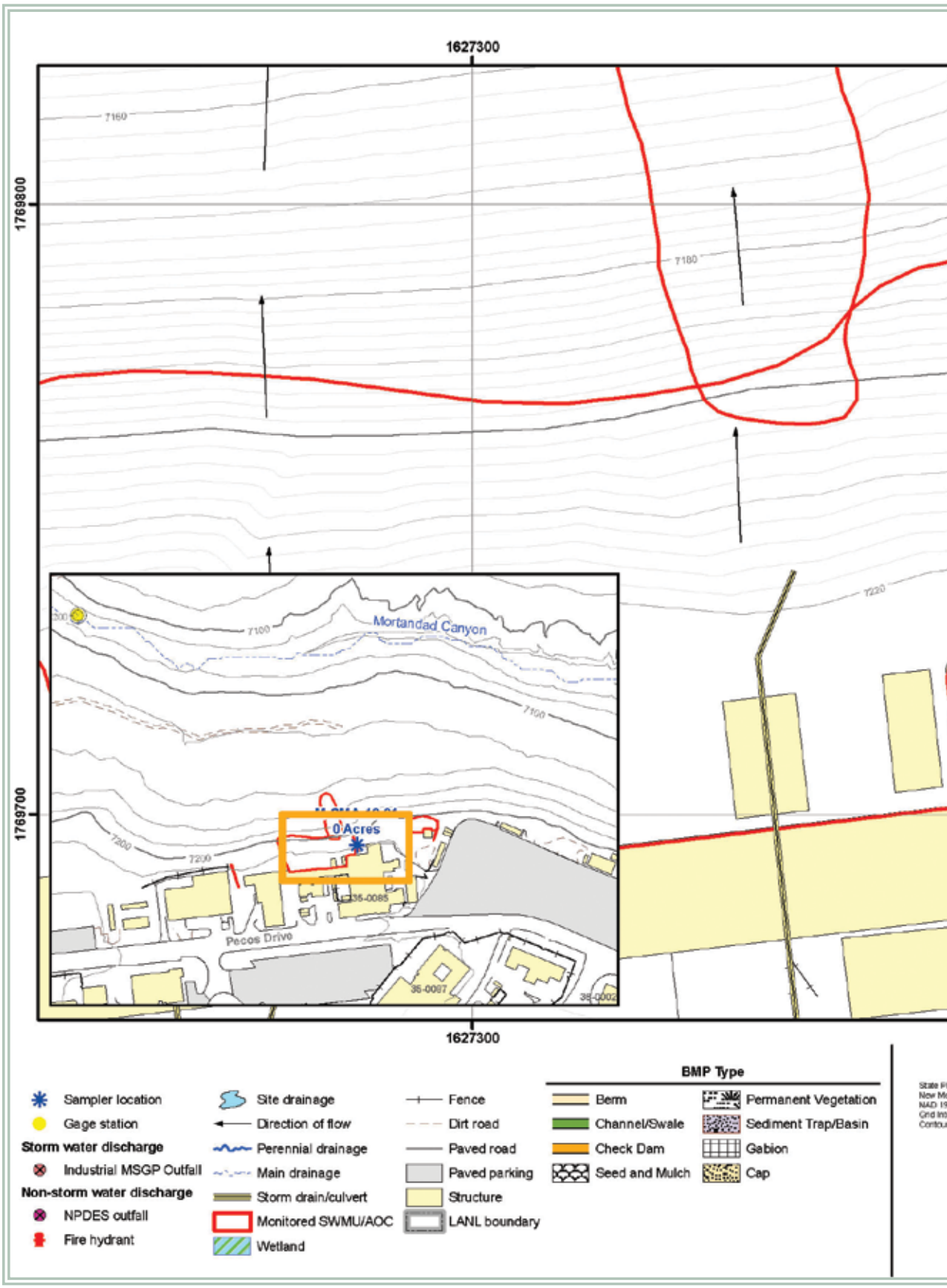
Straw Wattles (M012A-03-06-0004)

These wattles are located on the vegetated mesa edge north of building 35-0085. They are used to help control run-on from the paved areas. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rock Check Dam (M012A-06-01-0003)

This check dam is located down the slope north of the sampler. It is in place to help mitigate run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.25.4 Project Map



1627400
1627500
1769800
1769700
M012A06010003
M012A01010002
M012A03060004
M-SMA-10.01
0 Acres
35-016(e)
35-0095
35-0254
720
1627400
1627500
N
Feet
0 10 20 30 40
0 5 10 15
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M012A: M-SMA-10.01
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #M012A-10-0017-11-M10.01-R2

1000.25.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.25.6 Corrective Action Status

The Site associated with M-SMA-10.01 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.26 M-SMA-10.3

1000.26.1 Area Description

1000.26.2 Potential Pollutant Sources

1000.26.3 Control Measures

1000.26.4 Project Map

1000.26.5 Storm Water Monitoring Plan and Schedule

1000.26.6 Corrective Action Status



1000.26 M-SMA-10.3

1000.26.1 Area Description

M-SMA-10.3 is located within the secure area of TA-35 and access is controlled. The northern boundary is a narrow bench of Mortandad Canyon. The main drainage channel is located approximately 200 feet further north. The southern boundary is highly developed administrative area of TA-35. A portion of the eastern boundary is highly developed area including a large paved parking area. The remainder is undeveloped canyon slope. A portion of the western boundary is highly developed area including Pecos drive. The remainder is undeveloped canyon slope. Storm water flows from the developed areas in the southern portion of the SMA, north and east towards the receiving waters.

1000.26.2 Potential Pollutant Sources

1000.26.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M013, M-SMA-10.3, Sites 35-014(e2) and 35-016(i).

AOC 35-014(e2) is the site of a former oil spill at TA-35 that originated from overflows of a gunite-lined, surface waste-oil impoundment used to store waste dielectric oil. When the impoundment was operative, the oil was periodically pumped out of the impoundment and recycled. The impoundment was drained in 1988 and decommissioned in 1989. Documented releases from the impoundment consisted of oil spills. Soil samples from oil-stained areas showed detectable PCB concentrations.

SWMU 35-016(i) is a storm water outfall at TA-35 that originates from storm water drains south of Building 35-85 along Pecos Drive. This outfall is an 18 inch diameter CMP that discharges to Mortandad Canyon and was probably installed around 1977 when Building 35-85 was constructed. The area below the outfall also receives surface run-off from the eastern part of AOC 35-014(e2) and may have provided a pathway for oil spills associated with the former waste oil impoundment.

1000.26.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-014(e2)	Soil contamination associated with overflows from waste oil impoundment	Discrete Location, No overlap	Shared	•	•	•	PCBs
35-016(i)	Storm drains and Outfall	Discrete Location, No overlap	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites grouped within this SMA are located on a slope of Mortandad Canyon. Because they have similar contaminants and share a common drainage, they will discharge substantially identical effluent.

1000.26.3 Control Measures

The majority of potential run-on to this Permitted Feature is due to a culvert outlet discharging run-on from the parking lot drainage for the impervious area surrounding building 35-0127. Additional run-on originates from the parking lot just east of the SMA. Significant erosion and hillside instability due to culvert discharge was observed during the site visit.

Subsections to 1000.26.3 list all control measures used to control pollutant sources identified in Section 1000.26.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.26.4.

1000.26.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M013 02 01 0004	Established Vegetation - Grasses and Shrubs			•	
M013 02 02 0005	Established Vegetation - Forested/Needle Cast			•	
M013 03 01 0011	Berms - Earthen	•			•
M013 03 01 0012	Berms - Earthen		•		•
M013 06 01 0010	Check Dam - Rock		•		•

Established Vegetation (M013-02-01-0004, -02-0005)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Berms (M013-03-01-0011)

Earthen berm has been installed east of structure 35-0472 at the mesa top edge. It was placed to stabilize the slope against run-on from the paved areas and promote sediment retention. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Berms (M013-03-01-0012)

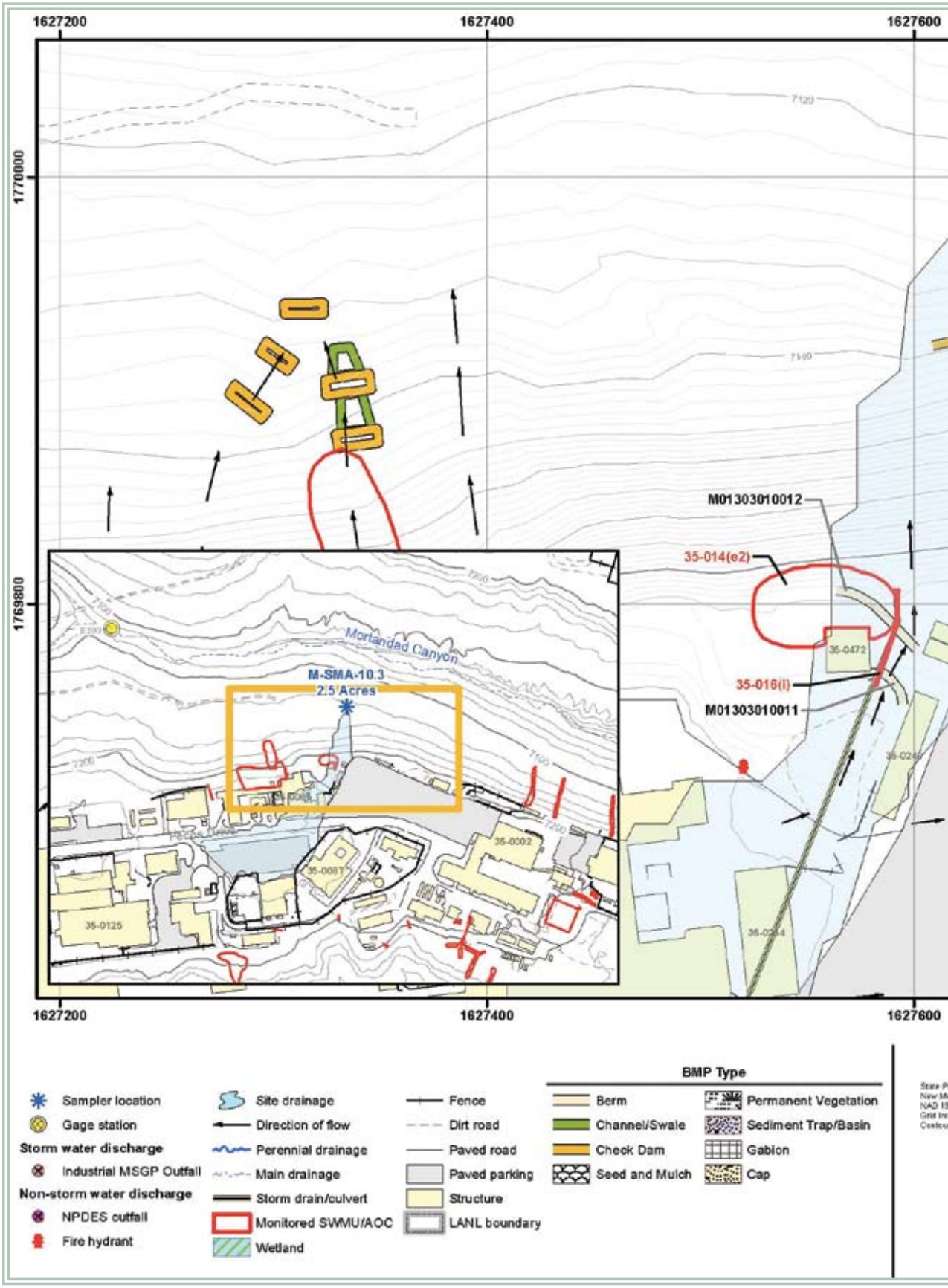
Earthen berm has been installed north of structure 35-0472 at the mesa top edge. It

was placed to control run-off from the Site and promote sediment retention. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Check Dam (M013-06-01-0010)

This check dam is located in the drainage above, south, of the sampler. It is in place to help control storm water run-off from the developed area on the mesa top. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.26.4 Project Map



1627800
1628000
1770000
1769800
M-SMA-10.3
2.5 Acres
M01306010010
7000
7120
7160
35-0337
35-0253
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M013: M-SMA-10.3
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #M013-10-0017-121-M10.3-R5

1000.26.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.26.6 Corrective Action Status

The Sites associated with M-SMA-10.3 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.27 M-SMA-11.1

1000.27.1 Area Description

1000.27.2 Potential Pollutant Sources

1000.27.2.1 Historical Industrial Activity Areas

1000.27.3 Control Measures

1000.27.3.1 Control Measures for Historical Industrial Activity Areas

1000.27.4 Project Map

1000.27.5 Storm Water Monitoring Plan and Schedule

1000.27.6 Corrective Action Status



1000.27 M-SMA-11.1

1000.27.1 Area Description

M-SMA-11.1 is located within TA-35 and access is controlled. The northern boundary is on a steep north facing slope of Mortandad Canyon. The main channel of the canyon is approximately 200 feet further north. The southern boundary is the developed administrative area of TA-35. Storm water flows from the developed area, northeast to the receiving waters.

1000.27.2 Potential Pollutant Sources

1000.27.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M014, M-SMA-11.1, Site 35-016(o).

SWMU 35-016(o) consists of three active storm drains established in 1951 to handle storm water run-off from the first laboratory and office building, Building 35-02, erected at TA-35. This SWMU also possibly handled Building 35-02 floor drain effluents from the following rooms: A10, in which floor drains received leaks and overflow from two 2,000 gallon tanks containing low-level radioactive/acid liquid wastes; A13, in which floor drains received leaks from four 55 gallon drums of PCB-contaminated waste oil; A22, the high-velocity projectile testing room; this room is next to room A23, which is sealed due to high background radiation from the LAPR-I and LAMPRE reactors that were formerly housed there. Engineering surveys have identified an additional outfall that handles run-off from Building 35-27 and which may be associated with this SWMU. The three outfalls comprising SWMU 35-016(o) are located on the eastern side of the mesa, on the south slope of Mortandad Canyon, approximately 20 feet below the mesa edge, and consist of cast iron drainpipes (the diameter is not documented). In addition, overflow from the septic system designated as SWMU 35-009(c) was discharged into Mortandad Canyon from two outfalls located at the east and west ends of its leach fields; the outfall in the east end coincides with one of the drainage channels from SWMU 35-016(o). Two of the outfalls in SWMU 35-016(o) are located north of trailers (Buildings 35-261 and 35-262).

1000.27.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(o)	Storm Drains and outfalls	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.27.3 Control Measures

Current discharge from the outfall is minimal and the potential for flow reaching the receiving waters is very low. There is no sign of erosion or sediment migration below the outfall pipe. The asphalt curbing serves to be divert run-on away from this Permitted Feature.

Subsections to 1000.27.3 list all control measures used to control pollutant sources identified in Section 1000.27.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.27.4.

1000.27.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M014 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
M014 02 02 0004	Established Vegetation - Forested/Needle Cast			•	
M014 03 09 0005	Berms - Curbing	•			•
M014 04 06 0001	Channel/Swale - Rip Rap	•		•	
M014 06 02 0006	Check Dam - Log		•		•

Established Vegetation (M014-02-01-0003, -02-0004)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Curbing (M014-03-09-0005)

The asphalt curb is located along the northern edge of the paved access road north of building 35-0002. It is used to control run-on from the impervious areas, diverting it away from the SMA. Curbing is an engineered device used to direct, convey, or divert storm water flow and prevent erosion.

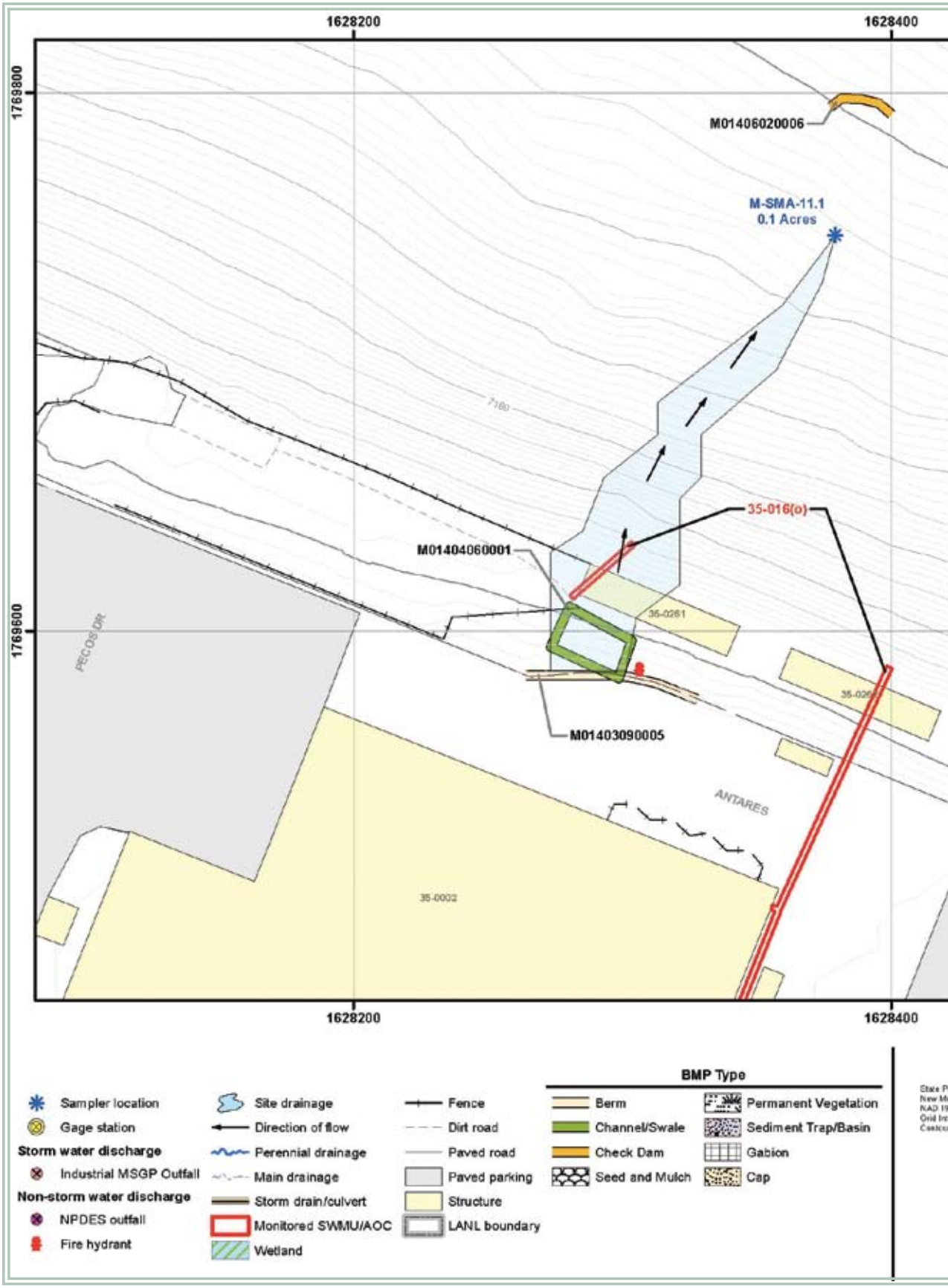
Rip Rap (M014-04-06-0001)

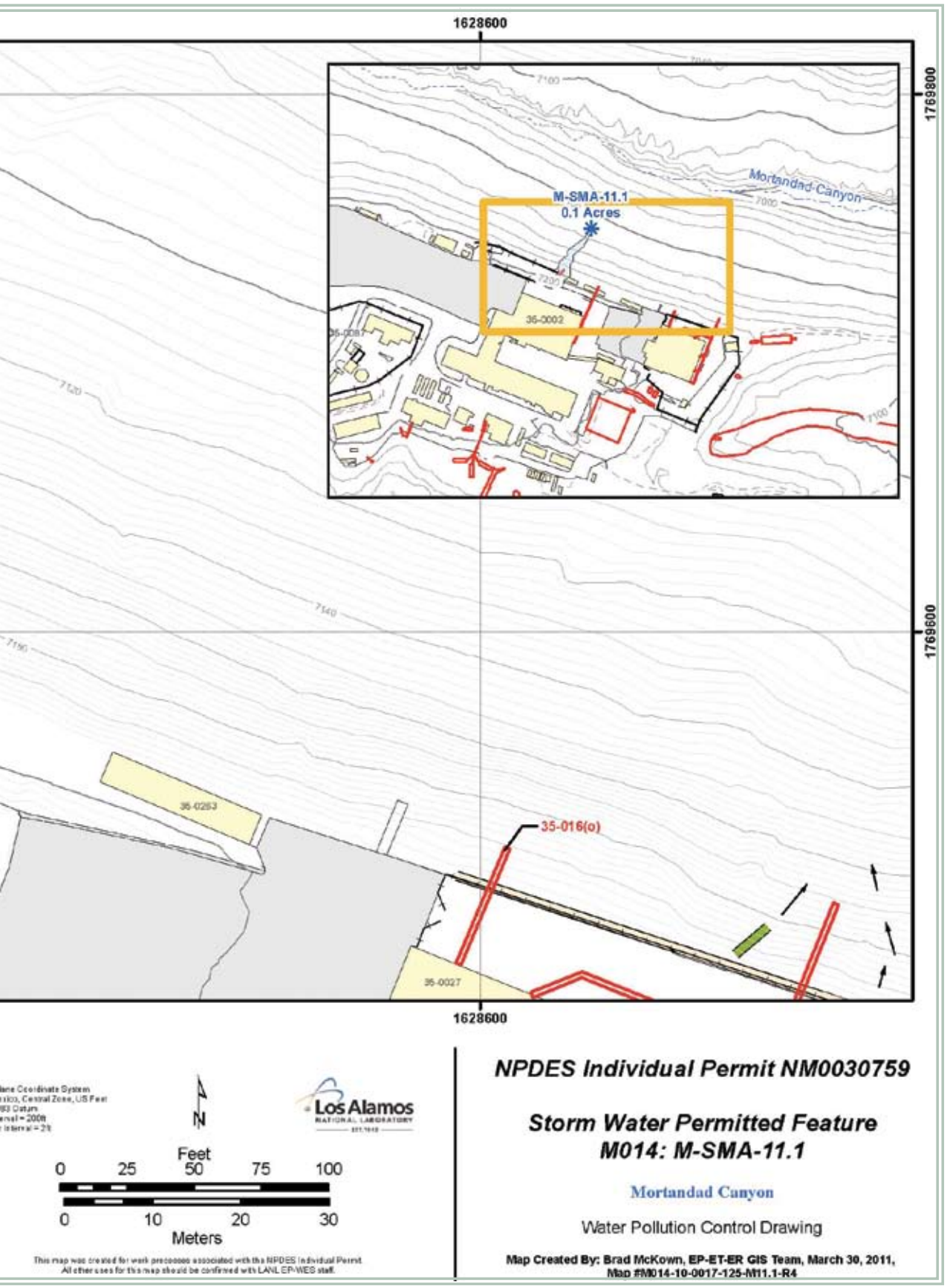
The rip rap is located at the top of the slope above the modular building at the southern end of the SMA. It is in place to control run-on from the paved areas above. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Log Check Dam (M014-06-02-0006)

This check dam is installed south of the access road and north of the sampler. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.27.4 Project Map




1628600
1769800
1769600
1628600
M-SMA-11.1
0.1 Acres
Mortandad Canyon
7100
7000
7200
7120
7140
7160
36-0002
36-0253
35-016(o)
36-0027
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M014: M-SMA-11.1
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 30, 2011,
Map #M014-10-0017-125-M11.1-R4

1000.27.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.27.6 Corrective Action Status

The Site associated with M-SMA-11.1 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.28 M-SMA-12

1000.28.1 Area Description

1000.28.2 Potential Pollutant Sources

1000.28.2.1 Historical Industrial Activity Areas

1000.28.4 Project Map

1000.28.5 Storm Water Monitoring Plan and Schedule

1000.28.6 Corrective Action Status



1000.28 M-SMA-12

1000.28.1 Area Description

M-SMA-12 is located within TA-35 and access is controlled. The northern boundary is on a canyon bench of Mortandad Canyon. The main channel of the canyon is approximately 300 feet further north. The southern boundary is the developed administrative area of TA-35. Storm water flows from the developed area, northeast to the receiving waters.

1000.28.2 Potential Pollutant Sources

1000.28.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M015, M-SMA-12, Site 35-016(p).

SWMU 35-016(p) is an active storm water discharge system that has handled storm water run-off from the roof of the TA-35 Nuclear Safeguards Research Building, Building 35-27, since the building was constructed in 1964. The north and east sides of Building 35-27 are equipped with six inch diameter roof leaders along which direct roof run-off flows into CMP storm drains. The storm drains connect to a storm drain manhole, which is located approximately 25 feet northeast of the northeast corner of Building 35-27. An 18-inch diameter CMP storm drain originates at this manhole and extends northward toward the edge of Ten Site Mesa. The outfall is located 40 feet below the mesa edge on the south slope of Mortandad Canyon, approximately 60 feet north of the security fence, which extends around Building 35-27.

1000.28.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(p)	Outfall from Building 35-27	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.28.3 Control Measures

The curb on the northern edge of the parking area is controlling run-on at this Permitted Feature. The log check dams above the sampler are controlling run-off.

Subsections to 1000.28.3 list all control measures used to control pollutant sources identified in Section 1000.28.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.28.4.

1000.28.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M015 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M015 02 02 0003	Established Vegetation - Forested/Needle Cast			•	
M015 03 09 0004	Berms - Curbing	•			•
M015 04 05 0005	Channel/Swale - Water Bar	•			•
M015 06 02 0001	Check Dam - Log		•		•
M015 06 02 0006	Check Dam - Log		•		•
M015 06 02 0007	Check Dam - Log		•		•

Established Vegetation (M015-02-01-0002, -02-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Curbing (M015-03-09-0004)

The curbing is located on the northern edge of the paved area and is diverting run-on away from the SMA to the east. Curbing is an engineered device used to direct, convey, or divert storm water flow and prevent erosion.

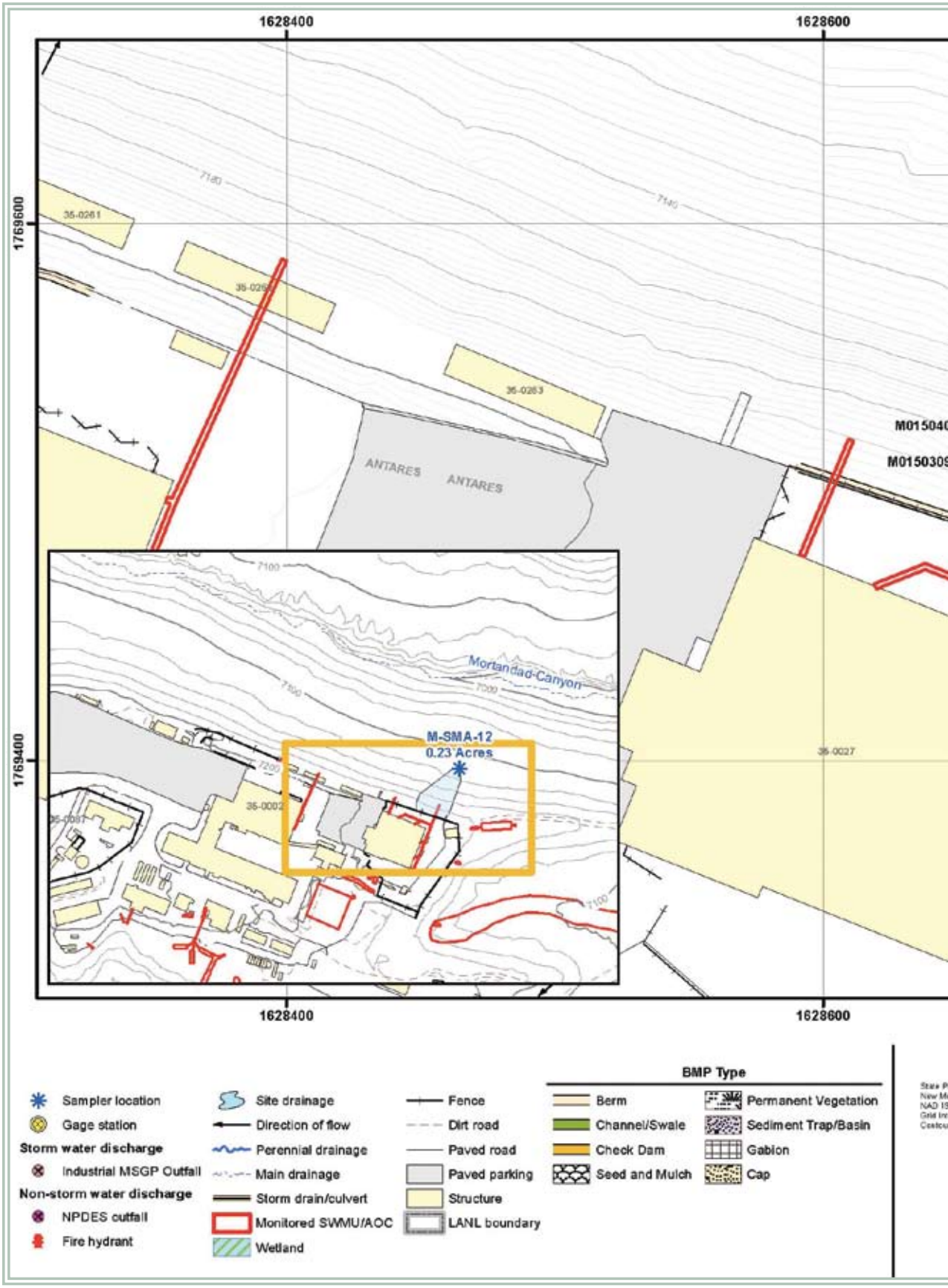
Water Bar (M015-04-05-0005)

This water bar is located in the southern portion of the SMA just north of the curbing. It is in place to help divert run-on from the hiking trail. A diversion dam constructed across a road or trail to remove and disperse surface run-off in a manner that adequately protects the soil resource and limits sediment transportation.

Log Check Dams (M015-06-02-0001, -0006, -0007)

This is a series of three log check dams located immediately southwest of the sampler. They are helping to control run-off and sediment migration from the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.28.4 Project Map



1628800
1769600
1769400
M-SMA-12
0.23 Acres
M01506020007
M01506020006
M01506020001
35-016(p)
35-0033
7120
7160
7180
7140
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M015: M-SMA-12
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 30, 2011,
Map #M015-10-0017-102-M12-R6

1000.28.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.28.6 Corrective Action Status

The Site associated with M-SMA-12 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.29 M-SMA-12.5

1000.29.1 Area Description

1000.29.2 Potential Pollutant Sources

1000.29.2.1 Historical Industrial Activity Areas

1000.29.3 Control Measures

1000.29.4 Project Map

1000.29.5 Storm Water Monitoring Plan and Schedule

1000.29.6 Corrective Action Status



1000.29 M-SMA-12.5

1000.29.1 Area Description

M-SMA-12.5 is located in an undeveloped area that was formerly TA-05. The northern boundary of the SMA contains an unpaved access road. The southern boundary is on the south facing slope of the headwaters of Cedro Canyon, a tributary to Mortandad Canyon. Storm water flows from an undeveloped area in the north, south towards the receiving waters.

1000.29.2 Potential Pollutant Sources

1000.29.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M016, M-SMA-12.5, Sites 05-005(b) and 05-006(c).

SWMU 05-005(b) is an area of potentially contaminated soil associated with a former outfall located at the edge of Mortandad Canyon. The outfall, which is associated with building 05-0005, was identified during a 1987 ER Project site reconnaissance. The outfall was located on the edge of the canyon, approximately 80 ft south of building 05-0005. This building, which is associated with SWMU 05-006(c), was used as a shop, a calibration facility, and a photographic darkroom. The building was used as a darkroom from 1944 to1947 to process photographs of experiments conducted at the TA-05 firing sites. In 1952, building 05-0005 was used to calibrate high-range radiation meters. The building was operational from about 1944 to 1959, and was destroyed by burning in May 1960. The outfall is believed to have also operated from 1944 to 1959.

The site currently contains no evidence of the outfall. A capped pipe is present at the ground surface at the former location of building 05-0005. This pipe may have been the drainline from the building. A drainage channel that collects most of the run-off from the site is present at the edge of the mesa. No evidence of significant erosion or run-off from the site was found, and storm water BMPs, including straw wattles, are in place above and downslope of the site.

SWMU 05-006(c) is an area of potentially contaminated soil associated with the location of a former shop and darkroom, building 05-0005. The shop was 16 ft × 16 ft and the darkroom was 9 ft × 6 ft. The building was operational from about 1944 to 1959. The structure was originally used to support firing site activities, including processing photographs of experiments conducted at the firing sites. In 1952, J Division temporarily used the building to calibrate high-range meters. A 1959 memorandum indicates this structure was contaminated with HE. This site is one of several areas of potential soil contamination at TA-05 identified during surveys conducted in 1958, 1959, and 1985. Potential soil contamination at these sites was reported to include HE and uranium. A 1959 list generated by the Laboratory's H-3 Group listed building 05-0005 as an HE-contaminated structure. Building 05-0005 was destroyed by burning on March 5, 1960.

Cleanup of the site of the former building was included in the 1985 LASCP. Surface debris, including wood, copper wire, scrap metal, and other building debris, was removed. No radioactive contamination was detected. A mound of burned debris, including charred wood and melted glass, was noted to be present at the site during an inspection in September 1994.

Currently, a small amount of burned debris (charred wood, melted glass, and metal) is still present at the former location of building 05-0005. Also present is a capped pipe at the ground surface. The site slopes to the south toward the edge of the

mesa. No evidence of significant erosion or run-off from the site was found, and storm water BMPs, including straw wattles, are in place above and downslope of the site.

1000.29.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-005(b)	Outfall associated with former Building 5-05	Co-located, Overlapping	Shared	•	•	•	HE SVC
05-006(c)	Soil Contamination from former Building 5-05	Co-located, Overlapping	Shared	•	•	•	HE SVC

Substantially Identical Determination

Sites grouped within this SMA are associated with early test firing experiments conducted at TA-05. The technical area was operational from 1944 to 1959. Because of their proximity to one another, shared common drainage, and similar contaminants, these Sites will discharge substantially identical effluent.

1000.29.3 Control Measures

Run-on contributions to this Permitted Feature originate from the unpaved access road on the northern boundary of the SMA. Controls have been installed to mitigate this run-on source.

Subsections to 1000.29.3 list all control measures used to control pollutant sources identified in Section 1000.29.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.29.4.

1000.29.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M016 01 01 0006	Seed and Mulch - Seed and Wood Mulch	•		•	
M016 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M016 03 06 0002	Berms - Straw Wattles	•			•
M016 03 06 0003	Berms - Straw Wattles		•		•
M016 03 06 0004	Berms - Straw Wattles		•		•
M016 03 06 0005	Berms - Straw Wattles		•		•
M016 06 01 0007	Check Dam - Rock		•		•
M016 06 01 0008	Check Dam - Rock		•		•

Seed and Mulch (M016-01-01-0006)

Bare areas within the SMA have been seeded and mulched to re-vegetate and reduce the velocity of run-on from these areas. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (M016-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles - Mesa Top (M016-03-06-0002)

Wattles have been placed on the mesa top to divert run on from the unpaved access

road. Wattles are employed along the northern edge of the SMA to mitigate run-on velocity and to promote sediment retention within the SMA. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

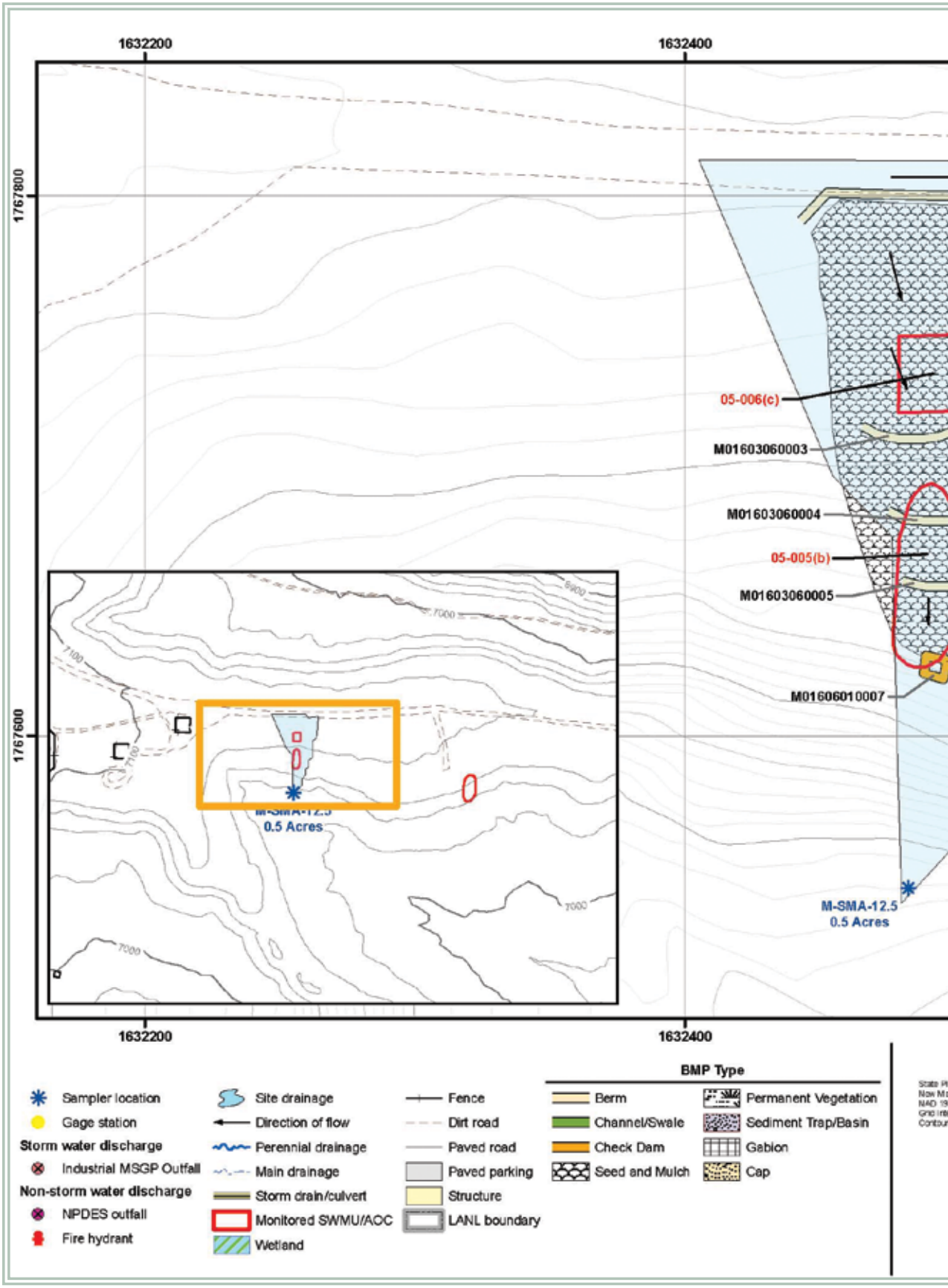
Straw Wattles - Channel (M016-03-06-0003, -0004, -0005)

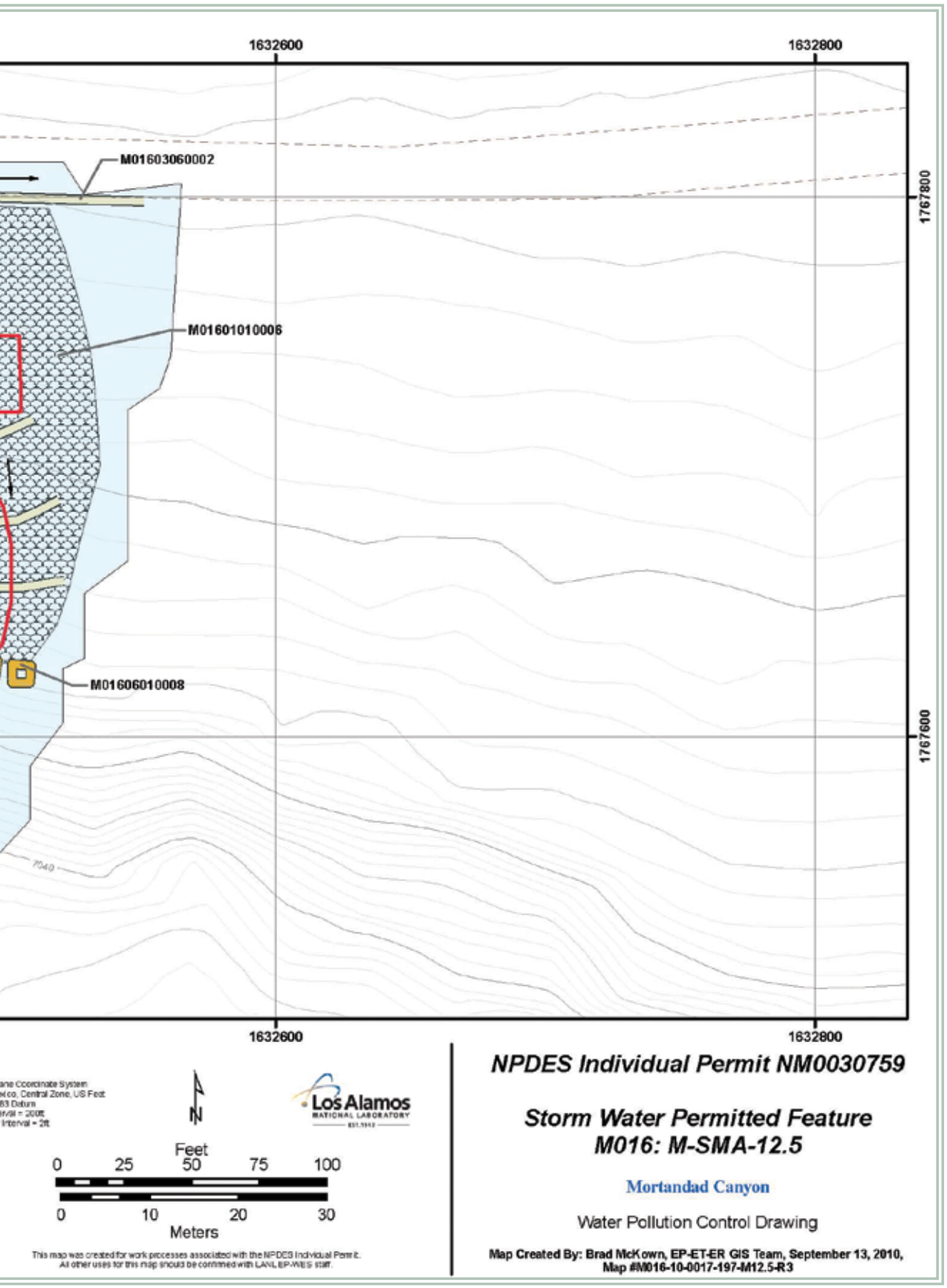
A series of three wattles have been installed on the mesa top within a sheet flow path to control run-off from within the SMA. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rock Check Dam (M016-06-01-0007, -0008)

Two rock check dams are located in small rills on the mesa edge, near the lip of the canyon above the sampler. They serve to reduce sediment in run-off discharged from the area to the north. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.29.4 Project Map




1632600
1632800
M01603060002
M01601010006
M01606010008
1767800
1767600
1632600
1632800
7040
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M016: M-SMA-12.5
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 13, 2010,
Map #M016-10-0017-197-M12.5-R3

1000.29.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.29.6 Corrective Action Status

The Sites associated with M-SMA-12.5 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.30 M-SMA-12.6

1000.30.1 Area Description

1000.30.2 Potential Pollutant Sources

1000.30.2.1 Historical Industrial Activity Areas

1000.30.3 Control Measures

1000.30.4 Project Map

1000.30.5 Storm Water Monitoring Plan and Schedule

1000.30.6 Corrective Action Status



1000.30 M-SMA-12.6

1000.30.1 Area Description

M-SMA-12.6 is located in former TA-05. The area is currently undeveloped, vegetated, and gently slopes towards the receiving waters further southeast. The southern boundary is the wide canyon floor of upper Cañada del Buey and is crossed by an unpaved access road.

1000.30.2 Potential Pollutant Sources

1000.30.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M017, M-SMA-12.6, Site 05-004.

SWMU 05-004 is a former septic tank (structure 05-0013), associated drainlines, and outfall that were located at the west end of TA-05 near the edge of Mortandad Canyon. From 1948 to 1949, the tank received industrial waste from a laboratory (building 05-0001). The tank was constructed in May 1948 and abandoned in place in December 1959. It was constructed of reinforced concrete and was 5 ft × 5 ft × 7 ft deep. As-built drawings show the presence of an inlet line running from building 05-0001 to the septic tank and an outlet line discharging south into an unnamed tributary of Mortandad Canyon. Historical information shows the tank was free of radiation and HE contamination but notes it contained unspecified toxic chemicals. A 1952 memorandum states septic tank 05-0013 was no longer needed to support use of building 05-0001, and the structure was being returned to Engineering Division for disposition. A 1959 memorandum states the tank had been monitored for radioactivity and no radioactivity above background was found. A site inspection conducted in January 1974 identified the septic tank as an open concrete pit, at least 3-ft deep, and having a 3-ft × 3-ft opening with a rotted wooden cover. The wooden cover was replaced with a metal grating cover. Notes from a radiation survey conducted at TA-05 during May 1976 describe structure 05-0013 as "an acid septic tank filled with liquid."

The types of materials used in building 05-0001 are not known. Building 05-0001 was inspected in 1959 and found to be free of contamination by toxic materials. A radiation survey of building 05-0001 in 1973 detected no radioactive contamination. During LASCP activities conducted in 1985, building 05-0001 was determined to be free of radioactive and HE contamination and was removed. The 1985 LASCP investigation confirmed removal of the tank and piping, and no evidence of radioactively contaminated soil was detected at that time. A 1988 survey detected gamma activity slightly above background. Notes taken during this survey described evidence of an outfall near the former location of structure 05-0013. A site inspection conducted in December 1994 noted the location of an approximately 2-ft-wide × 1-ft-deep outfall trench cut into the tuff. The trench, which was filled with plant debris, flowed to the south onto a natural bedrock rill/gully to the canyon. This trench presumably contained the discharge drainline that was removed.

The site currently contains no evidence of the tank or drainline. The outfall trench previously noted at the site was located at the edge of the mesa. No evidence of significant erosion or run-off from the site was found, and storm water best management practices (BMPs), including straw wattles, are in place above and downslope of the site.

1000.30.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-004	Septic Tank	Discrete Location, No overlap	Individual	•	•	•	HE SVC

1000.30.3 Control Measures

Run-on to the Permitted Feature originates on the dirt access road along the northern boundary of the SMA. Run-on from the main access road flows south on a secondary dirt road possibly causing erosion in the northern portion of the SMA. Berms have been installed to mitigate this run-on contribution.

Subsections to 1000.30.3 list all control measures used to control pollutant sources identified in Section 1000.30.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.30.4.

1000.30.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M017 01 01 0004	Seed and Mulch - Seed and Wood Mulch	•		•	
M017 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
M017 03 02 0005	Berms - Base Course	•			•
M017 03 02 0006	Berms - Base Course	•			•
M017 03 02 0007	Berms - Base Course	•			•
M017 03 06 0009	Berms - Straw Wattles		•		•
M017 06 01 0008	Check Dam - Rock		•		•

Seed and Mulch (M017-01-01-0004)

Seed and mulch has been applied across the width of the SMA near the edge of the mesa top. It is used to help prevent erosion from area run-on in this area.

Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (M017-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Northern Berm (M017-03-02-0005)

This berm is installed at the northern end of the SMA along the southern edge of the unpaved access road. The purpose of the berm is to help control storm water run-on from the road above the site. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Base Course Berm - West M017-03-02-0006)

This berm is located across the unpaved access road that traverses the SMA from north to south. It is used to help control storm water run-on. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Base Course Berm - Central (M017-03-02-0007)

This berm is located near the canyon edge on the western edge of the SMA. It is used to mitigate run-on from the slope above. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

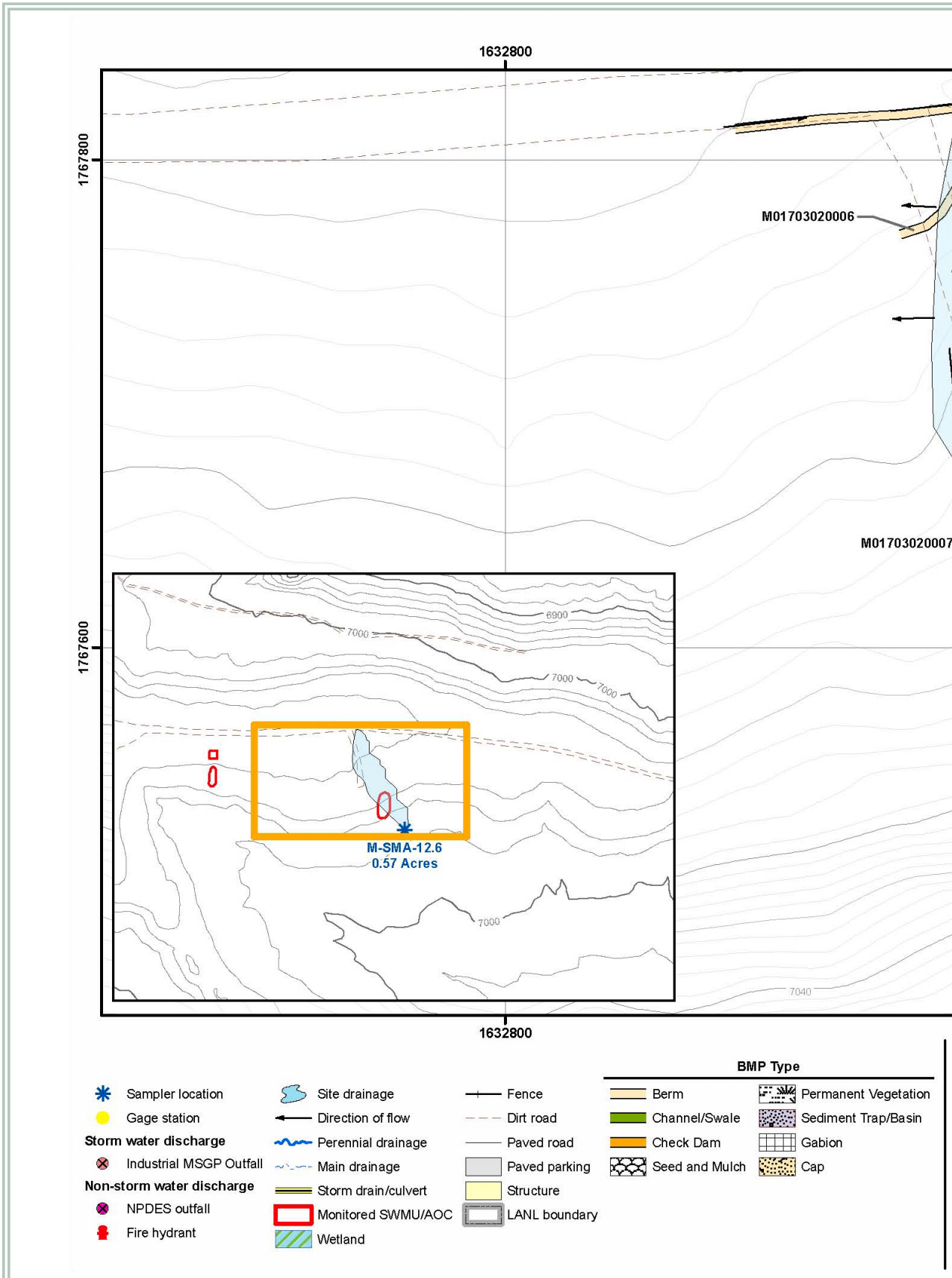
Southern Wattles (M017-03-06-0009)

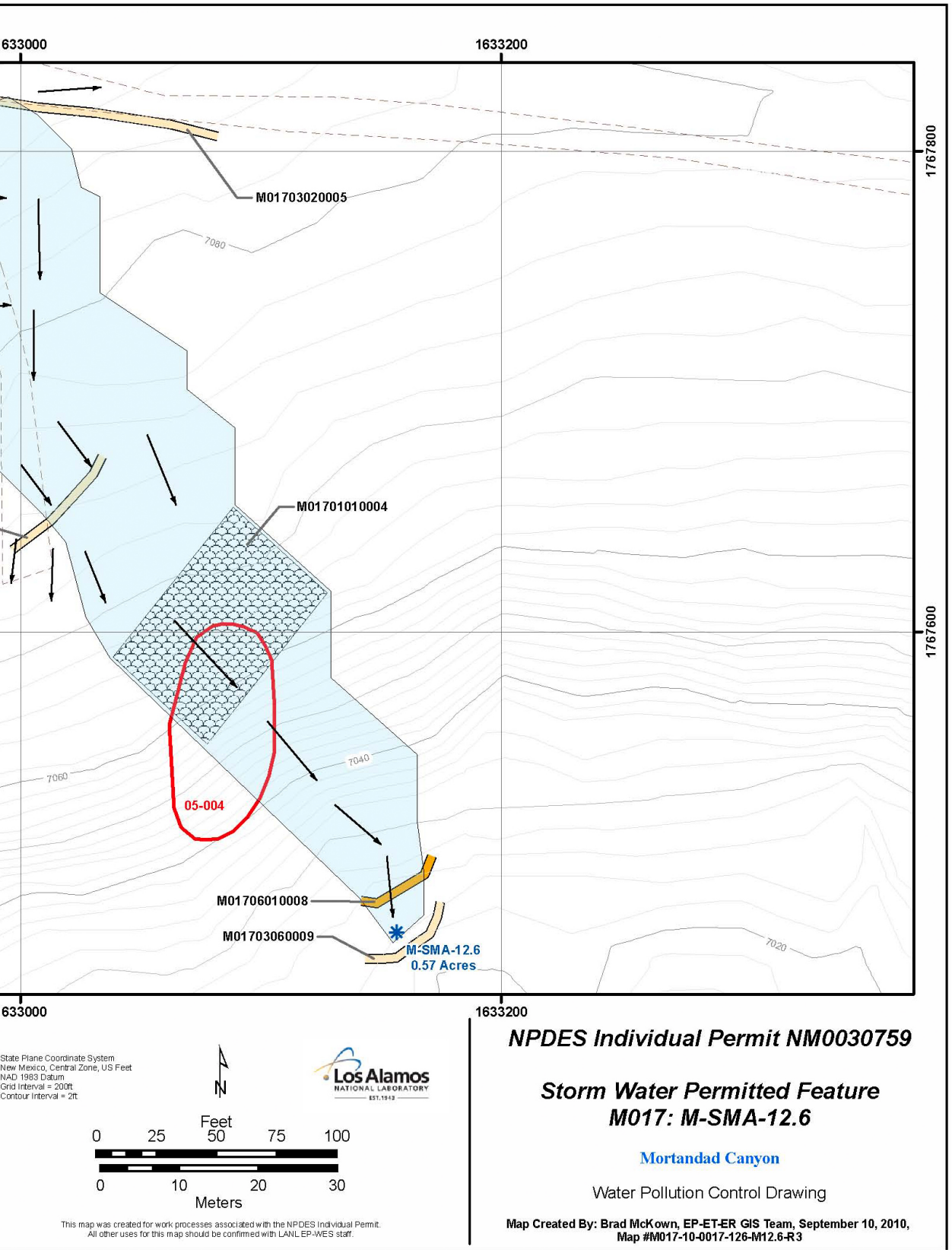
Installed south of the sampler. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

South Check Dam (M017-06-01-0008)

Installed north of the sampler at the southern end of the drainage. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.30.4 Project Map




1633000
1633200
1767800
1767600
M01703020005
M01701010004
M01706010008
M01703060009
M-SMA-12.6
0.57 Acres
05-004
7080
7060
7040
7020
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid Interval = 200ft
Contour Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
EST.1943
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M017: M-SMA-12.6
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 10, 2010,
Map #M017-10-0017-126-M12.6-R3

1000.30.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.30.6 Corrective Action Status

The Site associated with M-SMA-12.6 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.31 M-SMA-12.7

1000.31.1 Area Description

1000.31.2 Potential Pollutant Sources

1000.31.2.1 Historical Industrial Activity Areas

1000.31.3 Control Measures

1000.31.3.1 Control Measures for Historical Industrial Activity Areas

1000.31.4 Project Map

1000.31.5 Storm Water Monitoring Plan and Schedule

1000.31.6 Corrective Action Status



1000.31 M-SMA-12.7

1000.31.1 Area Description

M-SMA-12.7 is located in an undeveloped area that was formerly TA-05. The northern boundary is on a wide canyon bench. The main drainage channel of Mortandad Canyon is below this bench. All other surrounding boundaries of this SMA are undeveloped. Storm water flows from the southern area down a gentle slope towards the receiving waters further north.

1000.31.2 Potential Pollutant Sources

1000.31.2.1 Historical Industrial Activity Areas

There are four historical industrial activity areas associated with PF M018, M-SMA-12.7, Sites 05-002, 05-005(a), 05-006(b) and 05-006(e).

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for three years. A 1976 radiation study indicated contamination at this site. During 1985 LASCP activities, visible-surface shot debris was removed. Waste that may have been disposed of at this site includes shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel.

SWMU 05-005(a) was a French drain that ran north from the TA-05 firing site control building (Building 05-04) toward Mortandad Canyon. The drain was constructed in 1945 and became inactive when the control building stopped being used in 1959. The types of wastes introduced from the control building to the French drain are unknown. The French drain was removed in 1985.

Following the 2000 Cerro Grande fire, erosion control measures (straw wattles) were installed on the mesa for run-on diversion, within the north-facing drainage channels and on the lower bench for sediment retention at SWMU 05-005(a).

SWMU 05-006(b) is an area of potentially contaminated soil at the location of former TA-05 control building (Building 05-04). Contamination in the control building area is believed to have entered the environment through a French drain [SWMU 05-005(a)].

Following the 2000 Cerro Grande fire, straw wattles were installed within the south-facing drainage basin for sediment retention at SWMU 05-006(b).

SWMU 05-006(e) is an area of potentially contaminated soil at TA-05 associated with a former platform (structure 05-19) that was adjacent to Building 05-04. The platform was a 6 x 6 ft wood structure that was mounted 26 feet above the ground on two 45 feet tall wood poles. It was built about 1953 and left in place in 1959. The entire area was razed when Building 05-04 was removed in 1985, spreading potential contaminants from the control building, French drain, and platform so that they are not discernable among the SWMUs in the consolidated unit 05-005(a)-00, of which 05-006(e) is a part.

1000.31.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-002	Canyon side disposal site	Co-located, Overlapping	Shared	•	•	•	HE SVC
05-005(a)	Soil Contamination from former French Drain	Co-located, Overlapping	Shared	•	•	•	HE SVC
05-006(b)	Soil Contamination from former Building 5-04	Co-located, Overlapping	Shared	•	•	•	HE SVC
05-006(e)	Soil Contamination from former Building 5-19	Co-located, Overlapping	Shared	•	•	•	HE SVC

Substantially Identical Determination

Sites grouped within this SMA were associated with the operation of "Beta Site" an adjunct test firing site to the neighboring TA-04. The area was decontaminated and demolished in 1985. Because of the similarities of contaminants, a shared common drainage, and extensive remediation in the area, these Sites will discharge substantially identical effluent.

1000.31.3 Control Measures

Run-on enters this Permitted Feature from the unpaved access road on the southern boundary. Some of the run-on is diverted to the west away from the area by a natural flow path. A berm is installed just north of this road to control run-on that is not diverted to the drainage channel west of the SMA.

Subsections to 1000.31.3 list all control measures used to control pollutant sources identified in Section 1000.31.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.31.4.

1000.31.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M018 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M018 03 01 0008	Berms - Earthen	•			•
M018 03 06 0006	Berms - Straw Wattles	•			•
M018 03 06 0007	Berms - Straw Wattles	•			•
M018 06 02 0009	Check Dam - Log		•		•

Established Vegetation (M018-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berms (M018-03-01-0008)

This berm is located south of the SMA and the associated Sites. It functions as a diversion berm to mitigate road run-on. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

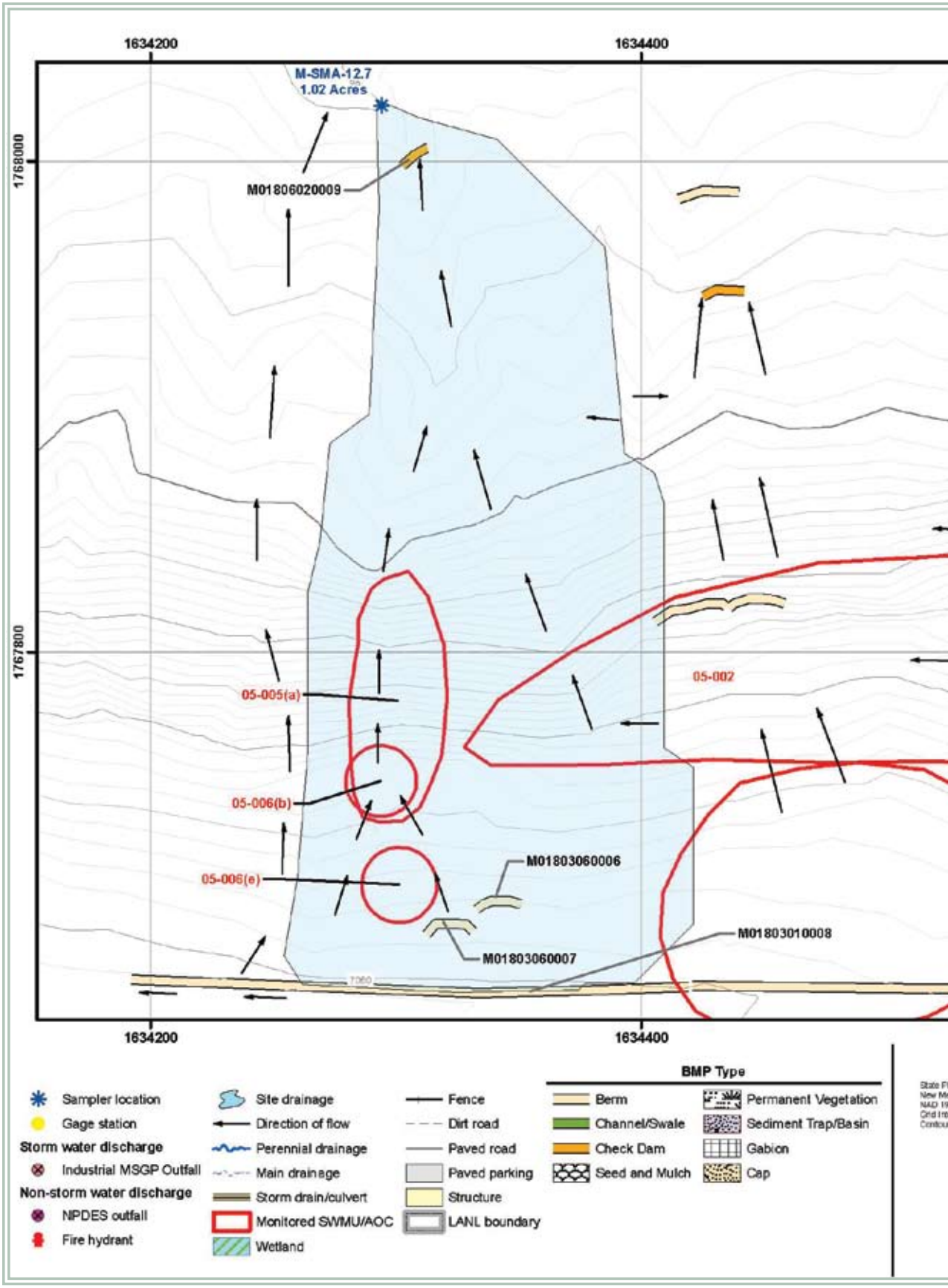
Straw Wattles - South (M018-03-06-0006, -0007)

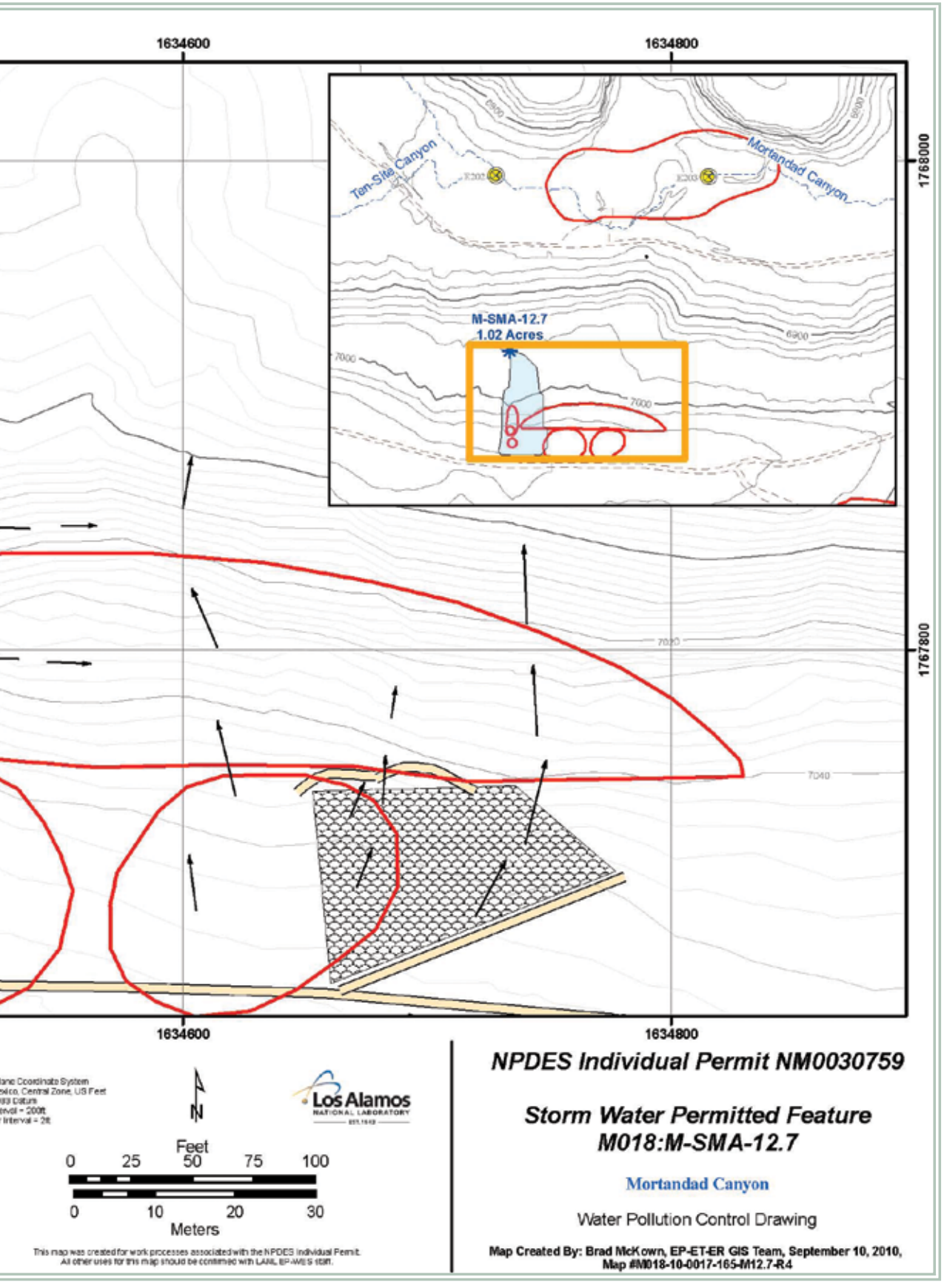
Two wattles have been installed to the north of the unpaved access road in the central section of the SMA to mitigate potential sheet flow run-on contributions from the road. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Log Check Dam (M018-06-02-0009)

This dam is directly south of the sampler to control run-off and sediment. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.31.4 Project Map




1634600
1634800
1768000
1767800
Ten-Site Canyon
Mortandad Canyon
M-SMA-12.7
1.02 Acres
7000
6900
7040
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M018:M-SMA-12.7
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 10, 2010,
Map #M018-10-0017-165-M12.7-R4

1000.31.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.31.6 Corrective Action Status

The Sites associated with M-SMA-12.7 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.32 M-SMA-12.8

1000.32.1 Area Description

1000.32.2 Potential Pollutant Sources

1000.32.2.1 Historical Industrial Activity Areas

1000.32.3 Control Measures

1000.32.4 Project Map

1000.32.5 Storm Water Monitoring Plan and Schedule

1000.32.6 Corrective Action Status



1000.32 M-SMA-12.8

1000.32.1 Area Description

M-SMA-12.8 is located in an undeveloped area that was formerly TA-05. The northern boundary is on a wide canyon bench. The main drainage channel of Mortandad Canyon is below this bench. All other surrounding boundaries of this SMA are undeveloped. Storm water flows from the southern area down a gentle slope towards the receiving waters further north.

1000.32.2 Potential Pollutant Sources

1000.32.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M019, M-SMA-12.8, Sites 05-001(a) and 05-002.

SWMU 05-001(a) is a former steel barricade firing pit, designated No. 1 (structure 05-07), which is associated with the historical Beta Site at TA-05. The firing pit was used for implosion tests from 1944 to 1959. The pit was constructed in 1944 and was taken out of service in 1959. Experimental shots were set up at the site and fired on open ground. The shots used HE as an energy source. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 feet around the firing pits. During 1985 D&D activities, steel plates around the pit, a control box, and a wood platform were removed.

Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Within one year after the fire, the site was observed to be in good condition, with a vegetative cover of approximately 70%. The area was stable, with minimal evidence of sediment migration.

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for three years. A 1976 radiation study indicated contamination at this site. During 1985 LASCP activities, visible-surface shot debris was removed. Waste that may have been disposed of at this site includes shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel.

1000.32.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-001(a)	Firing site	Co-located, Overlapping	Shared	•	•	•	HE SVC
05-002	Canyon side disposal site	Co-located, Overlapping	Shared	•	•	•	HE SVC

Substantially Identical Determination

Sites grouped within this SMA were associated with the operation of "Beta Site" an adjunct test firing site to the neighboring TA-04. The area was decontaminated and demolished in 1985. Because of the similarities of contaminants, a shared common drainage, and extensive remediation in the area, these Sites will discharge substantially identical effluent.

1000.32.3 Control Measures

Grading and maintenance on the unpaved road in the southern headwaters of this SMA have resulted in the formation of a berm along the road. Run-on to the area from the access road is effectively controlled by this berm.

Subsections to 1000.32.3 list all control measures used to control pollutant sources identified in Section 1000.32.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.32.4.

1000.32.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M019 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M019 03 01 0003	Berms - Earthen	•			•
M019 03 06 0004	Berms - Straw Wattles		•		•
M019 03 06 0007	Berms - Straw Wattles		•		•
M019 06 02 0006	Check Dam - Log		•		•

Established Vegetation (M019-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (M019-03-01-0003)

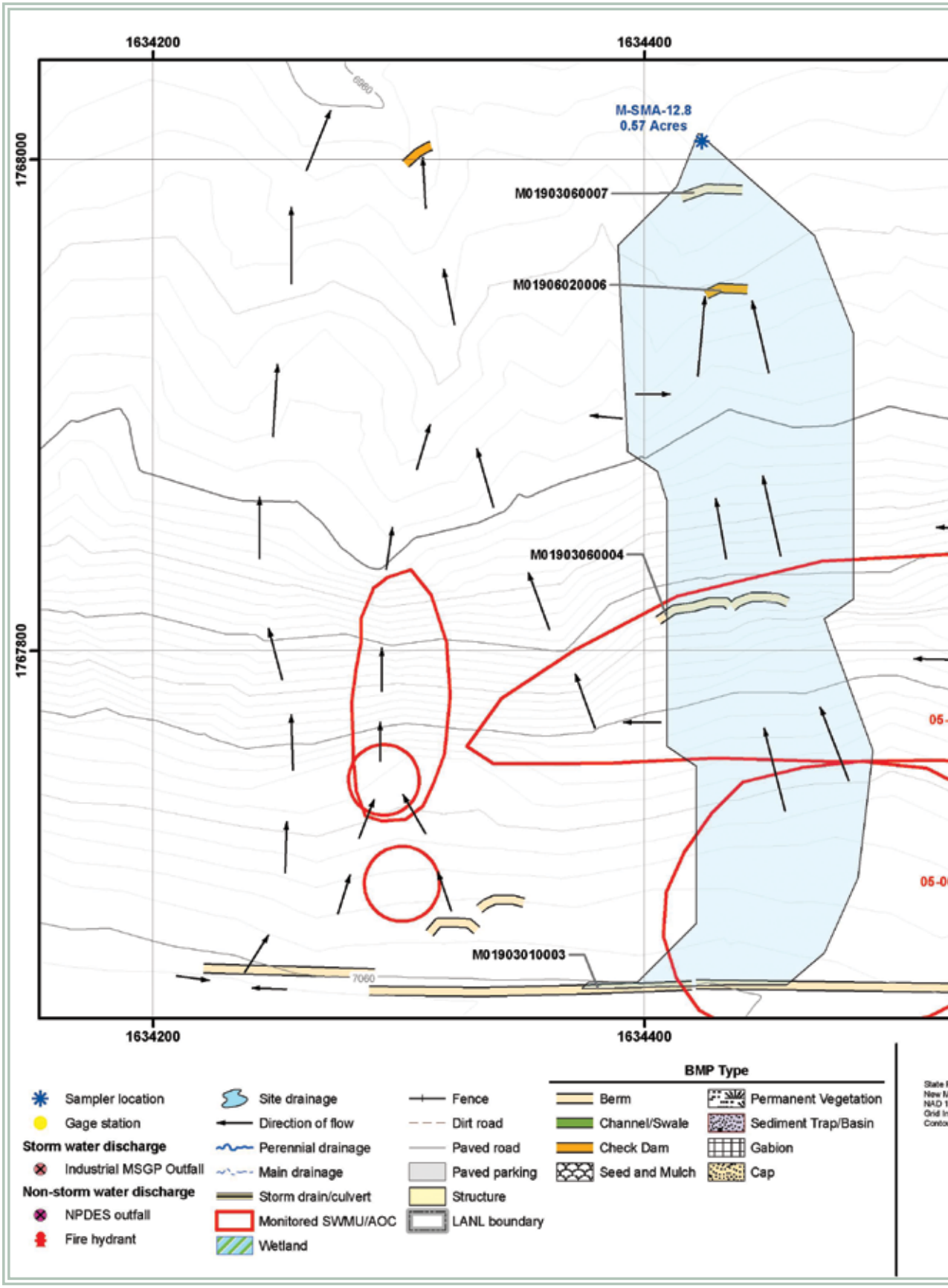
This earthen berm is located adjacent to the access road and serves as a run-on control. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

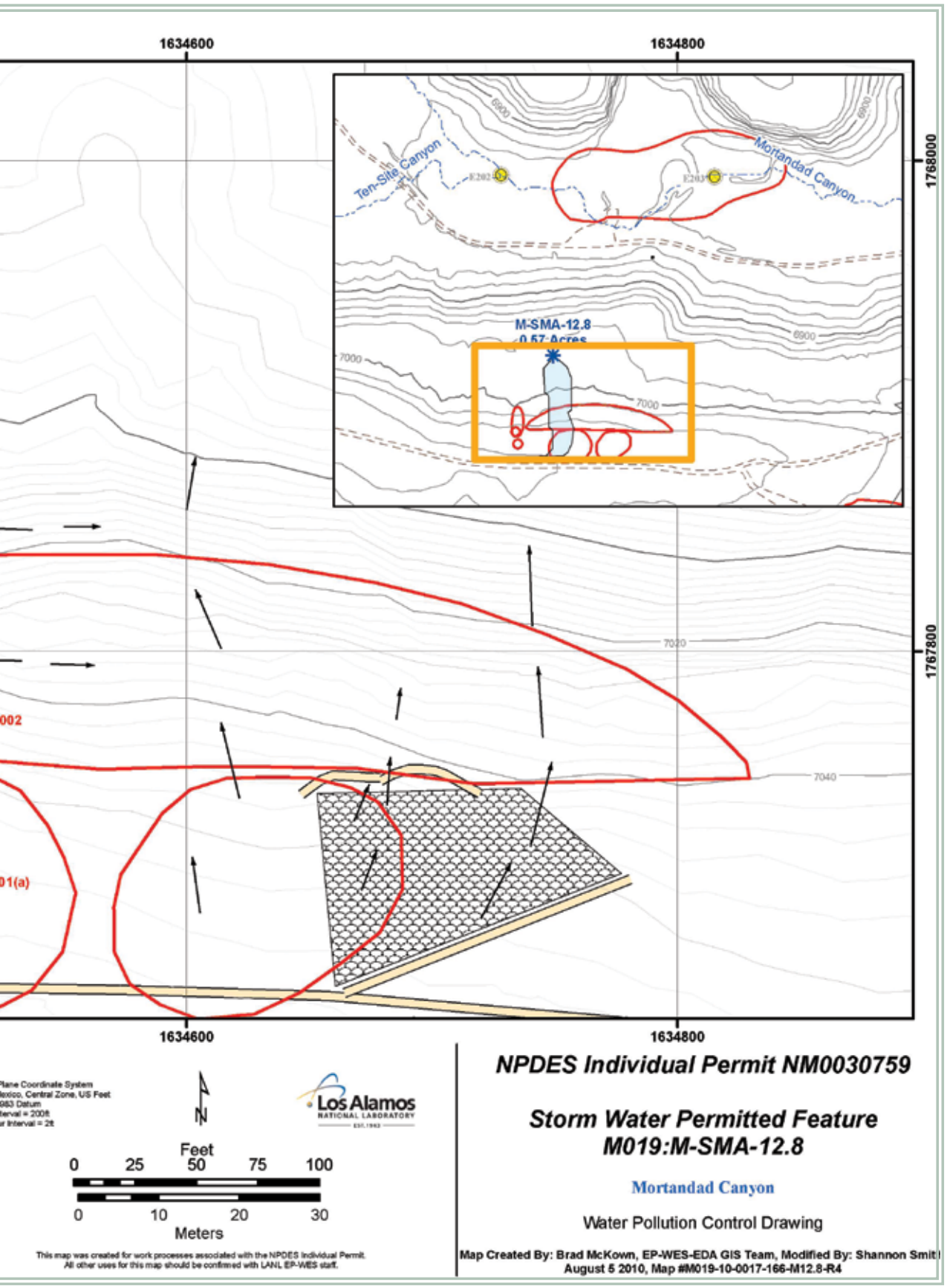
Straw Wattles
(M019-03-06-0004)
Wattles have been placed in the center of the SMA between the sampler and the access road. They were installed to reduce the velocity of storm water run-off as it moves across the area and to control sediment migration from the south. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Straw Wattles - South
(M019-03-06-0007)
This wattle is installed directly south of the sampler to control run-off and sediment from further south. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Log Check Dam
(M019-06-02-0006)
This check dam is installed in the northern portion of the site drainage to control run-off and sediment from the south. It is south of the sampler. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.32.4 Project Map




1634600
1634800
1768000
1767800
Ten-Site Canyon
Mortandad Canyon
M-SMA-12.8
0.57 Acres
6900
7000
7020
7040
002
01(a)
Plane Coordinate System
lexico, Central Zone, US Feet
983 Datum
terval = 200ft
r Interval = 2ft
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M019:M-SMA-12.8
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-WES-EDA GIS Team, Modified By: Shannon Smit
August 5 2010, Map #M019-10-0017-166-M12.8-R4

1000.32.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.32.6 Corrective Action Status

The Sites associated with M-SMA-12.8 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.33 M-SMA-12.9

1000.33.1 Area Description

1000.33.2 Potential Pollutant Sources

1000.33.2.1 Historical Industrial Activity Areas

1000.33.3 Control Measures

1000.33.4 Project Map

1000.33.5 Storm Water Monitoring Plan and Schedule

1000.33.6 Corrective Action Statu



1000.33 M-SMA-12.9

1000.33.1 Area Description

M-SMA-12.9 is located in an undeveloped area that was formerly TA-05. The northern boundary is on a wide canyon bench. The main drainage channel of Mortandad Canyon is below this bench. All other surrounding boundaries of this SMA are undeveloped. Storm water flows from the southern area down a gentle slope towards the receiving waters further north.

1000.33.2 Potential Pollutant Sources

1000.33.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF M020, M-SMA-12.9, Sites 05-001(b) and 05-002.

SWMU 05-001(b) is a former steel barricade firing pit, designated No. 2 (structure 05-15) which is associated with the historical Beta Site at TA-05. The pit was constructed in 1944 and was taken out of service in 1959. Experimental shots were set up at the site and fired on open ground. The shots used HE as an energy source. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 feet around the firing pits. During 1985 D&D activities, the firing pit was removed. During its removal, uranium contamination was found in the soil to a depth of 15 feet. The area was decontaminated and backfilled with clean soil.

Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on, at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Within one year after the fire, the site was in good condition, with a vegetative cover of approximately 70%. The area was stable, with minimal evidence of sediment migration.

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for three years. A 1976 radiation study indicated contamination at this site. During 1985 LASCP activities, visible-surface shot debris was removed. Waste that may have been disposed of at this site includes shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel.

1000.33.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-001(b)	Firing site	Co-located, Overlapping	Shared	•	•	•	HE
05-002	Canyon side disposal site	Co-located, Overlapping	Shared	•	•	•	HE

Substantially Identical Determination

Sites grouped within this SMA were associated with the operation of "Beta Site" an adjunct test firing site to the neighboring TA-04. The area was decontaminated and demolished in 1985. Because of the similarities of contaminants, a shared common drainage, and extensive remediation in the area, these Sites will discharge substantially identical effluent.

1000.33.3 Control Measures

Run-on has the potential to contribute storm water to this SMA from the unpaved access road and the pullout on the northern boundary of the SMA. Run-on is diverted away from the SMA via a natural channel that runs to the north along the eastern side of the SMA.

Subsections to 1000.33.3 list all control measures used to control pollutant sources identified in Section 1000.33.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.33.4.

1000.33.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M020 01 01 0006	Seed and Mulch - Seed and Wood Mulch	•		•	
M020 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M020 03 01 0005	Berms - Earthen	•			•
M020 03 06 0003	Berms - Straw Wattles		•		•
M020 03 06 0004	Berms - Straw Wattles	•			•
M020 03 06 0007	Berms - Straw Wattles		•		•

Seed and Mulch (M020-01-01-0006)

Seeding and mulch have been applied to the pullout area to stabilize this potential run-on source. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and

100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (M020-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (M020-03-01-0005)

An earthen berm is installed north of Site 05-001(b), to mitigate run-on contributions from the road. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattles - North (M020-03-06-0003)

Wattles have been installed across the width of the SMA north of seeded and mulched area. The wattles are in place to reduce the potential impacts from run-off from above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

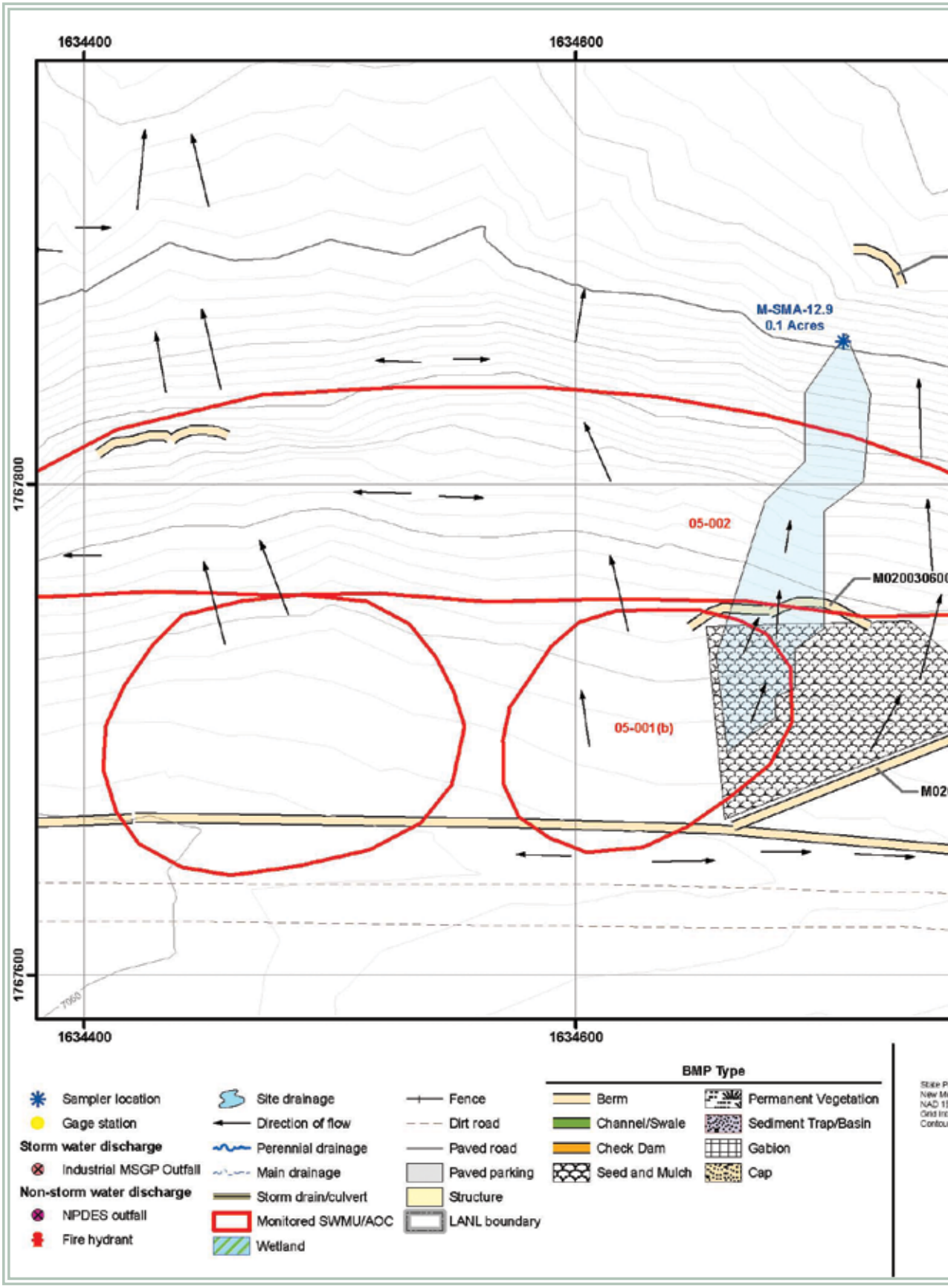
Straw Wattles - South (M020-03-06-0004)

Two wattles have been installed to reduce the potential impacts from road run-on in this area. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Northern Straw Wattles (M020-03-06-0007)

Installed north of the sampler. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.33.4 Project Map



1634800
1635000
1767800
1767600
Ten-Site Canyon
Mortandad Canyon
0.1 Acres
M02003060007
M02001010006
M02003010005
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M020:M-SMA-12.9
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 15, 2010,
Map #M020-10-0017-129-M12.9-R2

1000.33.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.33.6 Corrective Action Status

The Sites associated with M-SMA-12.9 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.34 M-SMA-12.92

1000.34.1 Area Description

1000.34.2 Potential Pollutant Sources

1000.34.2.1 Historical Industrial Activity Areas

1000.34.3 Control Measures

1000.34.4 Project Map

1000.34.5 Storm Water Monitoring Plan and Schedule

1000.34.6 Corrective Action Status



1000.34 M-SMA-12.92

1000.34.1 Area Description

M-SMA-12.92 is located adjacent to the receiving waters of Mortandad Canyon. The northern boundary is the south facing slope of Mortandad Canyon. The southern boundary is on developed mesa top land including Pajarito Road, Pecos Drive, administrative area of TA-35 and Puye Road (dirt access road in TA-5). The eastern boundary is the floor of Mortandad Canyon, approximately 500 feet below the confluence of Ten-Site Canyon. The western boundary is highly developed administrative area of TA-03.

1000.34.2 Potential Pollutant Sources

1000.34.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M021, M-SMA-12.92, Site 00-001.

SWMU 00-001 is the area of the historic and current sediment traps in Mortandad Canyon. The site is approximately 900 ft long x 200 ft wide along the Mortandad Canyon stream channel downstream from the confluence of Mortandad and Ten Site Canyons. The two original traps were built in 1976 with a capacity of approximately 20,000 gallons. In 1980, a third trap was built with a capacity of approximately 225,000 gallons.

Currently, Trap 1 the upstream basin, has a capacity of approximately 286,000 gallons. Trap 2, the next trap downstream, has a current capacity of 628,000 gallons. Trap 3, the downstream trap, has a current capacity of 287,000 gallons. The three basins were re-excavated in 1992 after they were filled following several storms. Sediment from the traps was stockpiled next to the traps.

The sediment traps are approximately 1.5 miles downstream from the TA-50 radioactive liquid waste treatment facility outfall and about 1.4 miles upstream from the LANL boundary. Suspect contaminants at this site could include: organic chemicals, inorganic chemicals, and radionuclides.

Maintenance of the sediment traps was performed as part of the post Cerro Grande fire recovery work. In July 2002, LANL requested and obtained NMED concurrence that that environmental media generated during this routine maintenance does not warrant management as F-listed hazardous wastes. Excavation of sediment trap #1 was conducted in July 2000. Approximately 384 cubic yards of soil from sediment trap #1 was excavated transported, and disposed of at TA-54, Area G. Excavation of the soil piles north and adjacent to sediment trap #1 was completed in August 2000. Approximately 1,308 cubic yards of soil from the piles were excavated, transported, and disposed of at TA-54, Area G. Excavation of sediment trap #3 was conducted in August 2000. Approximately 5,040 cubic yards of soil from sediment trap #3 was excavated, transported, and disposed of at TA-54, Area G.

1000.34.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
00-001	Sediment traps in Mortandad Canyon	Discrete Location, No overlap	Individual	•		•	

1000.34.3 Control Measures

The associated historical industrial activity is the existing sediment traps. They are installed to reduce sediment from discharges upstream of the SMA.

Subsections to 1000.34.3 list all control measures used to control pollutant sources identified in Section 1000.34.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.34.4.

1000.34.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M021 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M021 05 01 0001	Sediment Traps and Basins - Sediment Trap		•		•
M021 05 01 0003	Sediment Traps and Basins - Sediment Trap		•		•
M021 05 01 0004	Sediment Traps and Basins - Sediment Trap	•			•

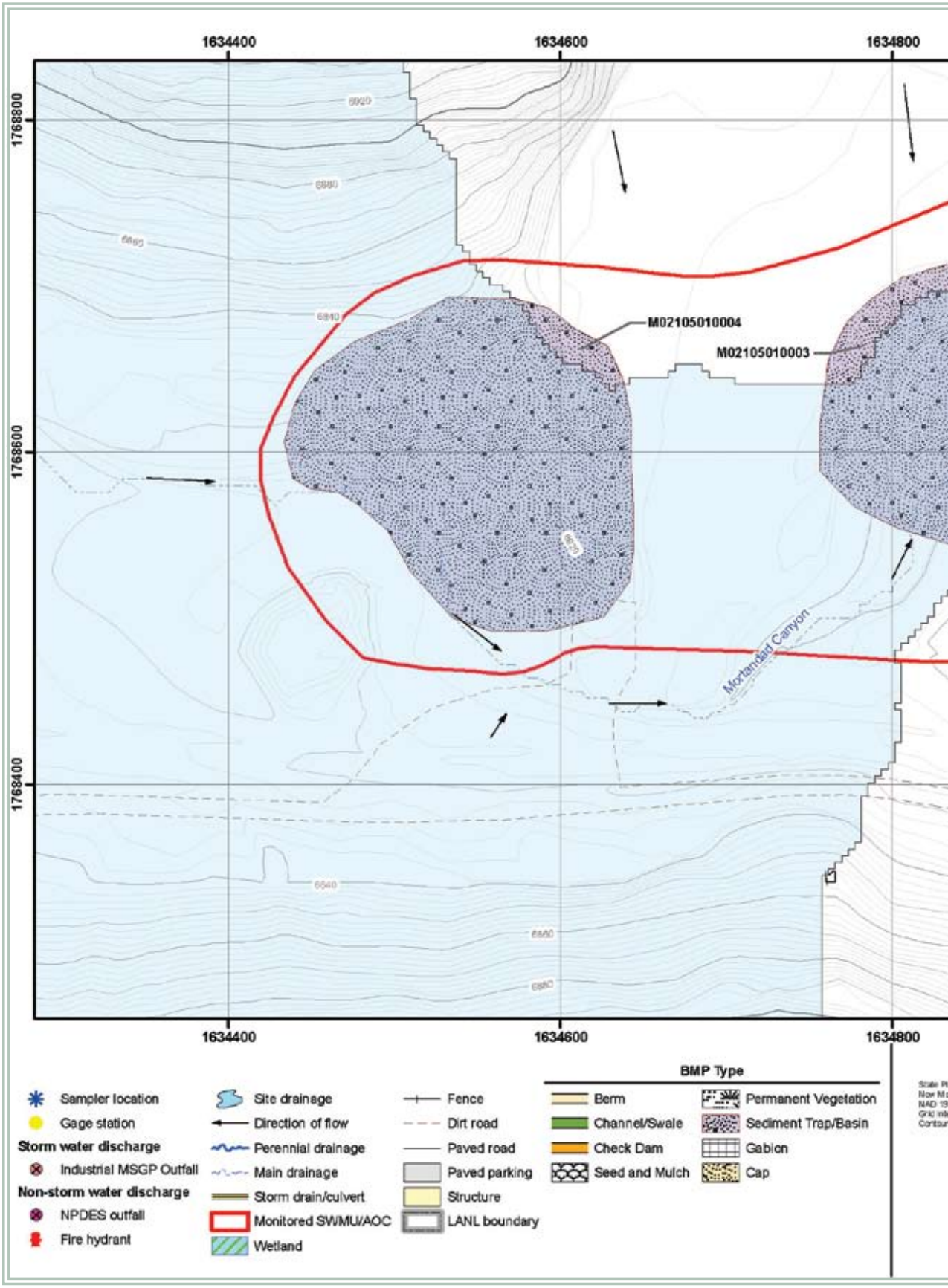
Established Vegetation (M021-02-01-0002)

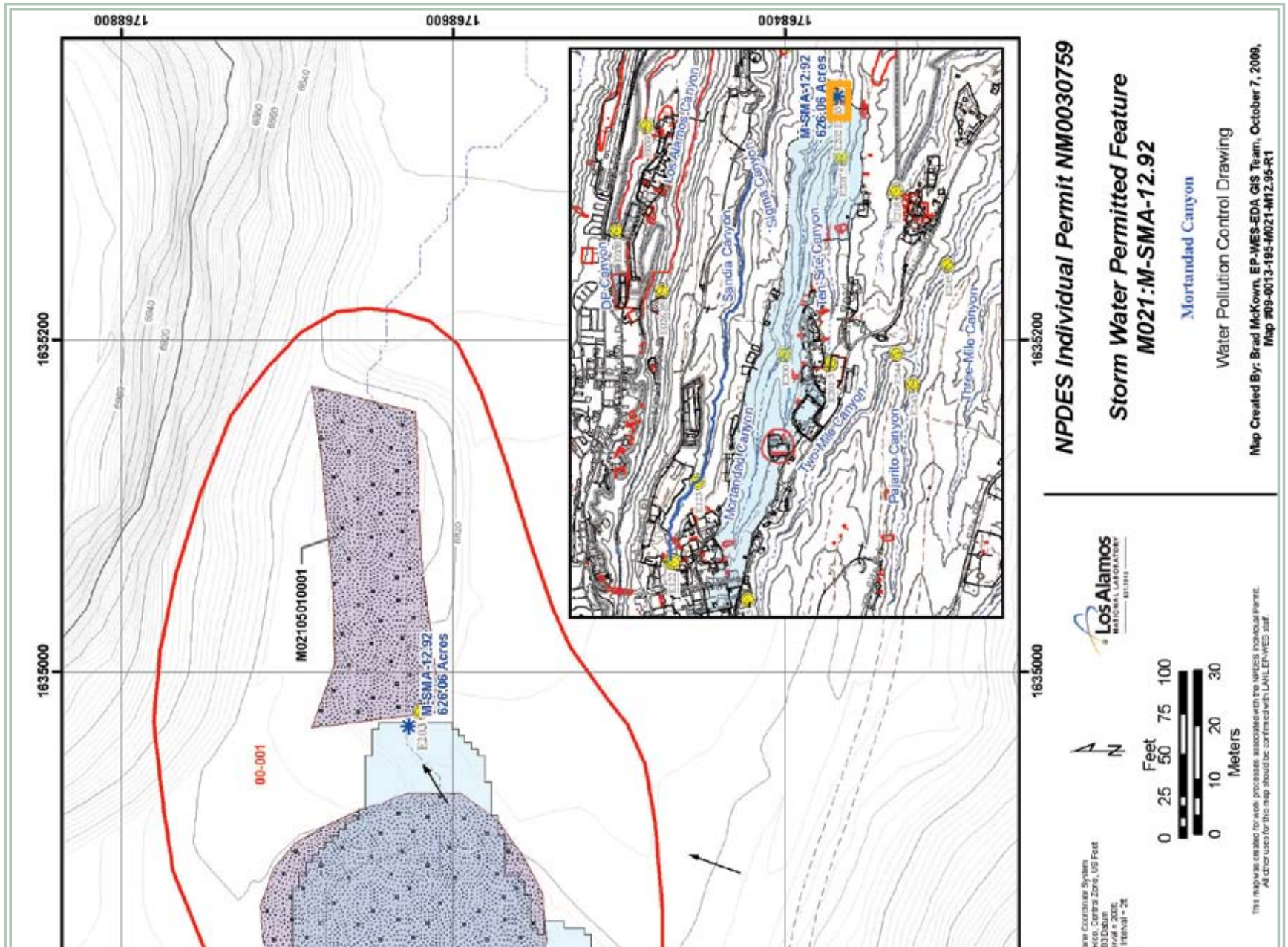
Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Sediment Traps and Basins (M021-05-01-0001, -0003, -0004)

The series of sediment traps were installed along the east to west axis of the SMA footprint. Their function is to reduce sediment migration via run-off from this primary drainage channel. Sediment traps and detention basins are used primarily for sediment control and secondarily for run-off control. Sediment traps perform the same function as sediment basins but are typically smaller in size and do not have pipe outlets.

1000.34.4 Project Map




1768800
1768600
1768400
1635200
1635000
DP Canyon
Los Alamos Canyon
Sandia Canyon
Sigma Canyon
Mortandad Canyon
Ten Site Canyon
Two-Mile Canyon
Three-Mile Canyon
Pajarito Canyon
M-SMA-12.92
626.06 Acres
M02105010001
00-001
E200
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M021:M-SMA-12.92
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-WES-EDA GIS Team, October 7, 2009,
Map #09-0013-195-M021-M12.92-R1
Los Alamos
NATIONAL LABORATORY
N
Feet
0 25 50 75 100
Meters
0 10 20 30

1000.34.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.34.6 Corrective Action Status

The Site associated with M-SMA-12.92 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.35 M-SMA-13

1000.35.1 Area Description

1000.35.2 Potential Pollutant Sources

1000.35.2.1 Historical Industrial Activity Areas

1000.35.3 Control Measures

1000.35.4 Project Map

1000.35.5 Storm Water Monitoring Plan and Schedule

1000.35.6 Corrective Action Status



1000.35 M-SMA-13

1000.35.1 Area Description

M-SMA-13 is located in an undeveloped area that comprised former TA-05. The northern boundary is an unpaved access road to Mortandad Canyon (Puye Road). The southern boundary is the head cut of a tributary canyon to Cañada del Buey. Storm water flows southeast down a gradual slope towards the receiving waters.

1000.35.2 Potential Pollutant Sources

1000.35.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF M022, M-SMA-13, Site 05-001(c).

AOC 05-001(c) is a former firing point designated as the larger Beta Far Point Site known only by references on maps and memoranda. AOC 05-001(c) reportedly was located several hundred ft east of SWMU 05-001(b) [now part of consolidated unit 05-001(a)-99], but its exact location, dates of operation, and types of potential releases are unknown, as reported in the 1990 SWMU report. After unsuccessfully searching libraries, records center, and archives at LANL for information on this site, a retired Los Alamos WX-Division Leader who had established the site in 1944 was contacted and interviewed for information on the site. A site visit was also conducted to further clarify the information provided. Beta Far Site Point was established 600 ft to 700 ft south/southeast of Firing Points 1 [05-001(a)] and 2 [05-001(b)]. It was located in Cañada del Buey off the toe of the south mesa, 20 ft to 30 ft below the mesa top. No facilities were established at the site. Multiconductor and coax cabling was run from the existing control bunker located approximately 1400 ft west of the site. Two or three 2500 lb shots were detonated at the site during the lifetime of the operation. Shot debris consisted of cabling, tuballoy, steel, aluminum, and wood. The shot debris radius was estimated to be 100 to 200 yards from the firing point. The site was closed in the spring of 1945. This site was not part of the 1985 LASCP D&D activities that were conducted at TA-05.

1000.35.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
05-001(c)	Firing site	Discrete Location, No overlap	Individual	•	•	•	HE

1000.35.3 Control Measures

Potential run-on may enter this Permitted Feature from an unpaved access road on the northern boundary of the SMA. There is a natural drainage channel that bisects the SMA.

Subsections to 1000.35.3 list all control measures used to control pollutant sources identified in Section 1000.35.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.35.4.

1000.35.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
M022 01 01 0012	Seed and Mulch - Seed and Wood Mulch			•	
M022 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
M022 02 02 0004	Established Vegetation - Forested/Needle Cast			•	
M022 03 06 0005	Berms - Straw Wattles	•			•
M022 03 06 0006	Berms - Straw Wattles	•			•
M022 03 06 0007	Berms - Straw Wattles	•			•
M022 06 01 0008	Check Dam - Rock	•			•
M022 06 01 0009	Check Dam - Rock	•			•
M022 06 01 0010	Check Dam - Rock	•			•
M022 06 01 0011	Check Dam - Rock	•			•
M022 06 02 0001	Check Dam - Log		•		•
M022 06 02 0003	Check Dam - Log		•		•

Seed and Wood Mulch (M022-01-01-0012)

Seed and mulch has been applied throughout the SMA and surrounding area in order to help control erosion. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

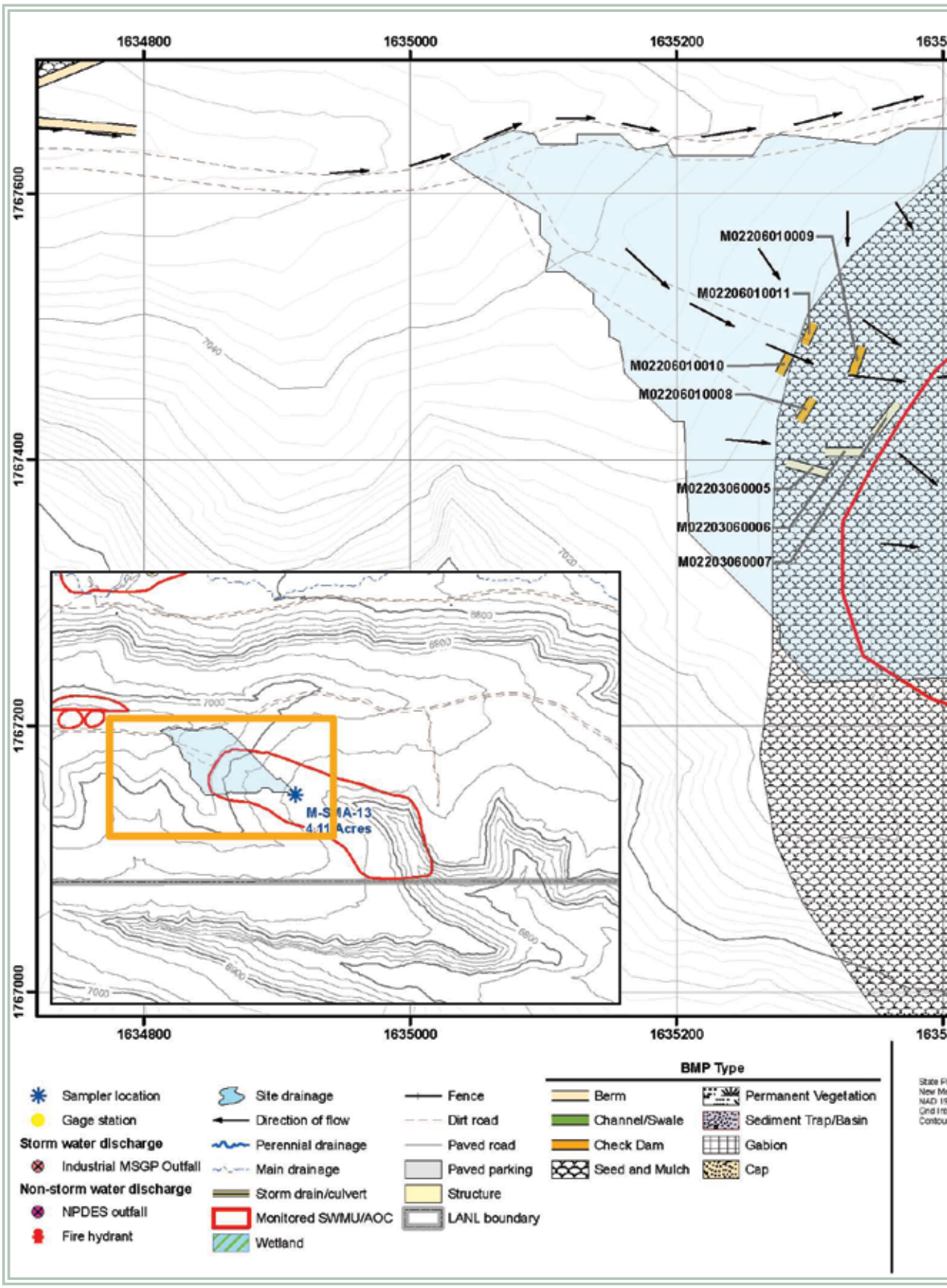
Established Vegetation (M022-02-01-0002, -02-0004)
Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

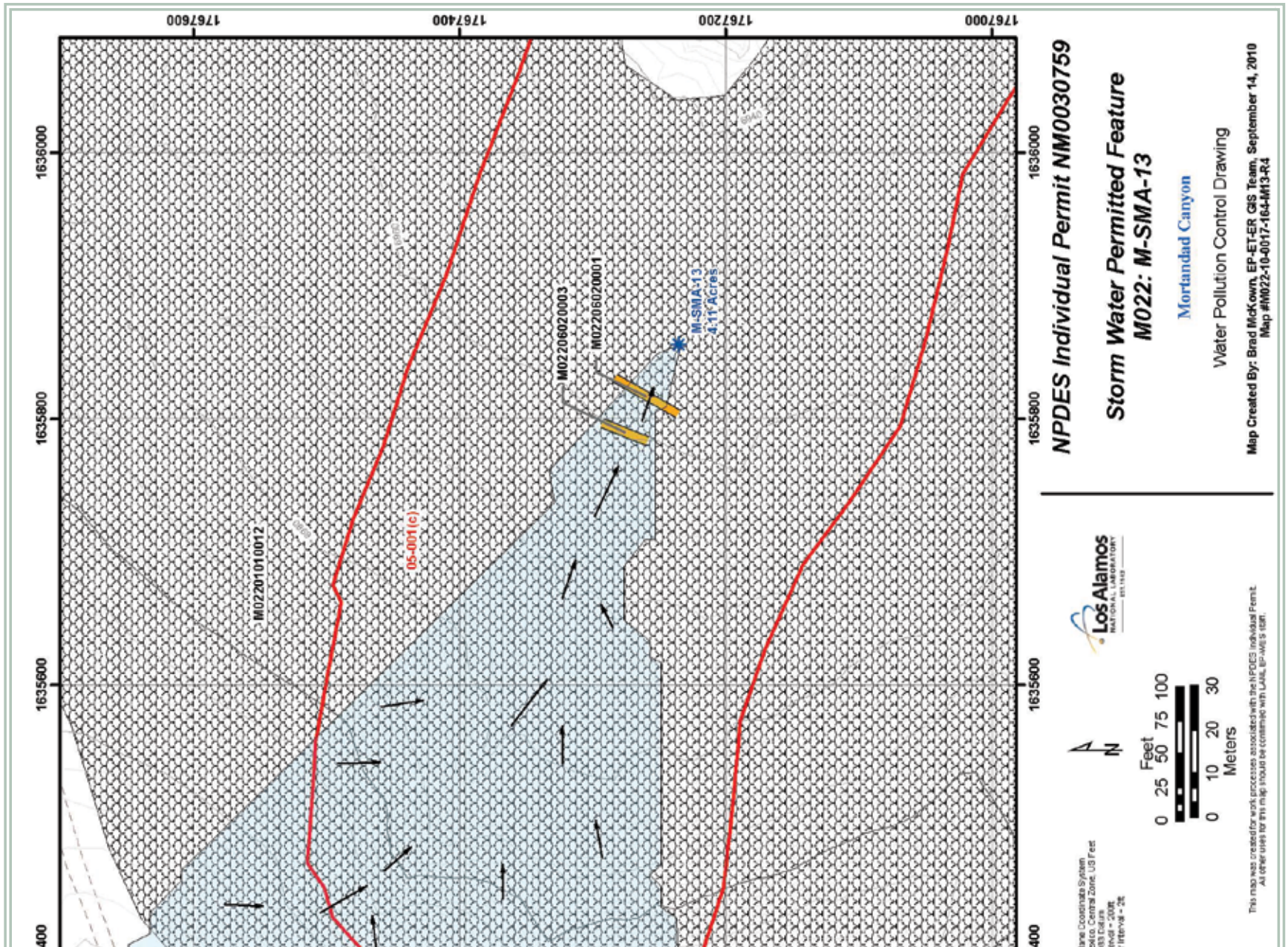
Straw Wattles (M022-03-06-0005, -0006, -0007)
This group of three wattles is in the center of the site drainage, and is installed to control run-on and sediment from the northwest. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rock Check Dams (M022-06-01-0008, -0009, -0010, -0011)
This group of four check dams is installed in the northwest portion of the site drainage to control run-on and sediment from further northwest. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Log Check Dam (M022-06-02-0001, -0003)
This is a pair of log check dams located at the far eastern side of the SMA just above the sampler they are controlling run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.35.4 Project Map




1767600
1767400
1767200
1767000
1636000
1635800
1635600
1635400
M02201010012
05-001(c)
M02206020003
M02206020001
M-SMA-13
4.11 Acres
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
M022: M-SMA-13
Mortandad Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 14, 2010
Map #M022-10-0017-164-M13-R4
Los Alamos
NATIONAL LABORATORY
N
Feet
0 25 50 75 100
Meters
0 10 20 30
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be coordinated with LANL EP-MIS staff.

1000.35.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.35.6 Corrective Action Status

The Site associated with M-SMA-13 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.36 S-SMA-0.25

1000.36.1 Area Description

1000.36.2 Potential Pollutant Sources

1000.36.2.2 Public Influences

1000.36.3 Control Measures

1000.36.3.1 Control Measures for Historical Industrial Activity Areas

1000.36.4 Project Map

1000.36.5 Storm Water Monitoring Plan and Schedule

1000.36.6 Corrective Action Status



1000.36 S-SMA-0.25

1000.36.1 Area Description

S-SMA-0.25 is located within the highly developed area of TA-03 and public access to the area is controlled. The surrounding area is flat and run-off occurs through man-made channels to the east. Storm water run-off in the area is influenced by run-off from structures and impervious areas adjacent to the Permitted Feature area on all sides. Most of the SMA is developed and contains a high percentage of impervious area.

1000.36.2 Potential Pollutant Sources

1000.36.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF S001, S-SMA-0.25, Sites 03-013(a) and 03-052(f).

SWMU 03-013(a) is a 1500-ft-long corrugated metal pipe storm drain that served building 03-0038. The storm drain ran underground around building 03-0038, east along the south side of the Otowi Building (building 03-0261), and connected to four other storm drains before daylighting 100 ft east of the Otowi Building where it became an open concrete and rock-lined ditch. The open drain continued past transportable office buildings (buildings 03-1616 and 03-1617) and passed beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (structure 03-0207) where it discharged to the SWMU 03-052(f) outfall before draining into Sandia Canyon.

Most of the corrugated metal pipe associated with SWMU 03-013(a) was removed in 2004 to accommodate the construction of the NSSB (03-1400) and a new parking structure (03-1402) east of the Otowi Building. The corrugated metal pipe was managed as nonhazardous/nonradioactive industrial waste. Inspection of the drainline trench showed no evidence of a release from the drainpipe. A new storm drainline was installed west of SWMU 03-052(f) to manage storm water run-off from the new parking structure. The new storm drain discharges to SWMU 03-052(f).

SWMU 03-052(f) is a former NPDES-permitted outfall (EPA 03A023) which received wastewater from floor drains [AOC 03-013(b)], sinks, water fountains, and a storm drain [SWMU 03-013(a)], which served building 03-0038 until 1987 when the drains in building 03-0038 were rerouted to the TA-03 sanitary sewer system. Stoddard solvents, dry acid, and caustic materials from the maintenance shop were discarded through sinks and floor drains to this outfall. Spent paint solvents and cutting oils contaminated with machined beryllium particles may also have been released to the floor drains during the 1960s and 1970s. In addition, cooling water for welding torches was discharged directly to the drains. The first spill was approximately 200 gal. of water-waste oil mixture that was discharged when an automatic compressor blowdown mechanism failed. A second spill from a ruptured aircompressor oil line resulted in the release of approximately 1 qt of compressor oil to the drain. This spill produced an oily sheen on the surface of the water at the SWMU 03-052(f) outfall. A third spill occurred when approximately 15 gal. of diesel fuel was released from a ruptured truck fuel line into the utilities construction trench between buildings 03-1793 and 03-1794. On the same day, a clay sewer pipe in the utility trench broke, releasing approximately 2000 gal. of wastewater into the excavation. A sump was used to remove the wastewater from the excavation and the wastewater was discharged to SWMU 03-052(f). The diesel-contaminated asphalt and soil was removed and disposed of. run-off from parking lots and the surrounding areas also discharges to the outfall. Outfall 03A023 was removed from the NPDES permit on July 11, 1997.

1000.36.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-013(a)	Storm drain	Co-located, Overlapping	Shared	•	•	•	PCBs SVC
03-052(f)	Outfall from Building 3-38	Co-located, Overlapping	Shared	•	•	•	PCBs SVC

Substantially Identical Determination

The Sites within this SMA are co-located and overlapping, share a common drainage, and have similar contaminants. These Sites will discharge substantially identical effluent.

1000.36.2.2 Public Influences

All boundaries of the SMA are accessible to the public. Pedestrian traffic in the area primarily consists of those who are working in the area.

1000.36.3 Control Measures

Run-on contributions to this SMA are significant and difficult to control. There is a large storm system that captures roof drains, roads, and parking areas from approximately 50% of TA-03. This run-on source also includes outfalls from the MSGP permitted TA-03-38 MFSA. A 40 inch and a 24 inch CMP discharge onto the SMA. These run-on sources are controlled but not diverted. Run-on associated with US 501 is routed north of the SMA.

Subsections to 1000.36.3 list all control measures used to control pollutant sources identified in Section 1000.36.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.36.4.

1000.36.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S001 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
S001 02 02 0006	Established Vegetation - Forested/Needle Cast			•	
S001 03 06 0009	Berms - Straw Wattles	•			•
S001 04 06 0007	Channel/Swale - Rip Rap	•		•	
S001 07 01 0008	Gabions - Gabions		•		•
S001 07 02 0003	Gabions - Gabion Blanket		•	•	

Established Vegetation (S001-02-01-0002, -02-0006)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles (S001-03-06-0009)

These wattles are located south of the sampler outside the SMA boundary. They are in place to control run-on from the paved areas. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rip Rap (S001-04-06-0007)

The rip rap is located on the south side of building 03-1402 between the building and Casa Grande Drive. It is used to mitigate run-on from the paved areas and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Gabions - West (S001-07-01-0008)

This gabion is located southeast of building 03-1403 in a drainage channel. It is used to restrict run-off from the area. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

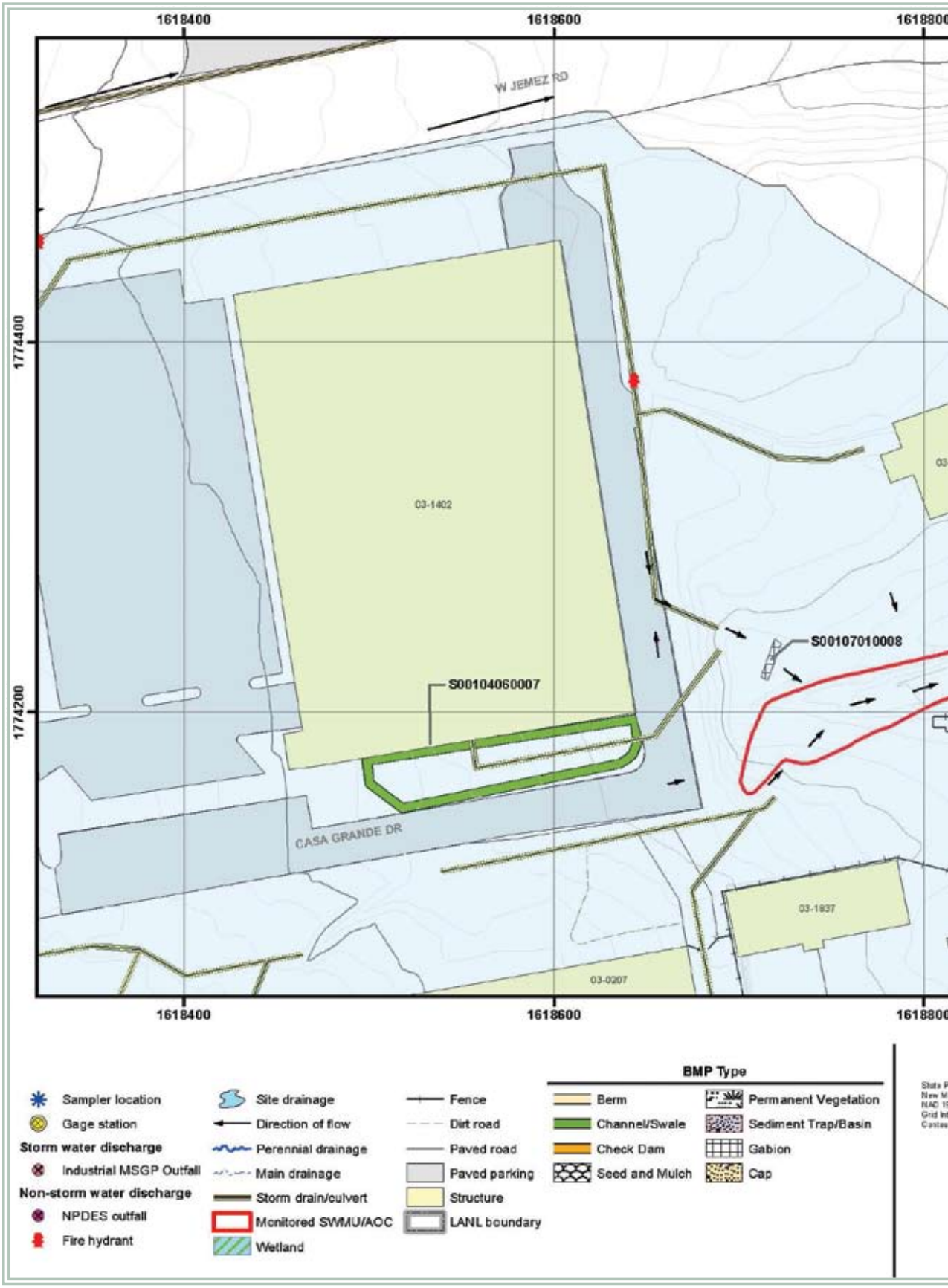
Gabions (S001-07-02-0003)

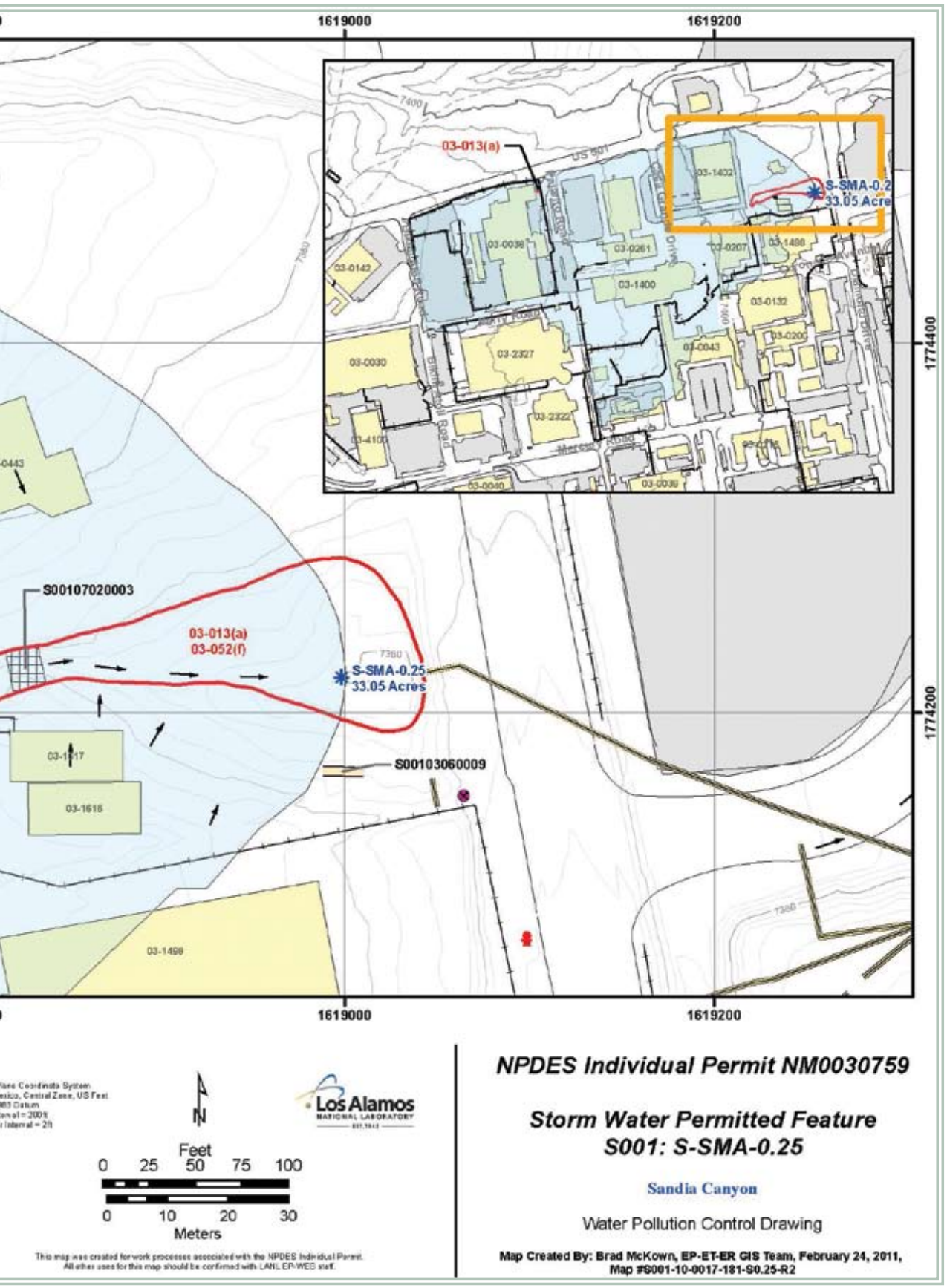
The gabion is located in the drainage channel north of building 03-1617. It is used to control run-off and prevent erosion of the channel. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions and gabion blankets are used for erosion control when they are used to line a channel or swale.

1000.36.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S001, S-SMA-0.25. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.36.4 Project Map




1619000
1619200
1774400
1774200
03-013(a)
S-SMA-0.2
33.05 Acre
S-SMA-0.25
33.05 Acres
S00107020003
03-013(a)
03-052(f)
S00103060009
03-0038
03-0261
03-1402
03-0207
03-1498
03-0142
03-1400
03-0132
03-0205
03-0043
03-0030
03-2327
03-2322
03-4100
03-0040
03-0039
03-1617
03-1618
03-1498
Feet
0 25 50 75 100
Meters
0 10 20 30
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S001: S-SMA-0.25
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, February 24, 2011,
Map #S001-10-0017-181-S0.25-R2

1000.36.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.36.6 Corrective Action Status

The Sites associated with S-SMA-0.25 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.37 S-SMA-1.1

1000.37.1 Area Description

1000.37.2 Potential Pollutant Sources

1000.37.2.1 Historical Industrial Activity Areas

1000.37.3 Control Measures

1000.37.4 Project Map

1000.37.5 Storm Water Monitoring Plan and Schedule

1000.37.6 Corrective Action Status



1000.37 S-SMA-1.1

1000.37.1 Area Description

S-SMA-1.1 is located within the highly developed area of TA-03 and public access to the area is restricted. The area is located on a flat mesa top and run-off flows east, through natural and man-made conveyances, to a south facing slope of Sandia Canyon. Storm water is influenced by run-off from a paved parking lot forming the western boundary, and a paved road forming the northern boundary. The eastern and southern boundaries are undeveloped. Most of the area surrounding and within this SMA is paved and impervious.

1000.37.2 Potential Pollutant Sources

1000.37.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S002, S-SMA-1.1, Site 03-029.

SWMU 03-029 is a 30-ft x 70-ft former landfill located approximately 300 ft south of building 03-0271 near the rim of Sandia Canyon. This landfill reportedly received excess asphalt from the batch plant and was subsequently covered with sand. The fill raised and leveled the surface areas at the mesa rim. NMED issued a notice of violation to the Laboratory in November 1990 concerning pieces of asphalt and an oily sheen found in the Sandia Canyon watercourse below building 03-0073. In early 1993, the Laboratory completed a corrective action at SWMU 03-029 to remove the asphalt within the drainage and on the associated slope, regrade the watercourse and slope to support vegetation, extend the drainage, and construct a concrete berm to prevent additional exposure of asphalt buried in the fill. Dense grass cover was seeded and maintained on all fill slopes and disturbed areas. Water samples collected from the storm drain indicated that oil, grease, or other chemicals typically associated with asphalt-plant operations were not present.

In 2004, an ACA was proposed to complete the investigation and remediation of SWMU 03-029 to accommodate the Laboratory's security perimeter road project. SWMU 03-029 was situated near the proposed location for the security perimeter road. In May 2005, GPR and electromagnetic (EM) surveys were conducted at SWMU 03-029. The results identified two possible locations for buried asphalt, which were further investigated by trenching. In July 2005, a total of 12 trenches were excavated to the top of bedrock, approximately 2 to 4 ft bgs, and varied in length from 20 ft to greater than 100 ft. Buried asphalt was not encountered in any of the trenches. Because buried asphalt was not encountered, the remaining proposed ACA activities for SWMU 03-029 were not implemented.

1000.37.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-029	Asphalt Batch Plant (Disposal Area)	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.37.3 Control Measures

This SMA is impacted by three culverts which capture storm water run-off from parking areas and roads. The SMA is also impacted by sheet flow run-on from the parking area south of Building 03-0271. Planned controls are to fortify and increase sediment retention. A Corrective Action Plan is being developed for this SMA.

Subsections to 1000.37.3 list all control measures used to control pollutant sources identified in Section 1000.37.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.37.4.

1000.37.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S002 03 01 0004	Berms - Earthen		•		•
S002 04 06 0006	Channel/Swale - Rip Rap	•		•	
S002 06 01 0008	Check Dam - Rock	•			•
S002 07 01 0003	Gabions - Gabions		•		•
S002 07 02 0005	Gabions - Gabion Blanket	•		•	

Earthen Berm (S002-03-01-0004)

This berm is located in the southern portion of the SMA along the edge of the mesa top. It is controlling run-off from the northern portion of the SMA. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rip Rap (S002-04-06-0006)

The rip rap is located west of the unpaved access road in the drainage channel and is used to help control storm water run-on from the paved areas above. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam (S002-06-01-0008)

This check dam is located in the channel near the intersection of the paved access roads. It is used to help control storm water run-on from the paved areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Gabions (S002-07-01-0003)

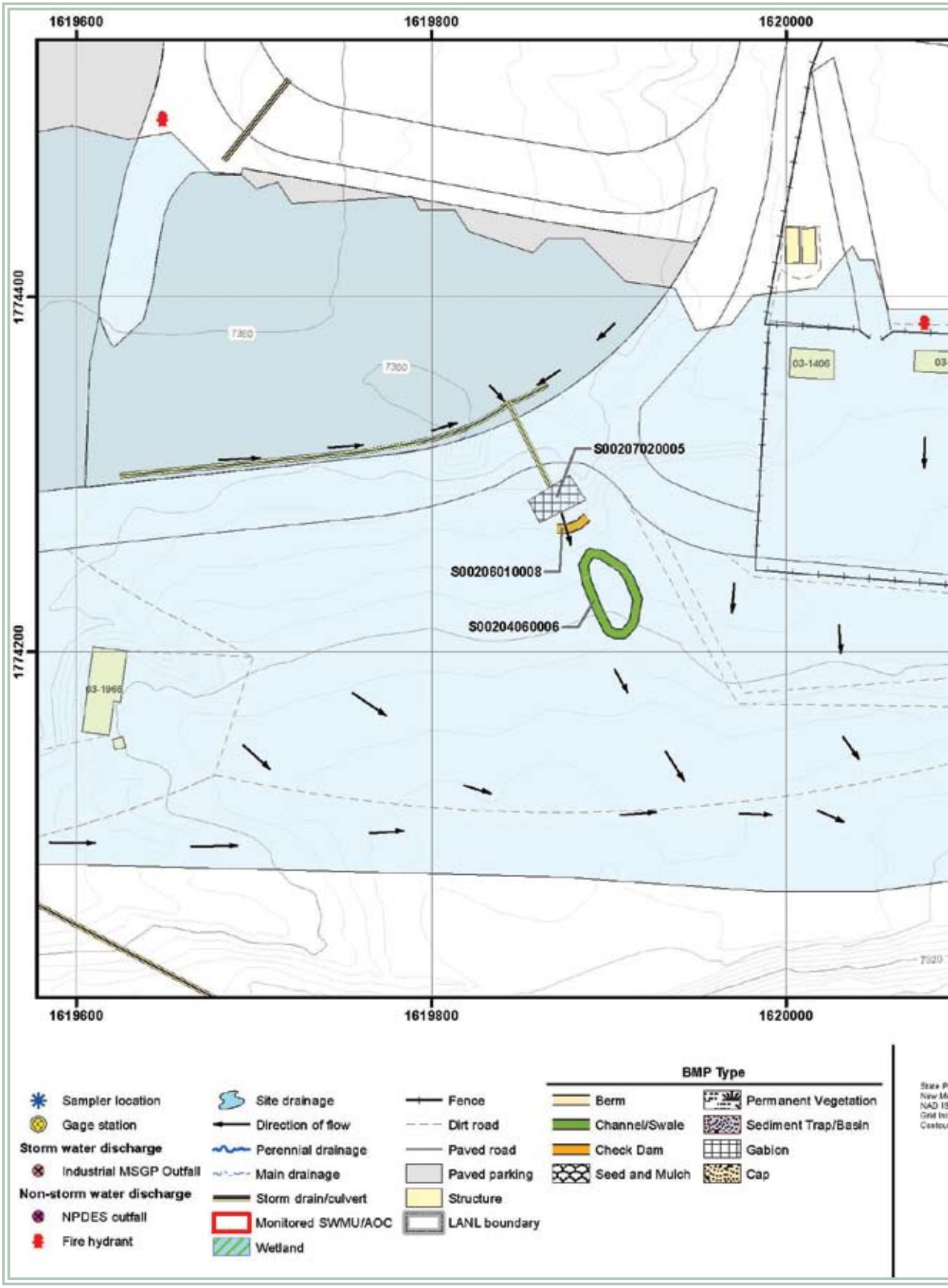
The gabions are located south of the SWMU along the edge of the mesa top at the head

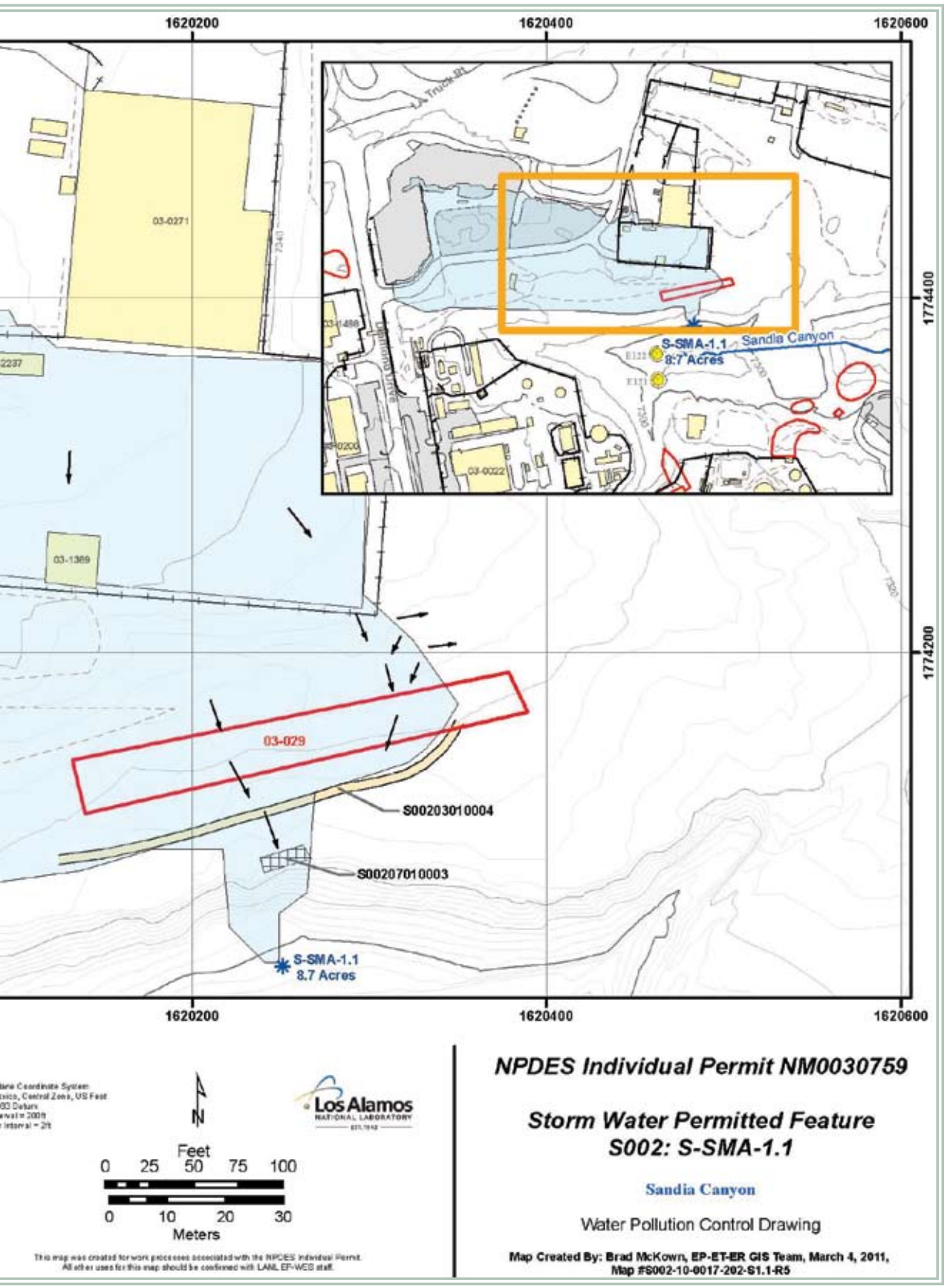
of the natural drainage channel. They control run-off from the SMA. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

Gabion Blanket (S002-07-02-0005)

This gabion blanket is located in the drainage channel south of the run-off berm It is in place to assist in controlling run-on from the paved areas to the north. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions and gabion blankets are used for erosion control when they are used to line a channel or swale.

1000.37.4 Project Map




1620200
1620400
1620600
1774400
1774200
03-0271
03-1389
03-029
S-SMA-1.1
8.7 Acres
Sandia Canyon
S00203010004
S00207010003
S-SMA-1.1
8.7 Acres
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S002: S-SMA-1.1
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 4, 2011,
Map #S002-10-0017-202-S1.1-R5

1000.37.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.37.6 Corrective Action Status

The Site associated with S-SMA-1.1 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.38 S-SMA-2

1000.38.1 Area Description

1000.38.2 Potential Pollutant Sources

1000.38.2.1 Historical Industrial Activity Areas

1000.38.3 Control Measures

1000.38.4 Project Map

1000.38.5 Storm Water Monitoring Plan and Schedule

1000.38.6 Corrective Action Status



1000.38 S-SMA-2

1000.38.1 Area Description

S-SMA-2 is located within the highly developed area of TA-03 and public access to the area is controlled. The surrounding area is flat and run-off occurs through man-made channels to the east and north. Storm water flows down a short, steep slope to the head of Sandia Canyon. Storm water is influenced by run-off from structures and impervious areas adjacent to the Permitted Feature area on all sides. Most of the surrounding area is developed and covered by impervious surfaces.

1000.38.2 Potential Pollutant Sources

1000.38.2.1 Historical Industrial Activity Areas

There are four historical industrial activity areas associated with PF S003, S-SMA-2, Sites 03-012(b), 03-045(b), 03-045(c) and 03-056(c).

SWMU 03-012(b) is soil contamination associated with operational releases from the TA-03 power plant, building 03-0022, and associated cooling towers, including cooling tower drift. A gas turbine generator, along with supporting utilities, were installed east of the power plant within the eastern portion of SWMU 03-012(b) in 2007.

SWMU 03-045(b) is the NPDES-permitted outfall (Outfall 001) that receives treated sanitary effluent from the TA-46 SWSC Plant, wastewater from makeup water production and boiler blowdown water from the co-generation plant, and occasional releases of cooling tower blowdown and other discharges from the TA-03 power plant, building 03-0022. All wastewater discharged from the TA-03 power plant to SWMU 03-045(b) is treated in a neutralization tank (structure 03-1381); the function of the tank is to adjust the pH of wastewater before discharge to meet NPDES requirements. Sulfuric acid and soda ash were used to adjust the pH of wastewater before discharge to the SWMU 03-045(b) outfall. The NPDES permit number for the outfall was previously identified as EPA 01A001 but is currently permitted as 001 on the 2007 NPDES authorization permit. The outfall is currently authorized to discharge power plant wastewater from cooling towers, boiler blowdown drains, demineralizer backwash, floor and sink drains, and treated sanitary reuse to Sandia Canyon. The outfall discharges onto sand and gravel southeast of building 03-0022 and into a small tributary of Sandia Canyon. Discharge from another permitted outfall (13S) at the TA-46 SWSC Plant is pumped to the holding tank 03-0336 [SWMU 03-014(q)] for potential reuse and eventually discharges to SWMU 03-045(b). The outfall received effluent from two power plant cooling towers (structures 03-0025 and 03-0058) and the chlorine building (structure 03-0024). Cooling tower (structure 03-0025) was demolished in 1990, and a new cooling tower (structure 03-0592) was constructed at the same location in 1998; the concrete foundation of structure 03-0025 collected storm water that discharged to the outfall. The two cooling tower structures (03-0058 and 03-0592) are currently in operation and continue to discharge to SWMU 03-045(b).

A sulfuric acid release to the SWMU 03-045(b) outfall from the power plant neutralization tank, structure 03-1381, occurred in May 1990. Low pH values were reported in a 2.5-mi section of the watercourse below the outfall. Soda ash was added along the watercourse to raise the pH. A subsequent survey detected no measurements below pH 6.9.

SWMU 03-045(c) is an NPDES-permitted outfall (EPA 03A027), located approximately 55 ft east of SWMU 03-045(b). SWMU 03-045(c) formerly received effluent from a cooling tower (structure 03-0285) that served the generators powering a Laboratory computer system. Cooling tower 03-0285 was taken out of service several

years ago, and SWMU 03-045(c) now receives blowdown from the cooling towers at the Strategic Computing Complex (building 03-2327), which became operational in 2002. SWMU 03-045(c) may have historically received chromate-treated water. Outfall 03A027 is currently permitted for the discharge of cooling tower blowdown water and other wastewater from structures 03-0285 and 03-2327.

SWMU 03-056(c) is an inactive outdoor storage area located at TA-03 on the north side of a utilities shop, building 03-0223. The SWMU extends along the length of building 03-0223 to the south and is bounded by a security fence to the north. The outdoor storage area was used to store electrical equipment, capacitors, and transformers with PCB-containing dielectric fluids. Waste solvents used for cleaning electrical equipment were also stored at this location. The types of solvents used at the site from 1967 to approximately 1981 are not known. Viking R30 (1,1,1-trichloroethane) was used from 1981 to 1990. Beginning in 1990 and continuing to 1992, a nonhazardous citrus-based solvent was used as a substitute for solvent-based cleaners. In addition, Transclene, which contains PCE, may have been stored at the site because it was used by an electrical equipment maintenance subcontractor to retrofill transformers in the field. It is believed that the maintenance crew disposed of all these waste materials at an approved waste-disposal facility. In 1991, the site's facility manager placed approximately 1–2 ft of clean fill on the area occupying the former storage area to elevate it and to reroute run-on drainage away from this site. In 1992, the storage area was decommissioned.

1000.38.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-012(b)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs
03-045(b)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs
03-045(c)	Outfall from structure 3-285	Co-located, Overlapping	Shared	•	•	•	PCBs
03-056(c)	Transformer storage area	Discrete Location, No overlap	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites 03-045(c), 03-012(b), and 03-045(b) are outfalls that discharge into a small tributary of Sandia Canyon directly south of the steam power. Site 03-056(c) was a former storage area located slightly downstream of the associated outfalls. All of the Sites in this SMA have the potential to impact a small tributary of Sandia Canyon. Because of the similarities in suspect contaminants and the proximity to one another, discharge from these Sites will be substantially identical.

1000.38.3 Control Measures

There are many potential run on sources at this SMA including culverts, paved roads and parking lots, drainage from the roofs of the numerous buildings, and two NPDES outfalls from the power plant.

Subsections to 1000.38.3 list all control measures used to control pollutant sources identified in Section 1000.38.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.38.4.

1000.38.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S003 02 01 0007	Established Vegetation - Grasses and Shrubs			•	
S003 03 02 0008	Berms - Base Course	•			•
S003 04 06 0005	Channel/Swale - Rip Rap	•		•	
S003 04 06 0009	Channel/Swale - Rip Rap	•		•	
S003 04 06 0010	Channel/Swale - Rip Rap	•		•	
S003 07 02 0006	Gabions - Gabion Blanket		•		•

Established Vegetation (S003-02-01-0007)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Base Course Berm (S003-03-02-0008)

This berm is located along the north side of Grable Road. It is used to control run-on from the paved areas, diverting flow around the Sites. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rip Rap (S003-04-06-0005)

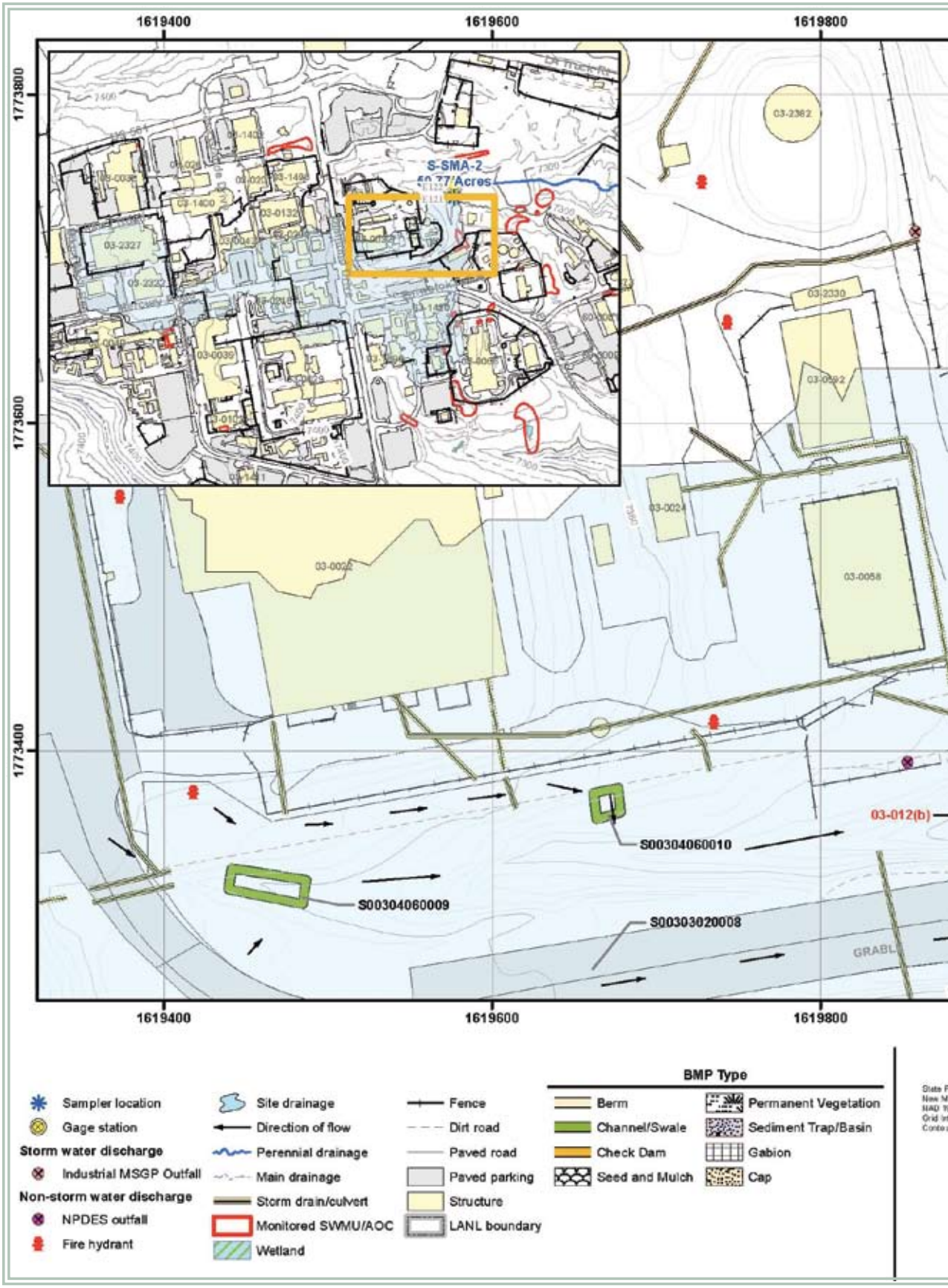
The rip rap is located at the edge of the paved are south of building 03-1398. It is helping to manage area run-on. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap -West
(S003-04-06-0009)
This rip rap outlet protection device is located near the southwest corner of building 03-0022 near the culvert outlets between the curve in the paved access road and the parking area. It is controlling run-on from the culvert outlets. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap -Central
(S003-04-06-0010)
This rip rap is located near the paved area south of building 03-0022. It is controlling run-on from the paved area outlet. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Gabion Blanket
(S003-07-02-0006)
This gabion is located on the slope near the northeast corner of building 03-0223. It is in place to control run-off from the slope above. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions and gabion blankets are used for erosion control when they are used to line a channel or swale.

1000.38.4 Project Map



1620000
1620200
1620400
1773800
1773600
1773400
03-1398
03-0336
S00304060005
03-056(c)
03-2422
03-2424
03-2423
03-2425
03-0296
S00307020006
03-2241
03-0665
03-0223
03-045(c)
03-045(b)
03-0049
03-0192
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S003: S-SMA-2
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team,
March 28, 2011, Map #S003-10-0017-54-S2-R4

1000.38.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.38.6 Corrective Action Status

The Sites associated with S-SMA-2 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.39 S-SMA-2.01

1000.39.1 Area Description

1000.39.2 Potential Pollutant Sources

1000.39.2.1 Historical Industrial Activity Areas

1000.39.3 Control Measures

1000.39.4 Project Map

1000.39.5 Storm Water Monitoring Plan and Schedule

1000.39.6 Corrective Action Status



1000.39 S-SMA-2.01

1000.39.1 Area Description

S-SMA-2.01 is located within the highly developed area of TA-03 and public access to the area is controlled. The surrounding area is flat and run-off occurs through man-made channels to the east. Run-off travels from the sampler location under Eniwetok Rd. to the north through a series of culverts before reaching the head of Sandia Canyon. Storm water is influenced by run-off from structures and impervious areas adjacent to the Permitted Feature area on all sides. Most of the surrounding area is developed and covered by impervious surfaces.

1000.39.2 Potential Pollutant Sources

1000.39.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S003A, S-SMA-2.01, Site 03-052(b).

AOC 03-052(b) consists of five storm water collection areas at TA-03 about 20 ft north and west of the Sigma Building (03-0066). Surface run-off flows from the area around the north end of the Sigma Building to three storm water-collection areas within the building fence, which channel storm water to two collection areas north of the building 03-0066 fence: the area to the northeast of building 03-0066 discharges to a storm drain outlet just north of Eniwetok Drive, and the area to the northwest of building 03-0066 flows to a single storm drain that discharges to a low-lying grassy area northwest of building 03-0066.

1000.39.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-052(b)	Storm drainage	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.39.3 Control Measures

The run-on at this SMA is captured by two culvert inlets within the two eastern vegetative buffer strips. These inlets capture roof and pavement drainage and discharge to the culvert outlet at the fence line and onto a rip rap.

Subsections to 1000.39.3 list all control measures used to control pollutant sources identified in Section 1000.39.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.39.4.

1000.39.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S003A 02 03 0005	Established Vegetation - Vegetative Buffer Strip	•		•	
S003A 03 01 0004	Berms - Earthen	•			•
S003A 04 06 0002	Channel/Swale - Rip Rap		•	•	
S003A 04 06 0003	Channel/Swale - Rip Rap		•	•	

Vegetative Buffer Strip (S003A-02-03-0005)

This buffer strip is located in three separate locations adjacent to culvert inlets north of building 03-0066. It is used as a run-on and erosion control. A vegetative buffer strip is a gently sloping area of vegetative cover that run-off water flows through before entering a stream, storm sewer, or other conveyance. The buffer strip may be an undisturbed strip of natural vegetation or it can be a graded and planted area. Vegetation buffer strips are more defined areas of permanent vegetation, often incorporated into developed areas, which act to protect soils from erosion.

Earthen Berm (S003A-03-01-0004)

This berm is located west of the sampler, between the paved parking area and the fence line. It is in place to control run-on from the paved areas, diverting storm water to the north. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

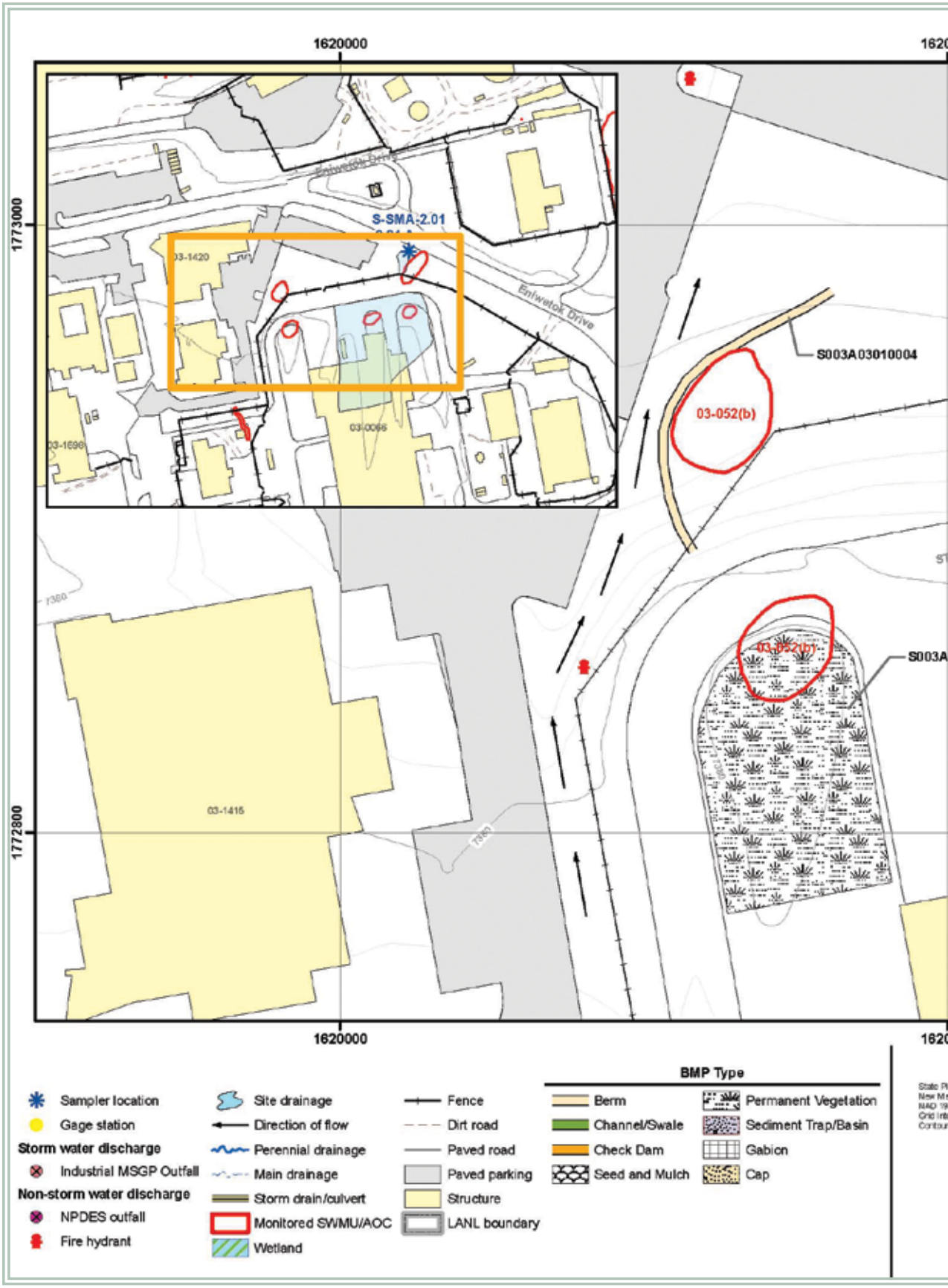
Rip Rap South (S003A-04-06-0002)

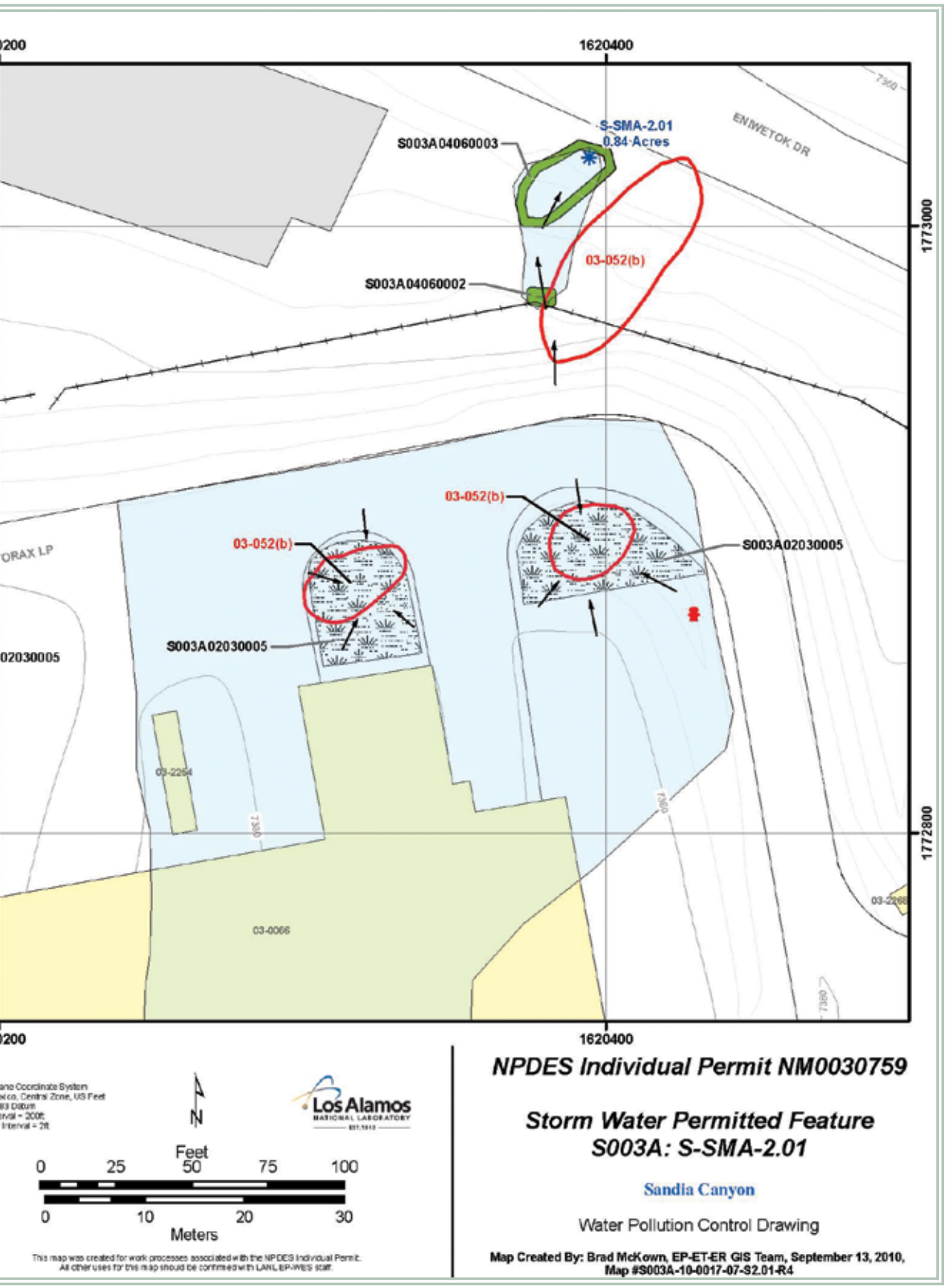
This rip rap is located below the culvert outlet (north of the fence) in the natural channel adjacent to, the east - west fence line. It is used to mitigate run-off and prevent erosion of the channel. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap North (S003A-04-06-0003)

This rip rap is situated above the sampler just south of Eniwetok Drive. It is in place to manage flow from the culvert outlet. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

1000.39.4 Project Map




1620400
S-SMA-2.01
0.84 Acres
S003A04060003
S003A04060002
03-052(b)
03-052(b)
03-052(b)
S003A02030005
S003A02030005
ENWETOK DR
1773000
1772800
1620400
03-2264
03-0066
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S003A: S-SMA-2.01
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 13, 2010,
Map #S003A-10-0017-07-S2.01-R4
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.

1000.39.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.39.6 Corrective Action Status

The Site associated with S-SMA-2.01 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.40 S-SMA-2.8

1000.40.1 Area Description

1000.40.2 Potential Pollutant Sources

1000.40.2.1 Historical Industrial Activity Areas

1000.40.3 Control Measures

1000.40.4 Project Map

1000.40.5 Storm Water Monitoring Plan and Schedule

1000.40.6 Corrective Action Status



1000.40 S-SMA-2.8

1000.40.1 Area Description

S-SMA-2.8 is located on a small vegetated area of TA-03. The area is gently sloped and run-off occurs naturally to the north, crossing a dirt road, before reaching Sandia Canyon. Storm water run-off in the area is influenced by structures and impervious areas south of the SMA.

1000.40.2 Potential Pollutant Sources

1000.40.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S004, S-SMA-2.8, Site 03-014(c2).

AOC 03-014(c2) is the inactive overflow outfall that previously received treated effluent from the former TA-03 WWTP from 1975 until the WWTP chlorination system [SWMU 03-014(j)] was constructed in 1985. The outfall was located on the north side of the chlorination system pump pit (structure 03-0166). Effluent for this outfall discharged as sheet flow onto a steep slope containing an erosion channel from storm water run-off. The channel eventually trends northeast into Sandia Canyon. Soil and sediment were occasionally cleaned out of the channel with a backhoe and piled onto the upslope channel bank. Following the construction of the chlorination system, the outfall was rerouted underground from the pump pit to the chlorination dosing and contact chamber where the final effluent discharged freely into Sandia Canyon from a flow measurement weir north of the contact chamber. This outfall was abandoned in 1988 or 1989, when the WWTP effluent was routed to a new outfall, AOC 03-014(b2).

An evaluation of the former WWTP blueprints during the 1994 RFI identified the location of the original treated effluent outfall approximately 20 to 30 ft west of the original AOC 03-014(c2) outfall.

1000.40.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-014(c2)	Outfall associated with former WWTP	Discrete Location, No overlap	Individual	•	•	•	PCBs SVC

1000.40.3 Control Measures

There is no evidence of culvert discharge from the culvert located below the fence on the steep hillside adjacent to the abandoned outfall. There is no evidence of significant run-on from the bare sand area south of the fence where the former WWTP is located. The northern access road contributes some run-on to the northern most SWMU boundary located below, or north of, the pit.

Subsections to 1000.40.3 list all control measures used to control pollutant sources identified in Section 1000.40.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.40.4.

1000.40.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S004 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S004 03 01 0005	Berms - Earthen		•		•
S004 03 02 0004	Berms - Base Course	•			•
S004 03 06 0002	Berms - Straw Wattles		•		•

Established Vegetation (S004-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Northern Earthen Berm (S004-03-01-0005)

This berm is installed in the northern portion of the SMA. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

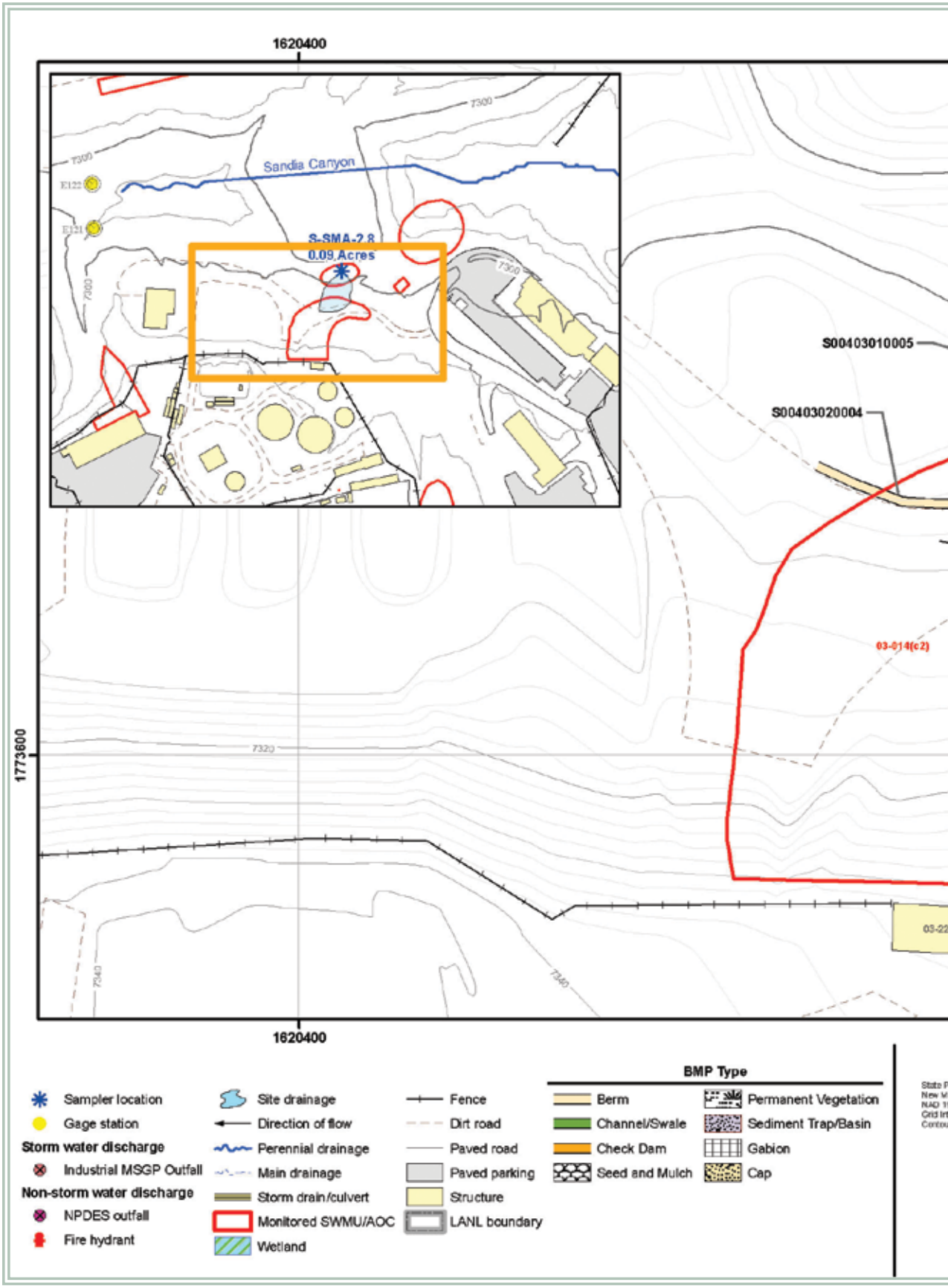
Southern Base Course Berm (S004-03-02-0004)

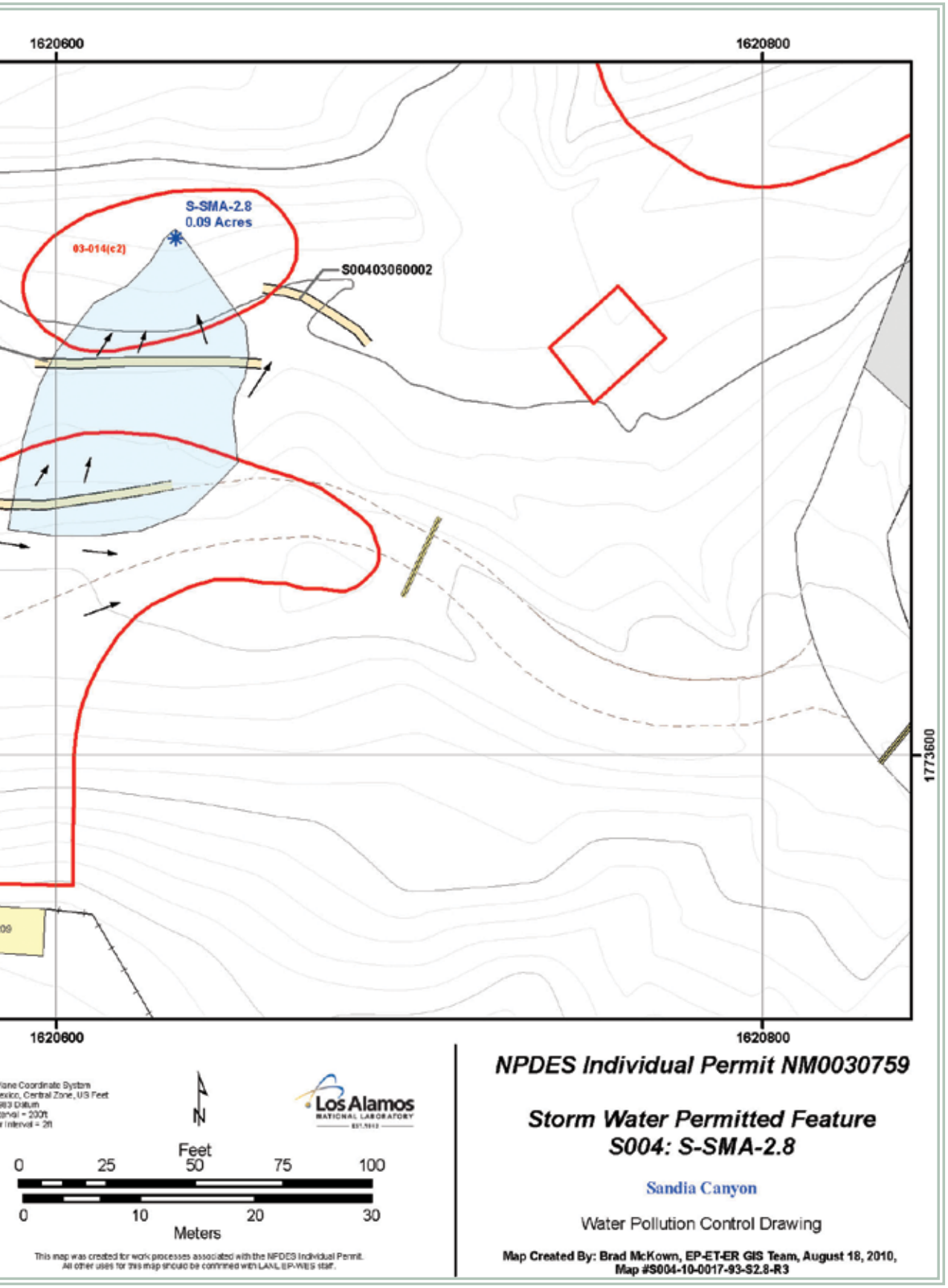
This berm is installed in the southern portion of the SMA. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattles - East(S004-03-06-0002)

These wattles are located to the east of the sampler. They are used to control run-off from the area. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.40.4 Project Map




1620600
1620800
S-SMA-2.8
0.09 Acres
03-014(c2)
S00403060002
1773600
1620600
1620800
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S004: S-SMA-2.8
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 18, 2010,
Map #S004-10-0017-93-S2.8-R3

1000.40.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.40.6 Corrective Action Status

The Site associated with S-SMA-2.8 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.41 S-SMA-3.51

1000.41.1 Area Description

1000.41.2 Potential Pollutant Sources

1000.41.2.1 Historical Industrial Activity Areas

1000.41.3 Control Measures

1000.41.3.1 Control Measures for Historical Industrial Activity Areas

1000.41.4 Project Map

1000.41.5 Storm Water Monitoring Plan and Schedule

1000.41.6 Corrective Action Status



1000.41 S-SMA-3.51

1000.41.1 Area Description

S-SMA-3.51, is located within a developed section of TA-3. The mesa top portion of the Permitted Feature area is flat to gradual and storm water run-off flows northwest to a short, steep north-facing slope before reaching Sandia Canyon. Run-off is influenced by structures and impervious areas on all sides of the area. Paved and unpaved roads intersect the western boundary at many points. Paved roads define the eastern boundary of the area. A majority of the interior of the Permitted Feature area is also impervious area.

1000.41.2 Potential Pollutant Sources

1000.41.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S005, S-SMA-3.51, Site 03-009(i).

SWMU 03-009(i) is an inactive surface disposal site located east of the liquid and compressed gas facility (building 03-0170). This site consists of construction debris, including crushed tuff, pieces of concrete, rock, and piles of fill. This surface disposal site ceased to be used in 1980.

1000.41.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-009(i)	Surface disposal site	Co-located, Overlapping	Individual	•	•	•	PCBs SVC

1000.41.3 Control Measures

Paved areas to the south of this SMA have the potential to contribute run-on.

Subsections to 1000.41.3 list all control measures used to control pollutant sources identified in Section 1000.41.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.41.4.

1000.41.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S005 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
S005 03 01 0005	Berms - Earthen		•		•
S005 03 02 0006	Berms - Base Course	•			•
S005 06 01 0007	Check Dam - Rock	•			•
S005 06 01 0008	Check Dam - Rock	•			•
S005 06 01 0009	Check Dam - Rock	•			•
S005 06 01 0010	Check Dam - Rock	•			•
S005 06 01 0012	Check Dam - Rock	•			•

Established Vegetation (S005-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (S005-03-01-0005)

This earthen berm is located southeast of the SMA and is helping to control run-off from the Site. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Base Course Berm (S005-03-02-0006)

This berm is located outside the fence line on the southern side of structure 03-0170. It is in place to help manage storm water run-on from the paved areas. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Check Dams (S005-06-01-0007, -0008, -0009, -0010)

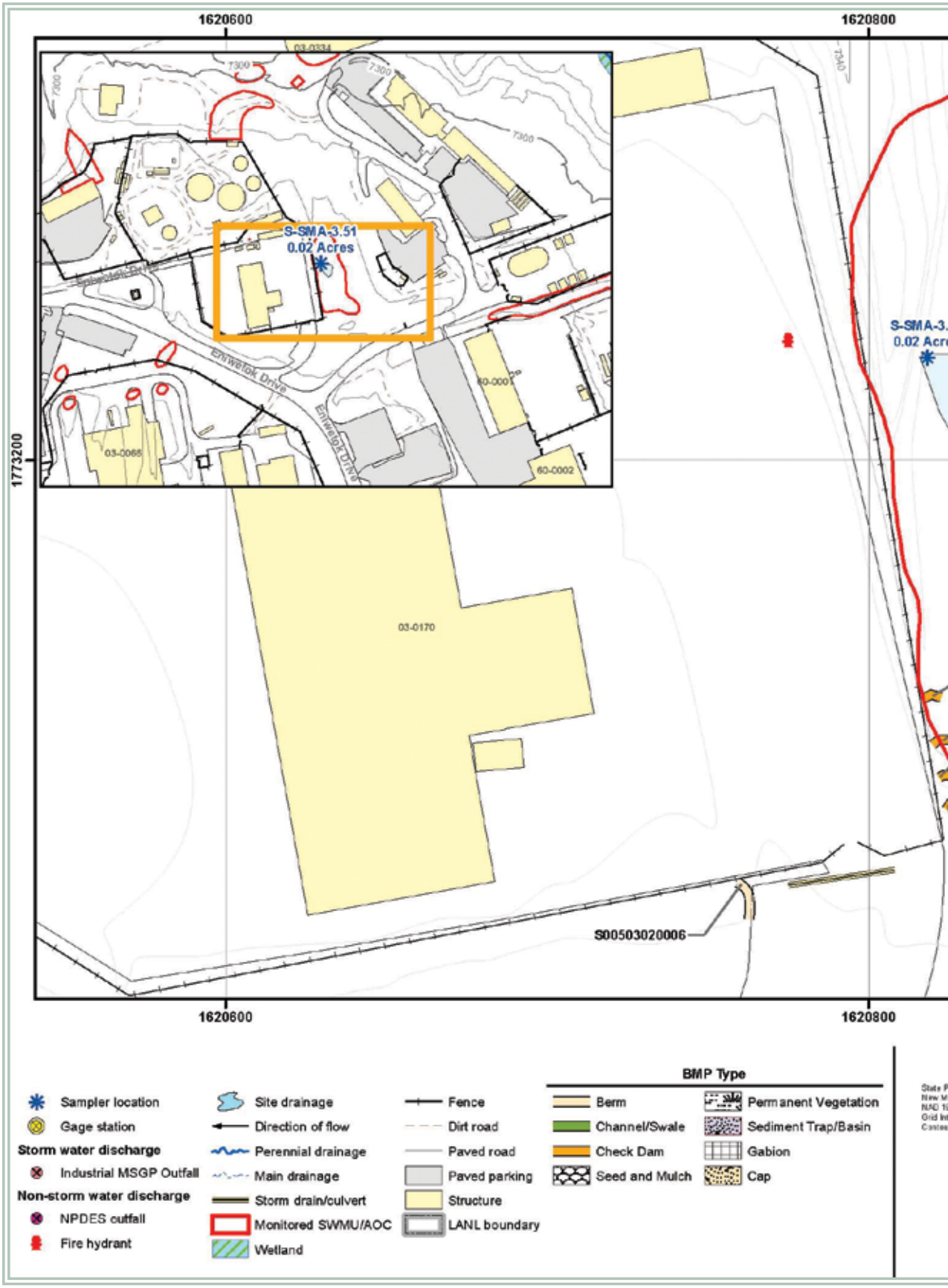
This is a series of four rock check dams located outside the fence east of structure 03-0170. They are used to help mitigate storm water run-on and reduce sediment migration. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of

rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam - South (S005-06-01-0012)

This check dam is located south of the SMA, near the southeast corner of the fence line. It is used to help control storm water run-on from the paved areas above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.41.4 Project Map



1621000
60-0245
S00503010005
03-009(I)
S00506010007
S00506010008
S00506010009
S00506010012
S00506010010
1773200
MANIAC
7360
7380
1621000
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL, EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S005:S-SMA-3.51
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 4, 2011,
Map #S005-10-0017-175-S3.51-R4

1000.41.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.41.6 Corrective Action Status

The Site associated with S-SMA-3.51 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.42 S-SMA-3.52

1000.42.1 Area Description

1000.42.2 Potential Pollutant Sources

1000.42.2.1 Historical Industrial Activity Areas

1000.42.3 Control Measures

1000.42.4 Project Map

1000.42.5 Storm Water Monitoring Plan and Schedule

1000.42.6 Corrective Action Status



1000.42 S-SMA-3.52

1000.42.1 Area Description

S-SMA-3.52, is located within a developed section of TA-03. The mesa top portion of the SMA is flat to gradual and storm water run-off flows northeast to a short, steep north-facing slope before reaching Sandia Canyon. Run-off is influenced by structures and impervious areas on all sides of the Permitted Feature area. Paved roads and dirt roads intersect the western boundary at many points. Paved roads define the eastern boundary of the area. A majority of the interior of the Permitted Feature area is also impervious area.

1000.42.2 Potential Pollutant Sources

1000.42.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S005A, S-SMA-3.52, Site 03-021.

SWMU 03-021 is an outfall and associated daylight channel located approximately 60 ft north of the north exterior wall of the liquid and compressed gas facility (building 03-0170). The outfall is a formerly NPDES-permitted outfall (EPA 04A094) and was removed from the 1997 permit. From 1964 to 1976, the outfall discharged caustic wash and rinse water from compressed-gas-cylinder cleaning operations. Cylinders were washed and stripped of paint using a caustic soda solution before they were repainted. Cylinders were screened for radioactive contamination and cleaned of any exterior oil, dirt, and grease before they were brought to building 03-0170. Washing and stripping were done in a below-floor-grade pit in the northern part of building 03-0170. A 2-in.-diameter iron outfall pipe in an open exterior ditch carried the caustic wash and rinse water from the pit. The end of the outfall pipe discharged into a northeast-trending surface ditch that continued about 180 ft to the main north-south drainage ditch. This outfall was not used after 1976, when the compressed gas suppliers assumed cylinder washing and painting responsibilities. The outfall was buried when 5 to 10 ft of fill material was placed over the former outfall area and graded during site preparation activities for the construction of building 03-1650, the compressed-gas cylinder storage shed.

1000.42.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-021	Outfall from Building 3-170	Co-located, Overlapping	Individual	•	•	•	PCBs SVC

1000.42.3 Control Measures

This SMA has the potential of run-on from the paved areas to the south and west.

Subsections to 1000.42.3 list all control measures used to control pollutant sources identified in Section 1000.42.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.42.4.

1000.42.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S005A 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S005A 03 06 0002	Berms - Straw Wattles	•			•
S005A 03 06 0003	Berms - Straw Wattles		•		•

Established Vegetation (S005A-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

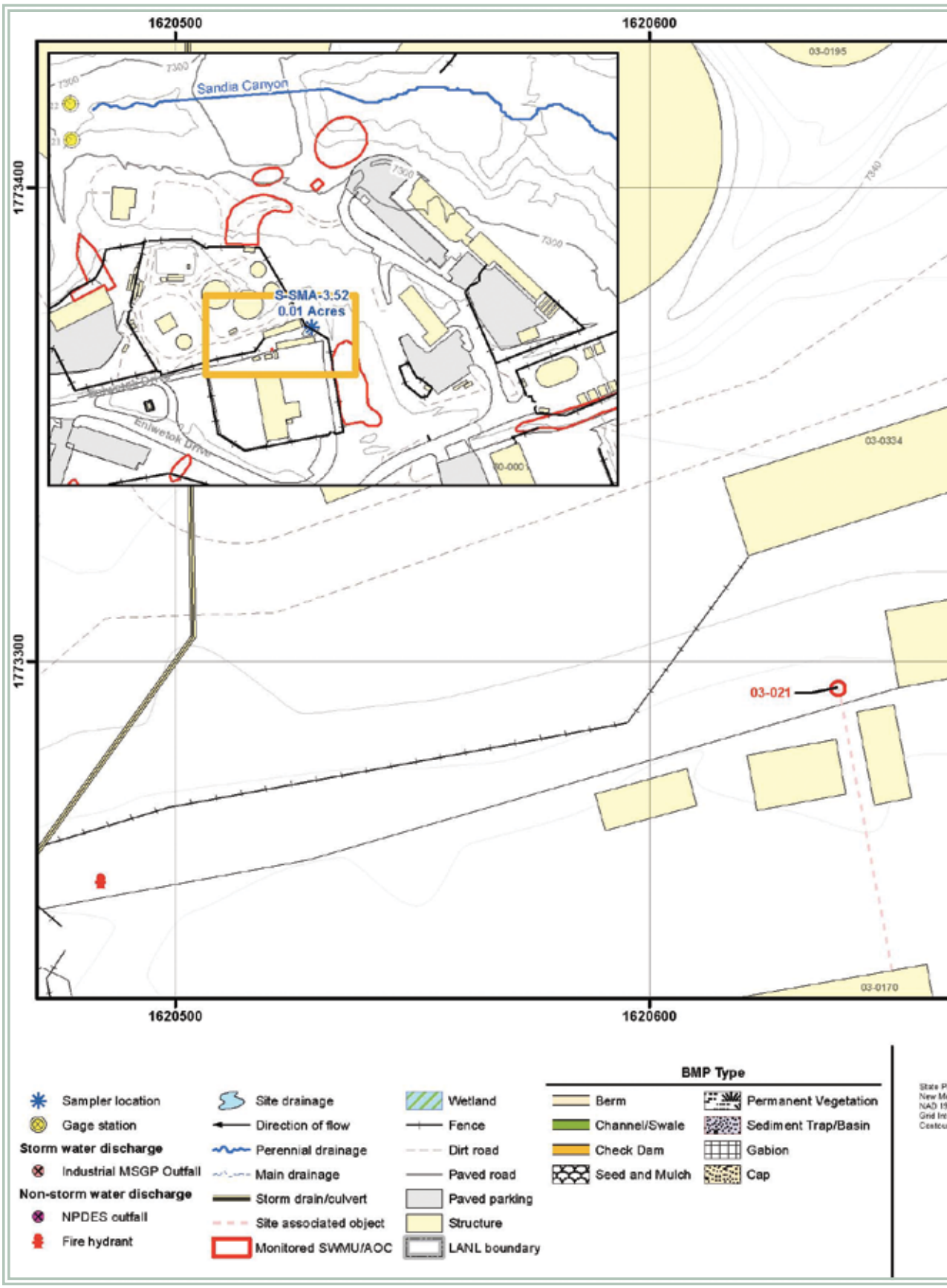
Straw Wattles - South (S005A-03-06-0002)

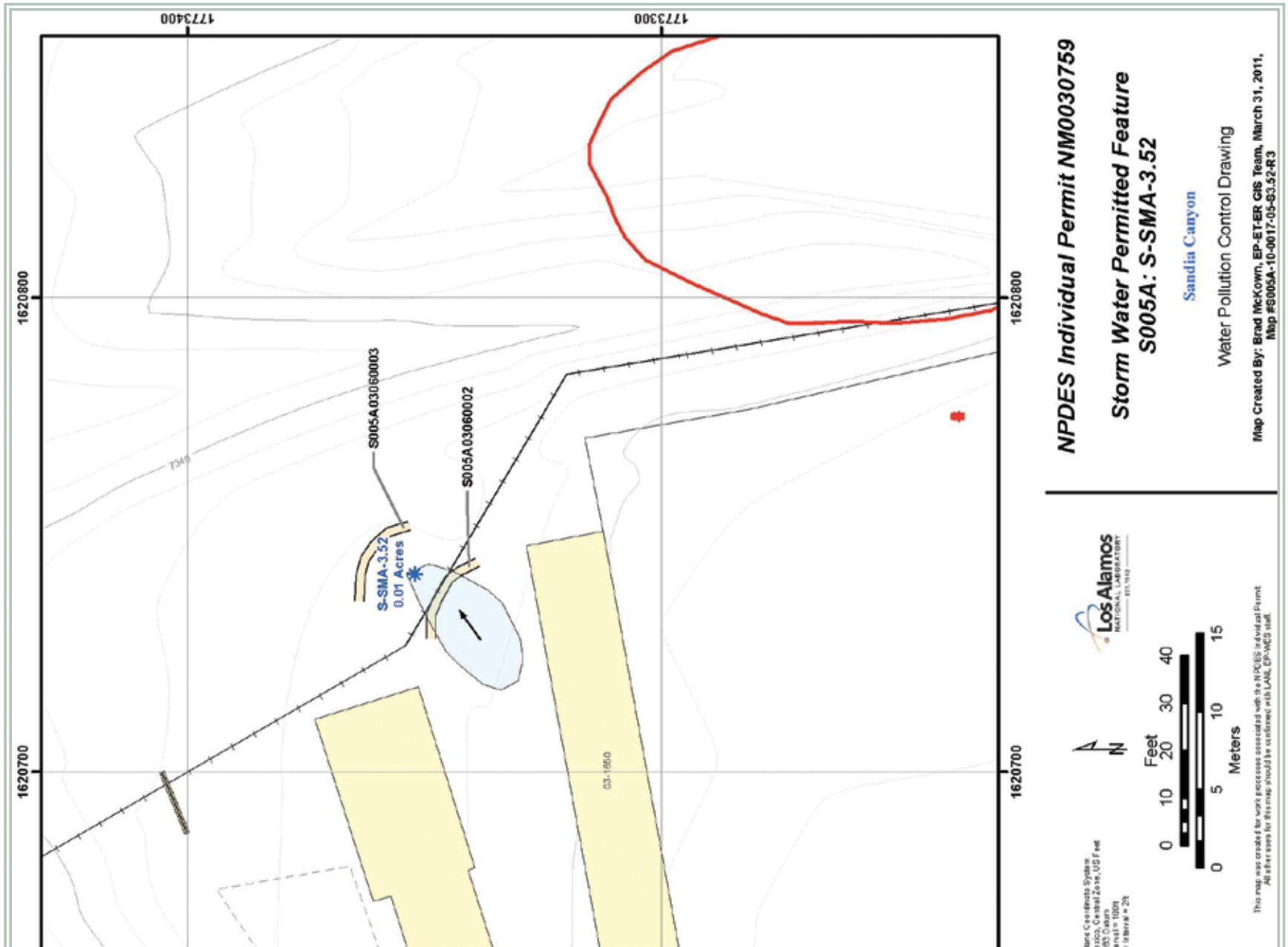
This wattle is located adjacent to the fence line and between structures 03-0334 and 03-1650. It is used to help manage storm water run-on from the paved areas. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Straw Wattles - North (S005A-03-06-0003)

This wattle is located north of the sampler, across the drainage channel. It is used to help control run-off from the slope above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.42.4 Project Map




1773400
1773300
1620800
1620700
S005A03060003
S005A03060002
S-SMA-3.52
0.01 Acres
03-1660
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S005A: S-SMA-3.52
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 31, 2011,
Map #S005A-10-0017-05-83.52-R3
Los Alamos
NATIONAL LABORATORY
N
Feet
0 10 20 30 40
Meters
0 5 10 15

1000.42.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.42.6 Corrective Action Status

The Site associated with S-SMA-3.52 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.43 S-SMA-3.52

1000.43.1 Area Description

1000.43.2 Potential Pollutant Sources

1000.43.2.1 Historical Industrial Activity Areas

1000.43.3 Control Measures

1000.43.4 Project Map

1000.43.5 Storm Water Monitoring Plan and Schedule

1000.43.6 Corrective Action Status



1000.43 S-SMA-3.53

1000.43.1 Area Description

S-SMA-3.53, is located within a developed section of TA-03. The mesa top portion of the Permitted Feature area is flat to gradual and storm water run-off flows north to a short, steep north-facing slope before reaching Sandia Canyon. Run-off is influenced by structures and impervious areas on all sides of the Permitted Feature area. Paved roads and dirt roads intersect the western boundary at many points. Paved roads define the eastern boundary of the area. A majority of the interior of the Permitted Feature area is also impervious area.

1000.43.2 Potential Pollutant Sources

1000.43.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S005B, S-SMA-3.53, Site 03-014(b2).

AOC 03-014(b2) is a former NPDES-permitted outfall (EPA SSSO1S) for the former TA-03 WWTP. The outfall received treated effluent from a flow-measurement weir north of the WWTP chlorination system [SWMU 03-014(j)] dosing and contact chamber via a 1.5-ft-diameter × 300-ft-long corrugated metal pipe. The outfall discharged to a rocky outcrop at the edge of Sandia Canyon. Outfall SSS01S was permitted for the discharge of wastewater and was removed from the NPDES permit in 1994.

AOC 03-014(b2) received effluent from the former TA-03 WWTP from 1989 to 1992 when the WWTP was decommissioned. AOC 03-014(b2) received treated effluent from the SWSC plant at TA-46 from 1992 to 1998 when the effluent was switched to the outfall at the power plant, building 03-0022. AOC 03-014(b2) was monitored three times per month for biochemical oxygen demand, total suspended solids (TSS), pH, fecal coliform, total chlorine, and radioactive constituents. From 1989 to 1993, radioactive constituents were reported over the DLs.

1000.43.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
03-014(b2)	Outfall associated with former WWTP	Co-located, Overlapping	Individual	•	•	•	PCBs SVC

1000.43.3 Control Measures

This SMA has the potential of run-on from the paved areas to the south.

Subsections to 1000.43.3 list all control measures used to control pollutant sources identified in Section 1000.43.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.43.4.

1000.43.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S005B 02 02 0001	Established Vegetation - Forested/Needle Cast			•	
S005B 03 12 0005	Berms - Rock		•		•
S005B 06 01 0003	Check Dam - Rock	•			•
S005B 06 01 0004	Check Dam - Rock	•			•

Established Vegetation (S005-02-02-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

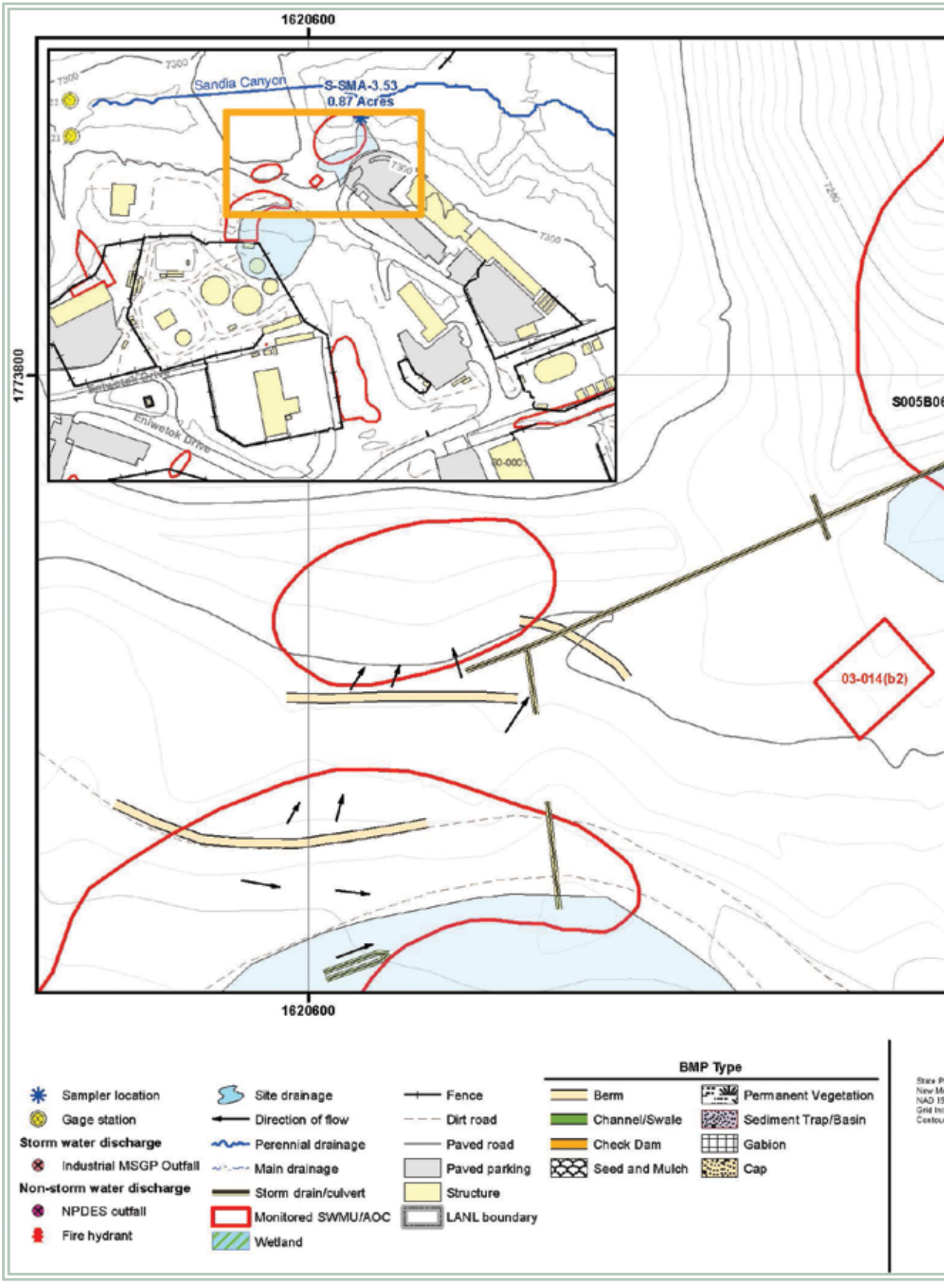
Rock Berm - South (S005B-03-12-0005)

This berm is located in the drainage channel south of the sampler. It is used to help mitigate storm water run-off. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Check Dams (S005B-06-01-0003, -0004)

This is a pair of rock check dams located in the western portion of the SMA. They are in place to manage run-on generated by the unpaved access road. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.43.4 Project Map



1620800
1621000
S-SMA-3.53
0.87 Acres
S005B03120005
03-014(b2)
S005B06010004
3010003
1773800
60-0175
1620800
1621000
N
Feet
0 10 20 30 40
0 5 10 15
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S005B: S-SMA-3.53
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, February 24, 2011,
Map #S005B-10-0017-06-S3.53-R5

1000.43.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.43.6 Corrective Action Status

The Site associated with S-SMA-3.53 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.44 S-SMA-3.6

1000.44.1 Area Description

1000.44.2 Potential Pollutant Sources

1000.44.2.1 Historical Industrial Activity Areas

1000.44.2.2 Public Influences

1000.44.3 Control Measures

1000.44.3.1 Control Measures for Historical Industrial Activity Areas

1000.44.4 Project Map

1000.44.5 Storm Water Monitoring Plan and Schedule

1000.44.6 Corrective Action Status



1000.44 S-SMA-3.6

1000.44.1 Area Description

S-SMA-3.6 is located in a developed portion of TA-03. The mesa top portion of the Permitted Feature is flat and run-off flows northeast down a gradual slope. Run-off continues to a northeast facing slope of Sandia Canyon. Run-off from the Permitted Feature is influenced by run-off from structures and impervious areas adjacent on the north, west, and south boundaries of the Permitted Feature. The majority of area on the northern and western boundaries is impervious. The southern boundary is primarily vegetated. An unpaved access road makes up the eastern boundary. The western two thirds of the area is developed land, while the eastern one third is undeveloped.

1000.44.2 Potential Pollutant Sources

1000.44.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S006, S-SMA-3.6, Site 60-007(b).

SWMU 60-007(b) is a storm drainage ditch at TA-60 that starts approximately 600 ft from a paved area directly north of the motor pool building (building 60-0001) and extends to the bottom of Sandia Canyon. Two parking lots located east of building 60-0001 drain to a ditch that eventually joins the SWMU 60-007(b) drainage ditch. Other former sources of potential contamination to the ditch are a steam-cleaning pad, a used-oil storage tank, and an oil/water separator. In addition, equipment that used PCB-containing oil was stored on an asphalt area east of building 60-0001. In 1986, the user group removed stained soil from the ditch.

1000.44.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
60-007(b)	Operational Release	Discrete Location, No overlap	Individual	•	•	•	HE PCBs

1000.44.2.2 Public Influences

All boundaries of the SMA are accessible to the public. Pedestrian traffic in the area primarily consists of those who are working in the area.

1000.44.3 Control Measures

Run-on sources at this SMA include: the dirt access road along the southern portion of the SWMU boundary; the asphalt parking area east of building 60-0002; the parking area and road between buildings 60-0001 and 60-0002 which discharges to a culvert and to the channel flowing onto the SWMU; the heavy equipment storage area east of 60-0001 which discharges to the culvert on site; and the road and parking area between building 60-0001 and building 60-0085 which discharges to the on site channel.

Subsections to 1000.44.3 list all control measures used to control pollutant sources identified in Section 1000.44.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.44.4.

1000.44.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S006 02 01 0004	Established Vegetation - Grasses and Shrubs			•	
S006 04 06 0002	Channel/Swale - Rip Rap	•		•	
S006 04 06 0010	Channel/Swale - Rip Rap		•	•	
S006 04 06 0011	Channel/Swale - Rip Rap	•		•	
S006 06 01 0001	Check Dam - Rock		•		•
S006 06 01 0012	Check Dam - Rock		•		•
S006 06 01 0013	Check Dam - Rock		•		•
S006 06 01 0014	Check Dam - Rock		•		•
S006 06 01 0015	Check Dam - Rock	•			•
S006 07 01 0007	Gabions - Gabions	•			•
S006 07 01 0008	Gabions - Gabions	•			•

Established Vegetation (S006-02-01-0004)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rip Rap - Central (S006-04-06-0002)

This rip rap is located in the drainage channel northeast of the parking area near structure 60-0009. It is acting as run-on culvert outlet protection. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap - North (S006-04-06-0010)

This rip rap is located west of the sampler in the drainage channel that flows south of building 60-0216. It is in place to control run-off and prevent erosion of the channel.

Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rip Rap - South
(S006-04-06-0011)
This rip rap is located adjacent to the paved area east of building 60-0007. It is used to mitigate run-on from the paved areas and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Rock Check Dam - East
(S006-06-01-0001)
This is a series of four rock check dams (tracked as one unit) located in the drainage channel northeast of the parking area near structure 60-0009. They are in place to control run-off from the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Check Dam - South
(S006-06-01-0012, -0013, -0014)
This is a series of three rock check dams located in the drainage channel east of building 60-0007. They are used to restrict run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Check Dam - Rock
(S006-06-01-0015)
This rock check dam is located in the drainage channel south of the transportainers. It is used to alleviate run-on from the paved areas to the north. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

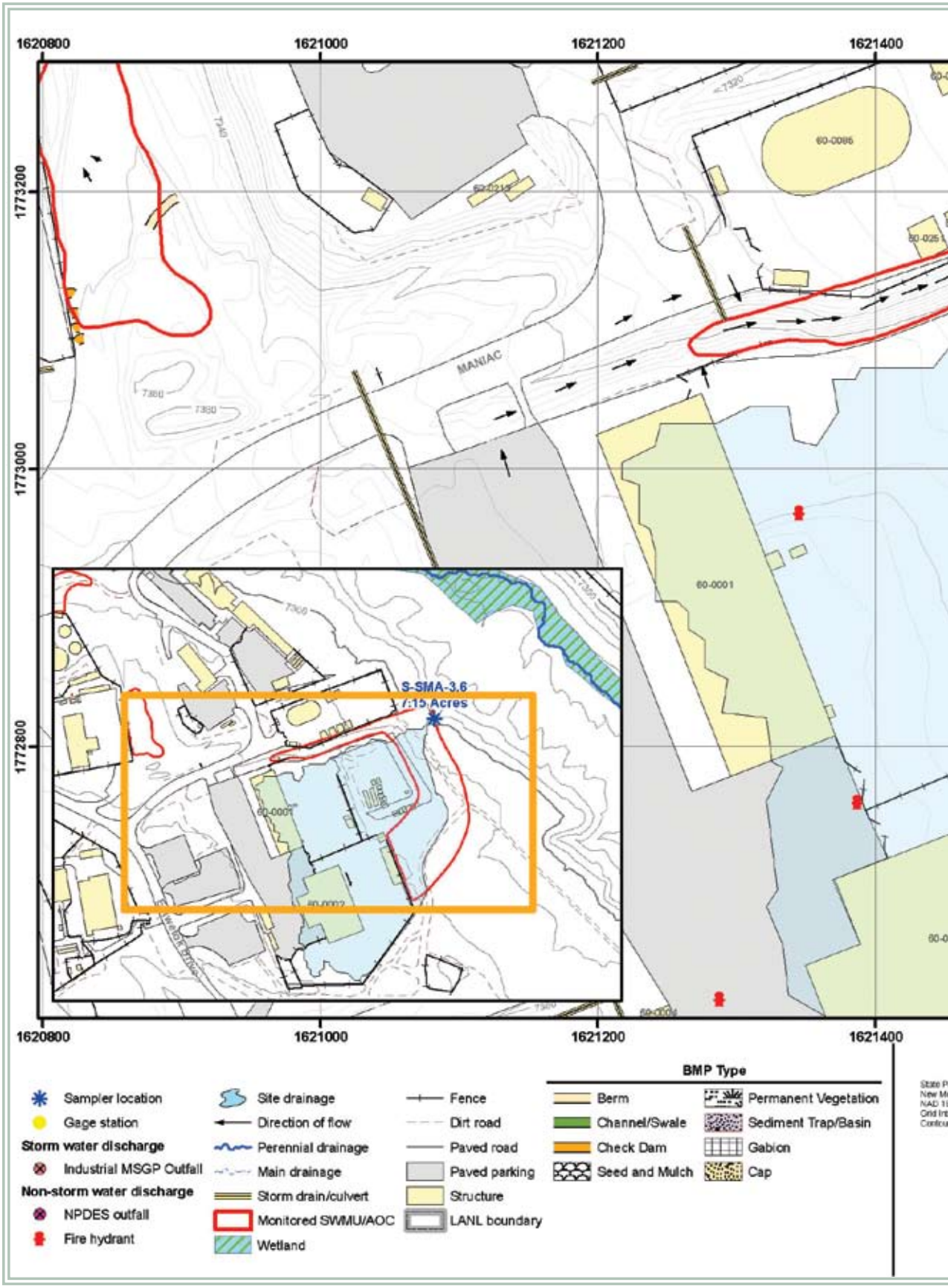
Gabions - North
(S006-07-01-0007)
The gabion is located at the north end of the fence east of building 60-0001. It is in place to control run-on from the paved parking area. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

Gabions - South
(S006-07-01-0008)
This gabion is located in the drainage channel north of building 60-0007. It is in place to mitigate run-on from the paved areas. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

1000.44.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S006, S-SMA-3.6. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.44.4 Project Map



1621600
1621800
1622000
1773200
1773000
1772800
S00604060010
S-SMA-3.6
7.15 Acres
S00606010001
S00604060002
S00607010007
S00606010001
60-007(b)
S00606010014
S00606010015
S00606010013
S00607010008
S00606010012
S00604060011
60-0003
60-0009
60-0220
60-0001
7320
7260
7280
7240
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S006: S-SMA-3.6
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 18, 2010,
Map #S006-10-0017-178-S3.6-R3
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WEB staff.

1000.44.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.44.6 Corrective Action Status

The Site associated with S-SMA-3.6 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.45 S-SMA-3.7

1000.45.1 Area Description

1000.45.2 Potential Pollutant Sources

1000.45.2.1 Historical Industrial Activity Areas

1000.45.3 Control Measures

1000.45.4 Project Map

1000.45.5 Storm Water Monitoring Plan and Schedule

1000.45.6 Corrective Action Status



1000.45 S-SMA-3.7

1000.45.1 Area Description

S-SMA-3.7 is located on a gradual portion of a southwest facing slope of Sandia Canyon. Downstream of the SMA, the slope of canyon wall becomes steep and run-off flows to Sandia Canyon. Storm water run-off is influenced by structures and impervious area north of the area. The SMA and all boundaries are undeveloped land.

1000.45.2 Potential Pollutant Sources

1000.45.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S007, S-SMA-3.7, Site 53-012(e).

AOC 53-012(e) is a drainline and former outfall associated with the TA-53 equipment test laboratory (building 53-2). The drainline runs southwest under an asphalt parking lot approximately 110 ft from the southwest corner of building 53-2 and then changes direction, running northwest approximately 100 ft to the associated outfall near the edge of Sandia Canyon. The drainline received discharges from 12 trench drains, 2 sink drains, and a floor drain in building 53-2. The primary source of wastewater was blow-down from the building 53-2 cooling tower, which was discharged to one of the trench drains.

Historically, chemicals added to the cooling water included sodium molybdate and hydroxyethylidene diphosphonic acid as corrosion inhibitors; 1-bromo-3-chloro-5,5-dimethylhydantoin as a microbicide; and sodium bisulfite as an oxygen scavenger. The trench drains also received equipment-flushing and floor-washing wastewater. Discharges to this outfall began in approximately 1968, when building 53-2 went into service. This outfall was included in the Laboratory's National Pollutant Discharge Elimination System (NPDES) permit as Outfall 03A114. Discharges to this outfall ceased, and the outfall was removed from the NPDES permit on July 11, 1995. The drainline is still in place, but the outfall has been plugged.

1000.45.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
53-012(e)	Outfall from Building 53-2	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.45.3 Control Measures

There is the potential for run-on at this SMA from the paved areas to the northeast.

Subsections to 1000.45.3 list all control measures used to control pollutant sources identified in Section 1000.45.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.45.4.

1000.45.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S007 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
S007 03 12 0004	Berms - Rock	•			•
S007 03 12 0005	Berms - Rock		•		•
S007 04 03 0003	Channel/Swale - Rock	•		•	

Established Vegetation (S007-02-02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control andstorm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Rock Berm (S007-03-12-0004)

This berm sits at the southwest corner of channel -0003 to control run-on and sediment as the water flows to the southwest. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

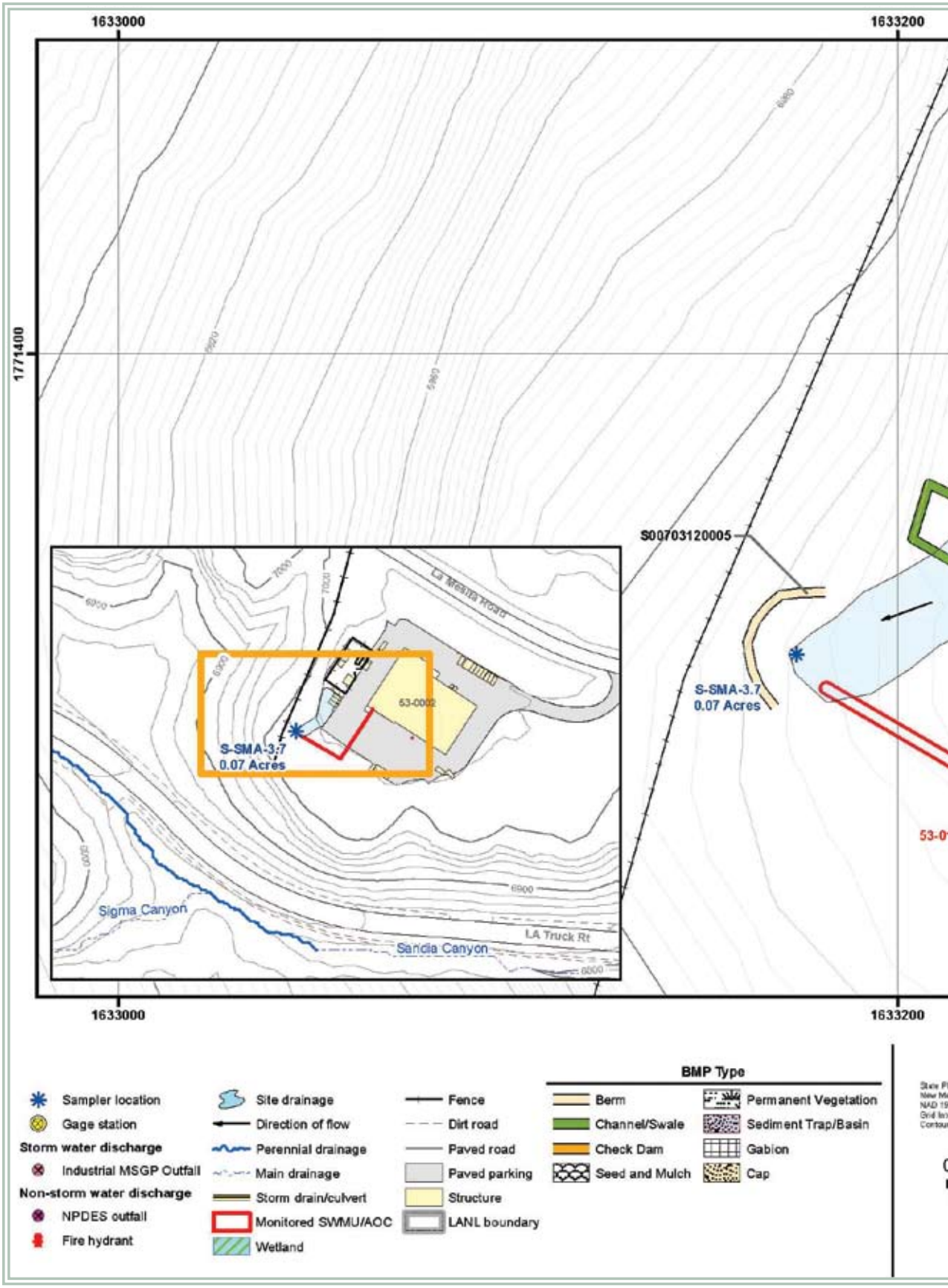
Rock Berm - West (S007-03-12-0005)

This berm is directly south of the sampler and moderates run-off flow and sediment transport. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Channel/Swale (S007-04-03-0003)

This channel runs north-east to south-west through the Site drainage and controls run-on and erosion. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

1000.45.4 Project Map



1633400
1771400
53-0973
53-0002
S00704030003
S00703120004
12(e)
53-0056
1633400
Feet
0
25
50
75
100
Meters
0
10
20
30
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S007: S-SMA-3.7
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 4, 2011,
Map #S007-10-0017-189-S3.7-R4

1000.45.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.45.6 Corrective Action Status

The Site associated with S-SMA-3.7 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.46 S-SMA-3.71

1000.46.1 Area Description

1000.46.2 Potential Pollutant Sources

1000.46.2.1 Historical Industrial Activity Areas

1000.46.3 Control Measures

1000.46.4 Project Map

1000.46.5 Storm Water Monitoring Plan and Schedule

1000.46.6 Corrective Action Status



1000.46 S-SMA-3.71

1000.46.1 Area Description

S-SMA-3.71 is located within TA-53 and access to the area is controlled. The northern boundary is La Mesita Rd, a paved access road to TA-53. The southern boundary is developed area in TA-53. The eastern boundary is developed and undeveloped land. The western boundary is undeveloped mesa edge. Approximately 25 feet further west, the slope of Sandia Canyon begins.

1000.46.2 Potential Pollutant Sources

1000.46.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S008, S-SMA-3.71, Site 53-001(a).

SWMU 53-001(a) is an outdoor storage area located on the north side of the TA-53 equipment test laboratory, building 53-2. This storage area consists of a covered concrete pad currently serving as a drum storage area for building 53-2. This area was also formerly used as a satellite accumulation area. Non-PCB dielectric oil is currently stored on the concrete pad. The pad is surrounded by a concrete curb to provide secondary containment. A drain valve located in the northwest corner of the curbed area was previously used to release accumulated rainwater but is now plugged. The storage area is believed to have been first used in 1968 when operations at building 53-2 began. A 1989 photograph of the area shows the site to look much as it does today. In 1992, the site was no longer used as a satellite accumulation area. A Laboratory listing of waste-accumulation areas dated April 1993 notes the satellite accumulation area on the north side of building 53-2 was removed. The site was inspected during preparation of the RFI work plan in 1993, and no evidence of staining or releases was noted.

1000.46.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
53-001(a)	Storage area	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.46.3 Control Measures

Run-on from the paved area east of the SWMU is minimal. The majority of flow generated by the paved area east of the SMA travels south of the SWMU boundary and impacts the southern most asphalt swale.

Some run-on from the hill slope north of the gabion structure flows south and over the gabions onto the paved area north of the SWMU.

Subsections to 1000.46.3 list all control measures used to control pollutant sources identified in Section 1000.46.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.46.4.

1000.46.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S008 01 01 0012	Seed and Mulch			•	
S008 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
S008 03 06 0004	Berms - Straw Wattles	•			•
S008 03 06 0005	Berms - Straw Wattles	•			•
S008 03 06 0006	Berms - Straw Wattles	•			•
S008 03 06 0007	Berms - Straw Wattles	•			•
S008 04 02 0002	Channel/Swale - Concrete/Asphalt		•	•	
S008 06 01 0008	Check Dam - Rock		•		•
S008 06 01 0009	Check Dam - Rock		•		•
S008 06 01 0010	Check Dam - Rock		•		•
S008 06 01 0011	Check Dam - Rock		•		•
S008 07 01 0001	Gabions - Gabions	•			•

Seed and Wood Mulch (S008-01-01-0012)

Seed and Mulch has been applied to the area southeast of the sampler, extending north towards La Mesita Road. It is used to help manage run-on and helps prevent erosion. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water runoff, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (S008-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of

existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles
(S008-03-06-0004, -0005, -0006, -0007)

This is a group of four wattles located southwest of La Mesita Road. They are used to help mitigate storm water run-on. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Concrete/Asphalt Swale
(S008-04-02-0002)

The swale is located on the northwest side of the paved area. It is in place to manage run-off from the area. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

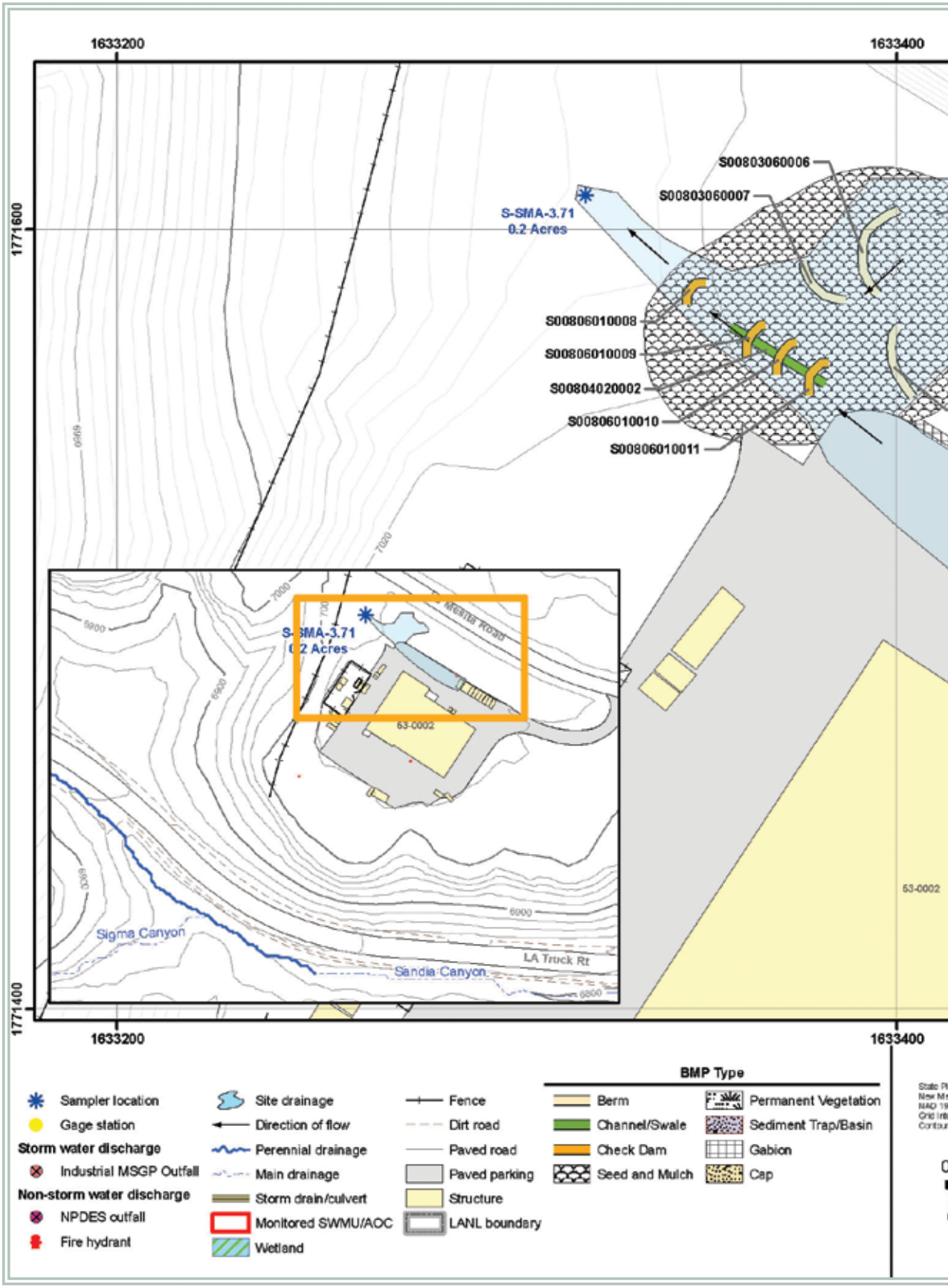
Rock Check Dams
(S008-06-01-0008, -0009, -0010, -0011)

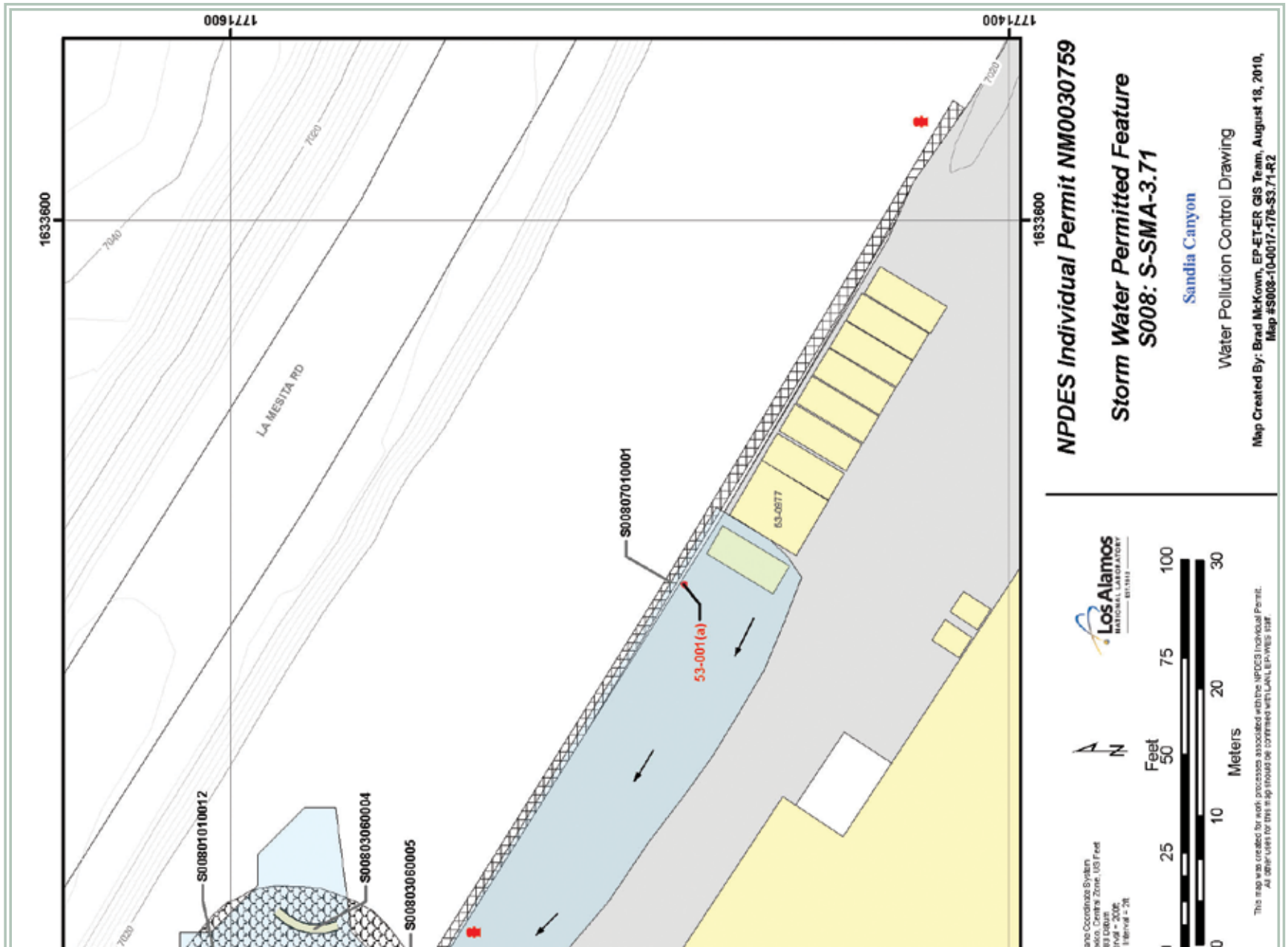
This is a series of four rock check dams, three check dams are located on the swale and one is located in the flow path below the swale in a small conveyance southeast of the sampler. They are helping to manage the storm water run-off from the paved parking areas. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Gabions
(S008-07-01-0001)

The gabion is located at the northeast corner of the parking perimeter around building 63-0002. It is acting to control run-on from the undeveloped area north of the SWMU. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

1000.46.4 Project Map




1771600
1771400
1633600
1633800
7040
7020
LA MESITA RD
S00807010001
53-001(a)
53-0877
S00801010012
S00803060004
S00803060005
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S008: S-SMA-3.71
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 18, 2010,
Map #S008-10-0017-178-S3.71-R2
Los Alamos
NATIONAL LABORATORY
N
Feet
50
75
100
Meters
10
20
30
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.

1000.46.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.46.6 Corrective Action Status

The Site associated with S-SMA-3.71 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.47 S-SMA-3.72

1000.47.1 Area Description

1000.47.2 Potential Pollutant Sources

1000.47.2.1 Historical Industrial Activity Areas

1000.47.4 Project Map

1000.47.5 Storm Water Monitoring Plan and Schedule

1000.47.6 Corrective Action Status



1000.47 S-SMA-3.72

1000.47.1 Area Description

S-SMA-3.72 is located within a developed portion of TA-53. The area comprising the SMA is flat and run-off flows south to a steep south facing slope of Sandia Canyon. The SMA is influenced by run-off from surrounding structures and impervious areas adjacent to the SMA on all sides. This SMA is heavily influenced by bare and impervious areas.

1000.47.2 Potential Pollutant Sources

1000.47.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S009, S-SMA-3.72, Site 53-001(b).

SWMU 53-001(b) is an outdoor storage area located on a concrete pad that rests on the asphalt parking lot on the south side of the TA-53 equipment test laboratory, building 53-2. Before 1990, this area consisted of drum racks used to store drums of products and wastes associated with maintenance activities conducted in building 53-2. Wastes included spent trichloroethene (TCE), Freon, other solvents, and acidic waste. Engineering drawings show the storage area was constructed in 1971. A photograph taken in 1989 shows the storage area contained drums, some of which were product and some of which were marked with hazardous waste labels. In addition, the photograph identifies no staining, suggesting no spills or leakage occurred.

In 1990, the drum racks were removed and replaced with four lockable flammable-material storage cabinets. The site was inspected during preparation of the RFI work plan in 1993, and again no evidence of staining or releases was noted. The Laboratory's current waste-site database indicates this storage location also contained a less-than-90-d storage area that was removed (i.e., taken out of service) in 1998. The site currently contains flammable-material storage cabinets, which are used for product storage but not for waste storage.

1000.47.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
53-001(b)	Storage area	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.47.3 Control Measures

Roof drains are the primary run-on source to the Permitted Feature, along with the impervious paved area south of building 53-0002. The roof drains are positioned to the east and west of the SWMU and do not impact the concrete pad or former drum storage area.

Subsections to 1000.47.3 list all control measures used to control pollutant sources identified in Section 1000.47.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.47.4.

1000.47.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S009 01 01 0008	Seed and Mulch - Seed and Wood Mulch			•	
S009 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S009 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
S009 03 12 0003	Berms - Rock	•			•
S009 06 01 0004	Check Dam - Rock		•		•
S009 06 01 0005	Check Dam - Rock		•		•
S009 06 01 0006	Check Dam - Rock		•		•
S009 06 01 0007	Check Dam - Rock		•		•

Seed and Wood Mulch (S009-01-01-0008)

The seed and wood mulch is located west of the check dams and sampler. It is in place to help control erosion in the area. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (S009-02-01-0001, -02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

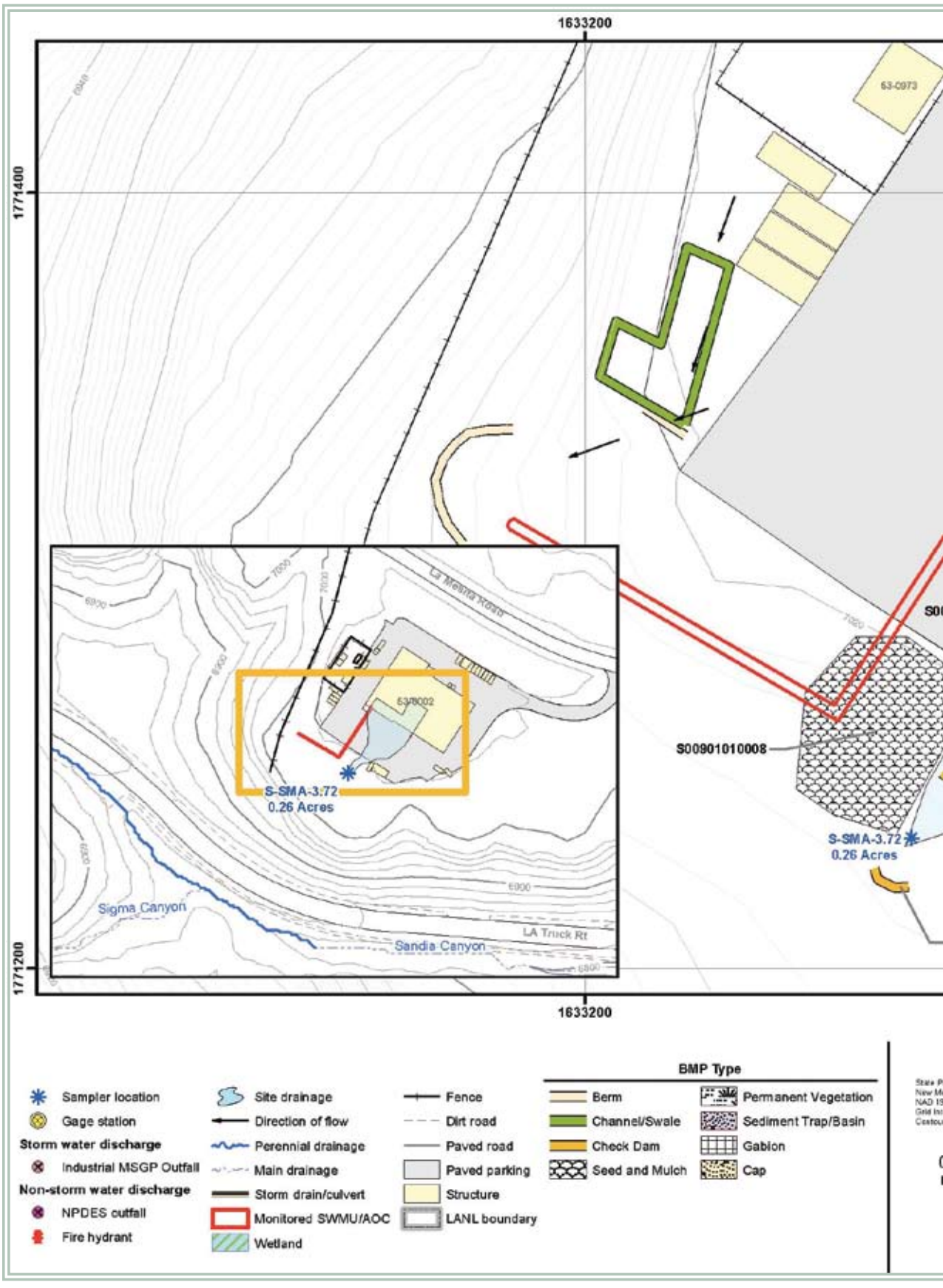
Rock Berm (S009-03-12-0003)

The berm is located at the dirt and paved parking interface above the sampler. It is

in place to help control storm water run-on. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Check Dams
(S009-06-01-0004, -0005, -0006, -0007)
This is a series of four check dams located within the small conveyance south of the asphalt parking area. They are in place to mitigate run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.47.4 Project Map



1633400
1771400
1771200
63-0002
53-001(b)
0903120003
63-0066
S00906010007
S00906010006
S00906010005
S00906010004
N
Feet
0
25
50
75
100
0
10
20
30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S009: S-SMA-3.72
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team,
March 16, 2011, Map #S009-10-0017-130-S3.72-R4

1000.47.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.47.6 Corrective Action Status

The Site associated with S-SMA-3.72 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.48 S-SMA-3.95

1000.48.1 Area Description

1000.48.2 Potential Pollutant Sources

1000.48.2.1 Historical Industrial Activity Areas

1000.48.2.2 Urban Influences

1000.48.2.3 Public Influences

1000.48.3 Control Measures

1000.48.3.1 Control Measures for Public Influences

1000.48.4 Project Map

1000.48.5 Storm Water Monitoring Plan and Schedule

1000.48.6 Corrective Action Status



1000.48 S-SMA-3.95

1000.48.1 Area Description

S-SMA-3.95 is located on the floor of Sandia Canyon in TA-53. The Feature Area is flat and run-off flows to the south to the main drainage channel of Sandia Canyon. Run-off is influenced by East Jemez Road to the north. South of the area is the main drainage channel and the north facing slope of Sandia Canyon. All other boundaries of the area are undeveloped land.

1000.48.2 Potential Pollutant Sources

1000.48.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S010, S-SMA-3.95, Site 20-002(a).

SWMU 20-002(a) is the location of a former firing pit (structure 20-6) used from 1945 to 1948 to conduct initiator tests. The firing pit was located on the far west end of former TA-20, south of East Jemez Road. The steel-lined pit was constructed following the failure of the Dumbo [a contained firing vessel, see description of SWMU 20-002(b)]. The firing pit had interior dimensions of 14 ft 8 in. x 14 ft 8 in. x 12 ft deep. The walls and floor of the pit consisted of 0.75-in.-thick steel plate backed by 12 in. x 12-in. timbers. The pit was covered by a steel framework overlain by a mat of 0.25-in.-diameter steel rods spaced 1 in. apart. According to a 1947 report, the framework and mat, presumably installed to contain shot debris, failed after the first few shots.

Laboratory facility engineering records indicate the pit was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes that one "cage" was excavated and that the "interior checked negative after clearing". The SWMU 20-002(a) firing pit is presumed to be the "cage" referred to in the memorandum.

1000.48.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
20-002(a)	Firing Site	Discrete Location, No overlap	Individual	•	•	•	HE SVC

1000.48.2.2 Urban Influences

The paved road is banked towards the SMA and contains an asphalt berm on the southern lip of the road. There are two drop inlets; one on the eastern and one on the western side of the SMA. The inlets serve to direct storm water off of the road.

1000.48.2.3 Public Influences

The SMA is fronted by East Jemez road. This SMA will be inspected for litter and visible debris.

1000.48.3 Control Measures

The northwestern edge of the SMA contains a drop inlet that directs storm water across the area. The canyon drainage runs through the bottom of the SMA and should be monitored for any undercutting of the Site.

Subsections to 1000.48.3 list all control measures used to control pollutant sources identified in Section 1000.48.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.48.4.

1000.48.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S010 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
S010 03 06 0004	Berms - Straw Wattles		•		•

Established Vegetation (S010-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Drainage Area Wattle (S010-03-06-0004)

This wattle is located in the center of the site drainage area. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.48.3.2 Control Measures for Urban Influences

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S010 03 06 0003	Berms - Straw Wattles	•			•

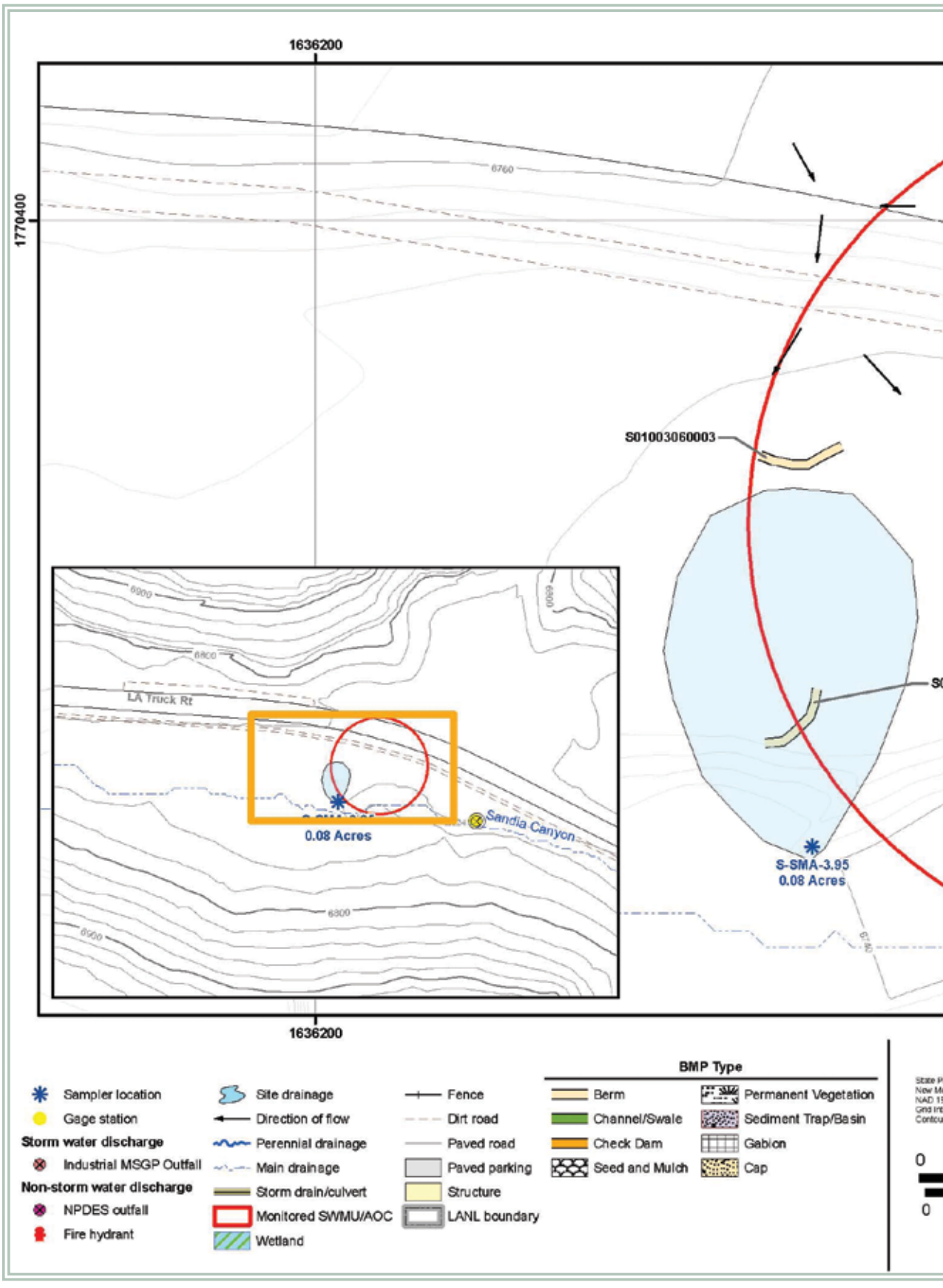
Northern Wattle (S010-03-06-0003)

This wattle is located to the north of the SMA outside the drainage area. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.48.3.3 Control Measures for Public Influences

There are no control measures for public influences at PF S010, S-SMA-3.95. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.48.4 Project Map



1636400
1770400
E JEMEZ RD
20-002(a)
01003060004
Sandia Canyon
1636400
Feet
25
50
75
100
10
20
30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S010: S-SMA-3.95
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, June 30, 2010,
Map #S010-10-0017-195-S3.95-R1

1000.48.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.48.6 Corrective Action Status

The Site associated with S-SMA-3.95 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.49 S-SMA-4.1

1000.49.1 Area Description

1000.49.2 Potential Pollutant Sources

1000.49.2.1 Historical Industrial Activity Areas

1000.49.3 Control Measures

1000.49.4 Project Map

1000.49.5 Storm Water Monitoring Plan and Schedule

1000.49.6 Corrective Action Status



1000.49 S-SMA-4.1

1000.49.1 Area Description

S-SMA-4.1 is located within a developed portion of TA-53. The SMA is flat on the mesa top and run-off flows south to a steep south facing slope of Sandia Canyon. The SMA is influenced by structures and impervious areas that make up the majority of the area. Paved and unpaved roads cross the SMA.

1000.49.2 Potential Pollutant Sources

1000.49.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S011, S-SMA-4.1, Site 53-014.

AOC 53-014, a lead spill site, is located at a paved storage area in TA-53 west of building 53-18. Lead shot was spilled on the paved surface, and stormwater washed the lead into an asphalt-lined channel that joins a drainage below an NPDES-permitted outfall (03A113). The lead shot was observed at a number of locations in the channel but was not seen below a large catchment approximately 50 ft below the canyon rim. This site was not originally identified in the 1990 SWMU report but was discovered only after the OU 1100 RFI work plan had been prepared.

1000.49.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
53-014	Soil contamination – Lead storage site II	Discrete Location, No overlap	Individual	•	•	•	PCBs

1000.49.3 Control Measures

There is run-on from paved areas at this SMA that a berm is currently managing. A paved area adjacent to the western side of the SMA provides some contribution.

Subsections to 1000.49.3 list all control measures used to control pollutant sources identified in Section 1000.49.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.49.4.

1000.49.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S011 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
S011 03 12 0003	Berms - Rock	•			•
S011 06 01 0004	Check Dam - Rock		•		•

Established Vegetation (S011-02-02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

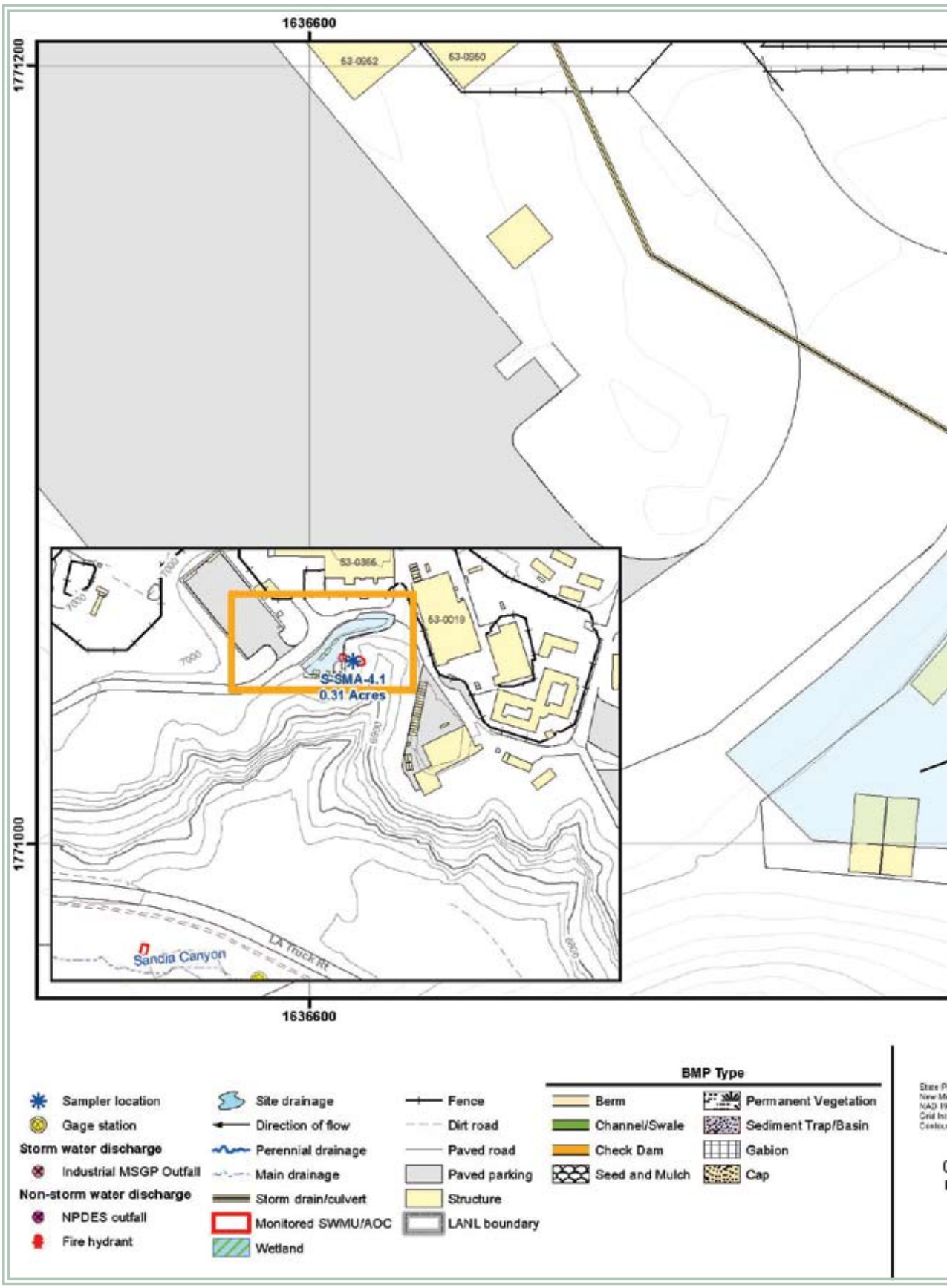
Rock Berm (S011-03-12-0003)

This berm was installed in the storage area at the head (east) of drainage to help control run-on from the parking area. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Check Dam (S011-06-01-0004)

This check dam is located across the asphalt channel above the sampler. It is used to mitigate run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.49.4 Project Map



1636800
1771200
1771000
53-0676
S01103120003
S01106010004
53-014
53-014
S-SMA-4.1
0.31 Acres
6060
6040
6020
N
Los Alamos
NATIONAL LABORATORY
Feet
0
25
50
75
100
0
10
20
30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S011: S-SMA-4.1
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 8, 2011,
Map #S011-10-0017-96-S4.1-R3

1000.49.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.49.6 Corrective Action Status

The Site associated with S-SMA-4.1 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.50 S-SMA-4.5

1000.50.1 Area Description

1000.50.2 Potential Pollutant Sources

1000.50.2.1 Historical Industrial Activity Areas

1000.50.2.2 Public Influences

1000.50.3 Control Measures

1000.50.3.1 Control Measures for Public Influences

1000.50.4 Project Map

1000.50.5 Storm Water Monitoring Plan and Schedule

1000.50.6 Corrective Action Status



1000.50 S-SMA-4.5

1000.50.1 Area Description

S-SMA-4.5 is located in an undeveloped area of TA-53 and access to the area is controlled. The mesa top portion of the area is flat and run-off flows north, northeast to a steep northeast facing slope of Sandia Canyon. Run-off continues from this slope to the canyon floor before it reaches the main canyon drainage further northeast. All boundaries of the SMA are undeveloped land.

1000.50.2 Potential Pollutant Sources

1000.50.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S012, S-SMA-4.5, Site 20-002(d).

SWMU 20-002(d) is a former firing point located near a manhole (structure 20-3) in the central part of former TA-20. Fewer than 10 implosion shots were fired near structure 20-3. One of these shots, containing 500 lb of Composition B, did not completely detonate. A 1962 Laboratory memorandum describes two cleanup efforts related to this incident: one conducted immediately after the incident and a second that was part of the 1948 Sandia Canyon cleanup conducted before the construction of East Jemez Road. Other historical documents indicate small pieces of HE were found and removed from this site at various times, including in July 1966, July 1967, and June 1969. No HE was found during inspections in April 1971, May 1973, and June 1975.

1000.50.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
20-002(d)	Firing site	Discrete Location, No overlap	Individual	•	•	•	HE

1000.50.2.2 Public Influences

The SMA is just south of East Jemez road, which receives heavy traffic. This SMA will be inspected for litter and floatable debris.

1000.50.3 Control Measures

There is minimal potential for run-on impact from the truck route. The primary source of potential run-on is sheet flow from the unpaved access road used for well access and sheet flow generated at the vegetated area south of the SWMU.

Subsections to 1000.50.3 list all control measures used to control pollutant sources identified in Section 1000.50.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.50.4.

1000.50.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S012 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S012 03 01 0005	Berm-Earthen		•		•
S012 03 06 0002	Berms - Straw Wattles		•		•
S012 03 06 0003	Berms - Straw Wattles		•		•
S012 03 06 0004	Berms - Straw Wattles	•			•

Established Vegetation (S012-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (S012-03-01-0005)

This berm is located east of the Site and is used to help control run-off from the area. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattle - Central (S012-03-06-0002)

This wattle is located in a sheet flow path southwest of the Site. It is used to help control storm water run-off from the natural areas above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Straw Wattle - North (S012-03-06-0003)

This straw wattles is located near the southern border of the Site footprint. It is used to help manage storm water run-off from the natural areas above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Straw Wattle - South (S012-03-06-0004)

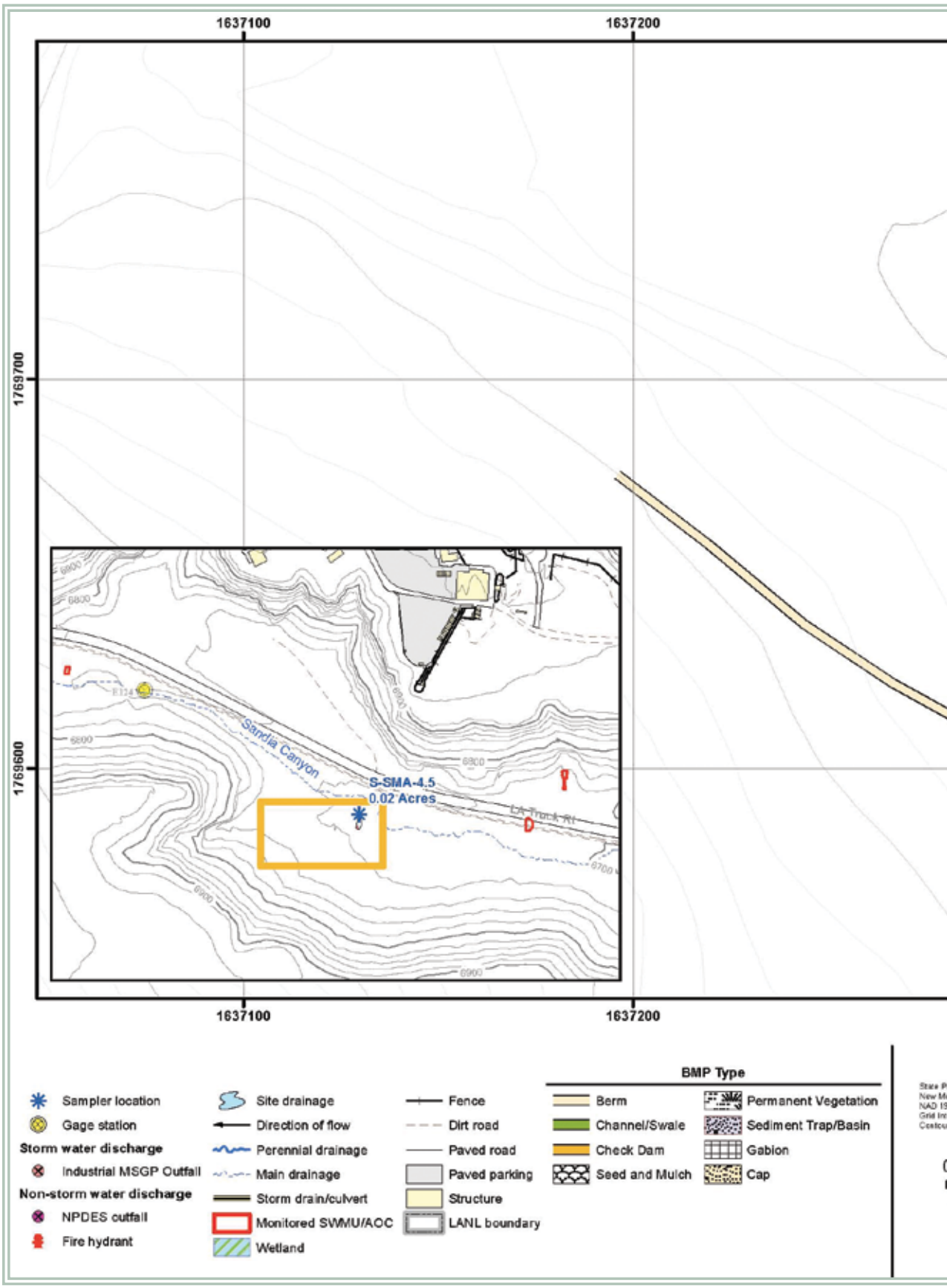
This wattle is located southwest of the Site. It is used to help control run-on from

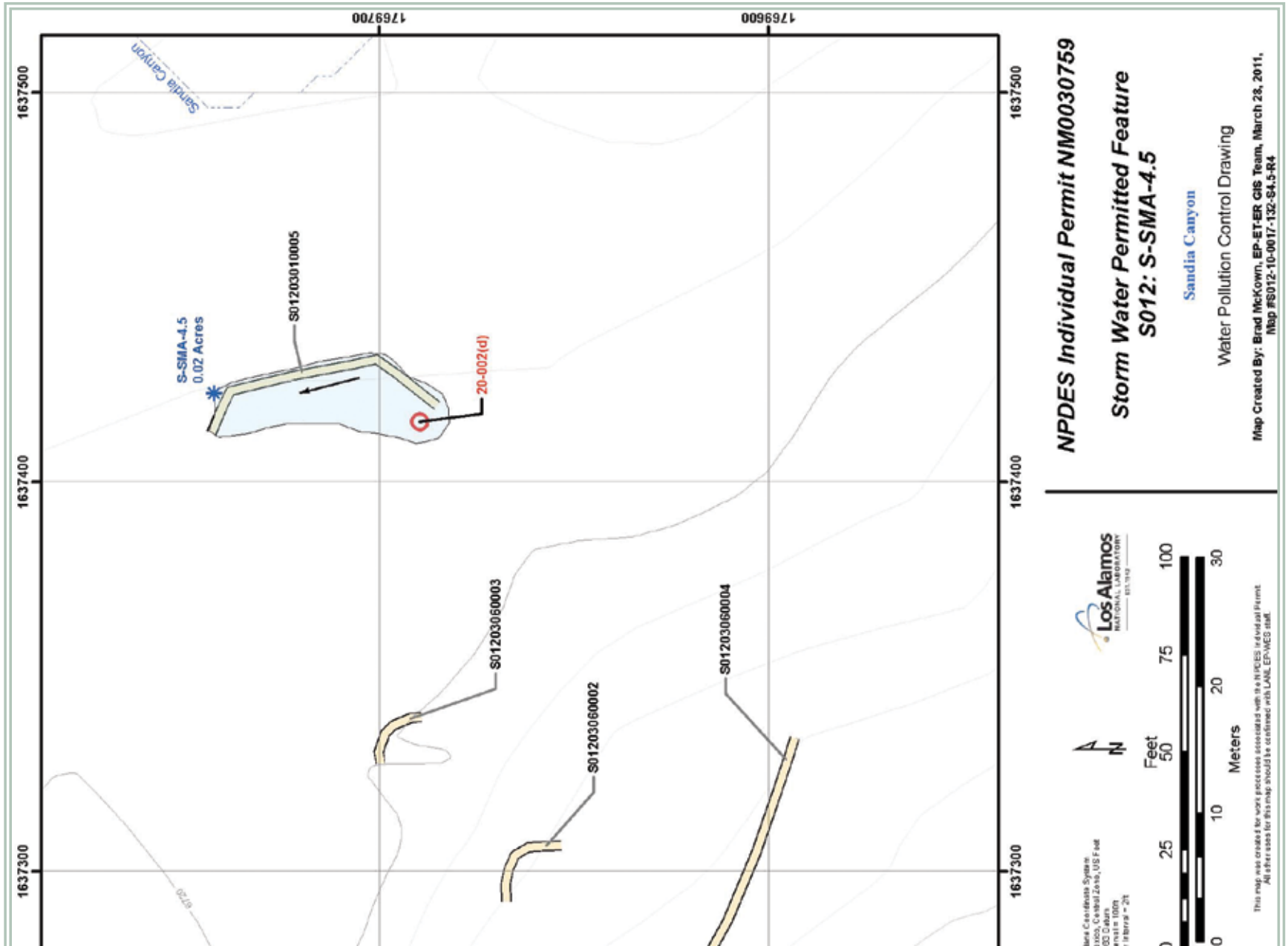
the slope above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

1000.50.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S012, S-SMA-4.5. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.50.4 Project Map




1769700
1769600
1637500
1637400
1637300
Sandia Canyon
S01203010005
S-SMA-4.5
0.02 Acres
20-002(d)
S01203060003
S01203060002
S01203060004
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S012: S-SMA-4.5
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #S012-10-0017-132-S4.5-R4
Los Alamos
NATIONAL LABORATORY
N
Feet
50
25
0
Meters
10
0
75
100
20
30

1000.50.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.50.6 Corrective Action Status

The Site associated with S-SMA-4.5 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.51 S-SMA-5

1000.51.1 Area Description

1000.51.2 Potential Pollutant Sources

1000.51.2.1 Historical Industrial Activity Areas

1000.51.2.2 Urban Influences

1000.51.2.3 Public Influences

1000.51.3 Control Measures

1000.51.3.1 Control Measures for Public Influences

1000.51.4 Project Map

1000.51.5 Storm Water Monitoring Plan and Schedule

1000.51.6 Corrective Action Status



1000.51 S-SMA-5

1000.51.1 Area Description

S-SMA-5 is located on the floor of Sandia Canyon. The area is flat and run-off flows southeast to the main drainage channel of Sandia Canyon. Run-off is influenced by East Jemez Road, which makes up the northern boundary of the area. The southern boundary of the area is defined by the northern head cut of the main drainage channel. The remaining boundaries of the area are undeveloped land.

1000.51.2 Potential Pollutant Sources

1000.51.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S013, S-SMA-5, Site 20-002(c).

SWMU 20-002(c) is a former firing point located near the southern edge of TA-53 close to the boundary of TA-72. This firing point was used for tests with explosive charges of up to 50 lb. The firing point is depicted in engineering drawing ENG-C 1778, Revision 1, as a pad bordered on three sides by an earthen berm. Engineering records show that the structure associated with this firing point (structure 20-9) was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes seven "shot areas" were excavated and the "ground checked negative after removal". It is likely that the SWMU 20-002(c) firing point is one of the seven shot areas. The north side of this site is currently covered by the road embankment for East Jemez Road.

1000.51.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
20-002(c)	Firing site	Discrete Location, No overlap	Individual	•	•	•	HE PCBs

1000.51.2.2 Urban Influences

This SMA is located just south of East Jemez road and is potentially influenced by road maintenance and winter grooming.

1000.51.2.3 Public Influences

The SMA is just south of East Jemez road, which receives heavy traffic. This SMA will be inspected for litter and floatable debris. Signage is to be used as necessary.

1000.51.3 Control Measures

There is the potential for run-on to this SMA from the paved road, East Jemez Road. The receiving waters are approximately 10 to 20 feet south of the the SMA.

Subsections to 1000.51.3 list all control measures used to control pollutant sources identified in Section 1000.51.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.51.4.

1000.51.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S013 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S013 03 06 0004	Berms - Straw Wattles		•		•
S013 03 06 0005	Berms - Straw Wattles		•		•
S013 04 06 0003	Channel/Swale - Rip Rap	•		•	
S013 07 01 0002	Gabions - Gabions	•			•

Established Vegetation (S013-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Eastern Drainage Wattle (S013-03-06-0004)

This wattle is located in the eastern area of the site drainage, north of wattle 0005. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Southeastern Drainage Wattle (S013-03-06-0005)

This wattle is located in the southeastern section of the site drainage, south of wattle 0004. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rip Rap
(S013-04-06-0003)
The rip rap is located on the northern side of the arroyo near the dirt road south of East Jemez Road. It is in place to control run-on to the SMA and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Gabions
(S013-07-01-0002)
The gabion is located on the northern side of the arroyo near the dirt road south of East Jemez Road. It is in place to control run-on to the SMA from the arroyo. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

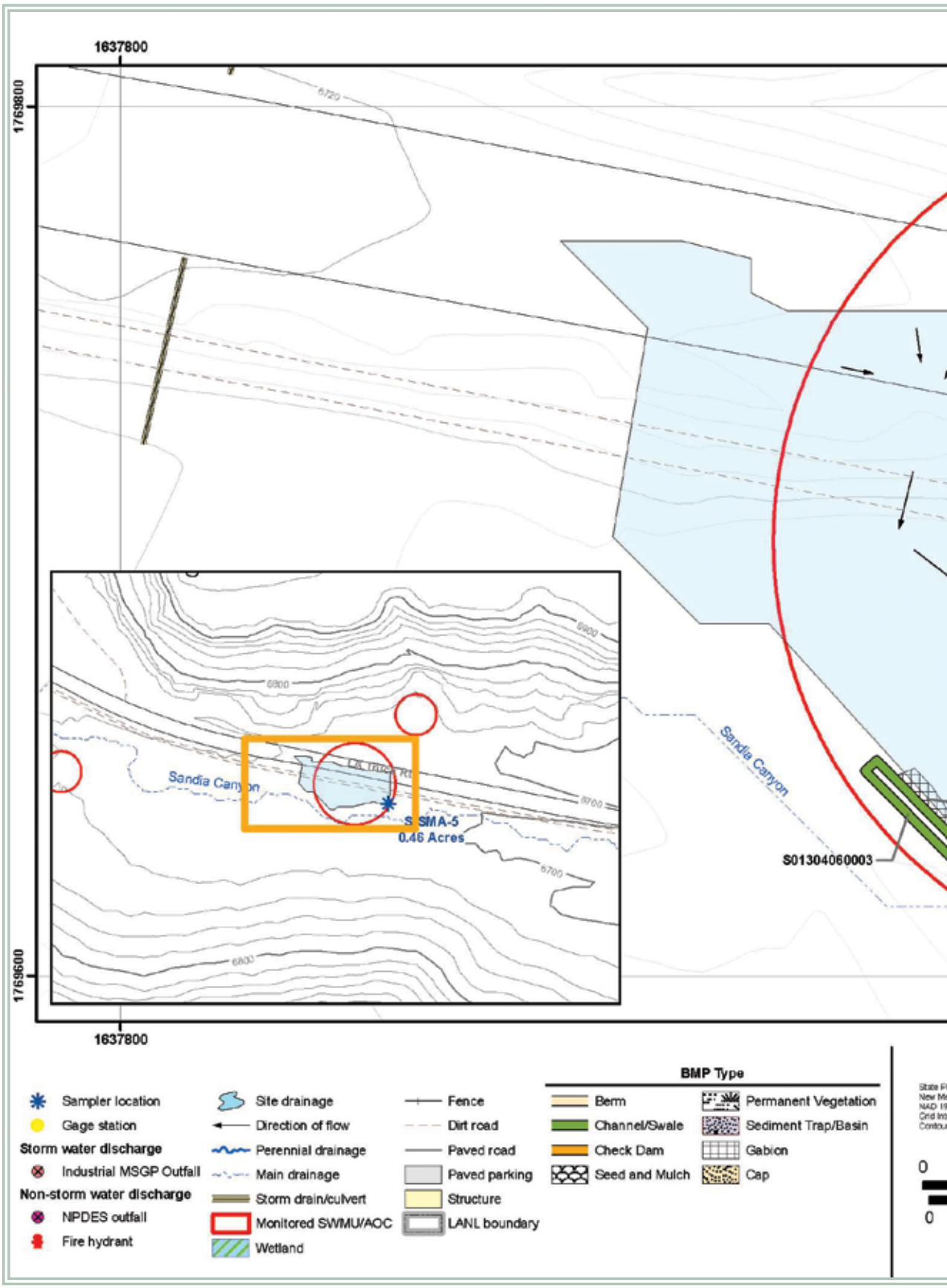
1000.51.3.2 Control Measures for Urban Influences

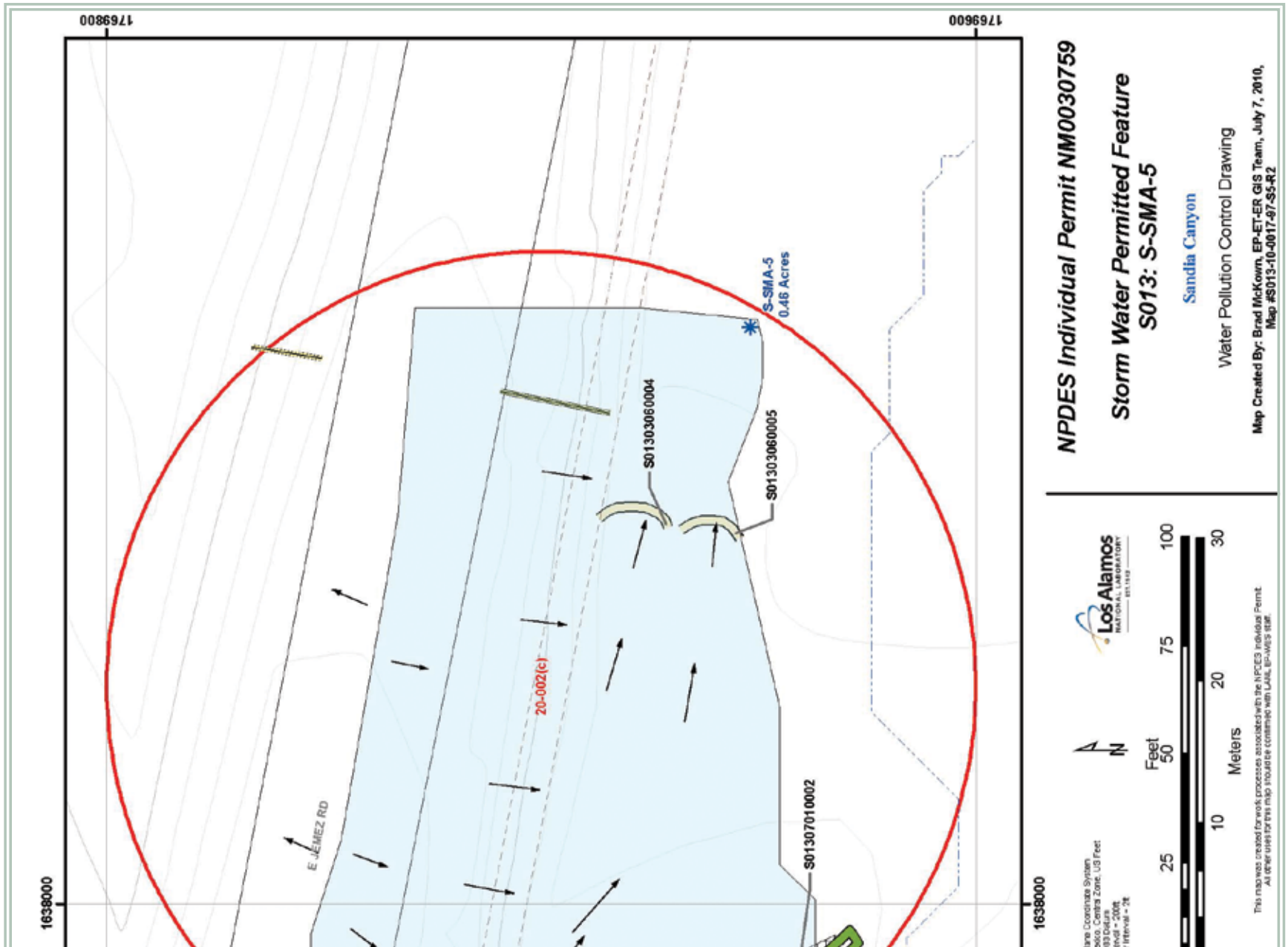
There are no control measures for Urban Influences at PF S013, S-SMA-5. Although the potential for urban influences at this SMA exists, no controls are necessary at this time.

1000.51.3.3 Control Measures for Public Influences

There are no control measures for public influences at PF S013, S-SMA-5. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.51.4 Project Map




NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S013: S-SMA-5
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #S013-10-0017-97-S5-R2
S-SMA-5
0.46 Acres
S01303060004
S01303060005
S01307010002
20-002(c)
E. JEMEZ RD
1638000
1638000
1769800
1769600
Los Alamos
NATIONAL LABORATORY
N
Feet
50
25
0
75
100
Meters
10
20
30

1000.51.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.51.6 Corrective Action Status

The Site associated with S-SMA-5 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.52 S-SMA-5.2

1000.52.1 Area Description

1000.52.2 Potential Pollutant Sources

1000.52.2.1 Historical Industrial Activity Areas

1000.52.2.2 Public Influences

1000.52.3 Control Measures

1000.52.3.1 Control Measures for Public Influences

1000.52.4 Project Map

1000.52.5 Storm Water Monitoring Plan and Schedule

1000.52.6 Corrective Action Status



1000.52 S-SMA-5.2

1000.52.1 Area Description

S-SMA-5.2 is located on the south facing wall of Sandia Canyon in TA-53. A small mesa top portion of the area is flat and run-off flows south down the steep canyon wall before reaching the canyon floor further south. Although all boundaries of the SMA are undeveloped land. The SMA may be influenced by run-off from adjacent paved roads in TA-53, located a short distance to the north.

1000.52.2 Potential Pollutant Sources

1000.52.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S014, S-SMA-5.2, Site 20-003(c).

AOC 20-003(c) is the site of a former U.S. Navy gun mount that was located approximately 90 ft north of East Jemez Road in Sandia Canyon. Together with SWMUs 20-001(b) and 20-002(c), AOC 0-003(c) comprises Consolidated Unit 20-001(b)-00. The former gun site was used between 1945 and 1948. A 10-ft x 10-ft concrete pad with a steel plate surface (structure 20-16) was used as a mount for the gun. Engineering drawing ENG-C 1778 shows a 30-ft-long earth-bermed timber frame bin filled with tamped earth (structure 20-10) located near the gun and on the slope at the toe of the canyon wall. At the end nearest the gun, the timber frame was 12 ft wide and 10 ft high, and at the far end it was 20 ft wide and 5 ft high. The gun was fired into the earth-filled bin so the projectile could be recovered. Laboratory engineering records show that in April 1948 structures 20-10 and 20-16 were removed and that structure 20-28, a conduit manhole, was left in place. The disposition of the soil that filled the frame is not known. The site was cleaned up in a 1995 VCA conducted by LANL personnel. Four feet of the concrete pad, and the manholes were removed. The remaining pieces of the concrete pad were buried under 5 to 6-ft. of backfill. Approximately 21.5 cubic yards of concrete debris were hauled to the Los Alamos County Landfill.

1000.52.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
20-003(c)	Firing site	Discrete Location, No overlap	Individual	•	•	•	HE PCBs SVC

1000.52.2.2 Public Influences

The southern boundary of the SMA is adjacent to US 501.

1000.52.3 Control Measures

Control measures on the mesa top at this SMA are managing the culvert run-on contribution from the storm water discharges from the paved areas on the mesa above. The rock check dam along the eastern side of the SMA helps to control this run-on source.

Subsections to 1000.52.3 list all control measures used to control pollutant sources identified in Section 1000.52.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.52.4.

1000.52.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S014 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
S014 03 06 0004	Berms - Straw Wattles		•		•
S014 03 06 0005	Berms - Straw Wattles		•		•
S014 04 06 0011	Channel/Swale - Rip Rap	•			•
S014 06 01 0006	Check Dam - Rock	•			•
S014 06 01 0007	Check Dam - Rock	•			•
S014 06 01 0008	Check Dam - Rock	•			•
S014 06 01 0009	Check Dam - Rock	•			•
S014 06 01 0010	Check Dam - Rock	•			•
S014 06 01 0012	Check Dam - Rock		•		•

Established Vegetation (S014-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles (S014-03-06-0004, -0005)

This is a pair of wattles located on the eastern side of the SMA, just north of the sampler. They are in place to help control storm water run-off from the slope above. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Rip Rap
(S014-04-06-0011)
The rip rap is located near the edge of the mesa top east of the SMA and is used to control run-on and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

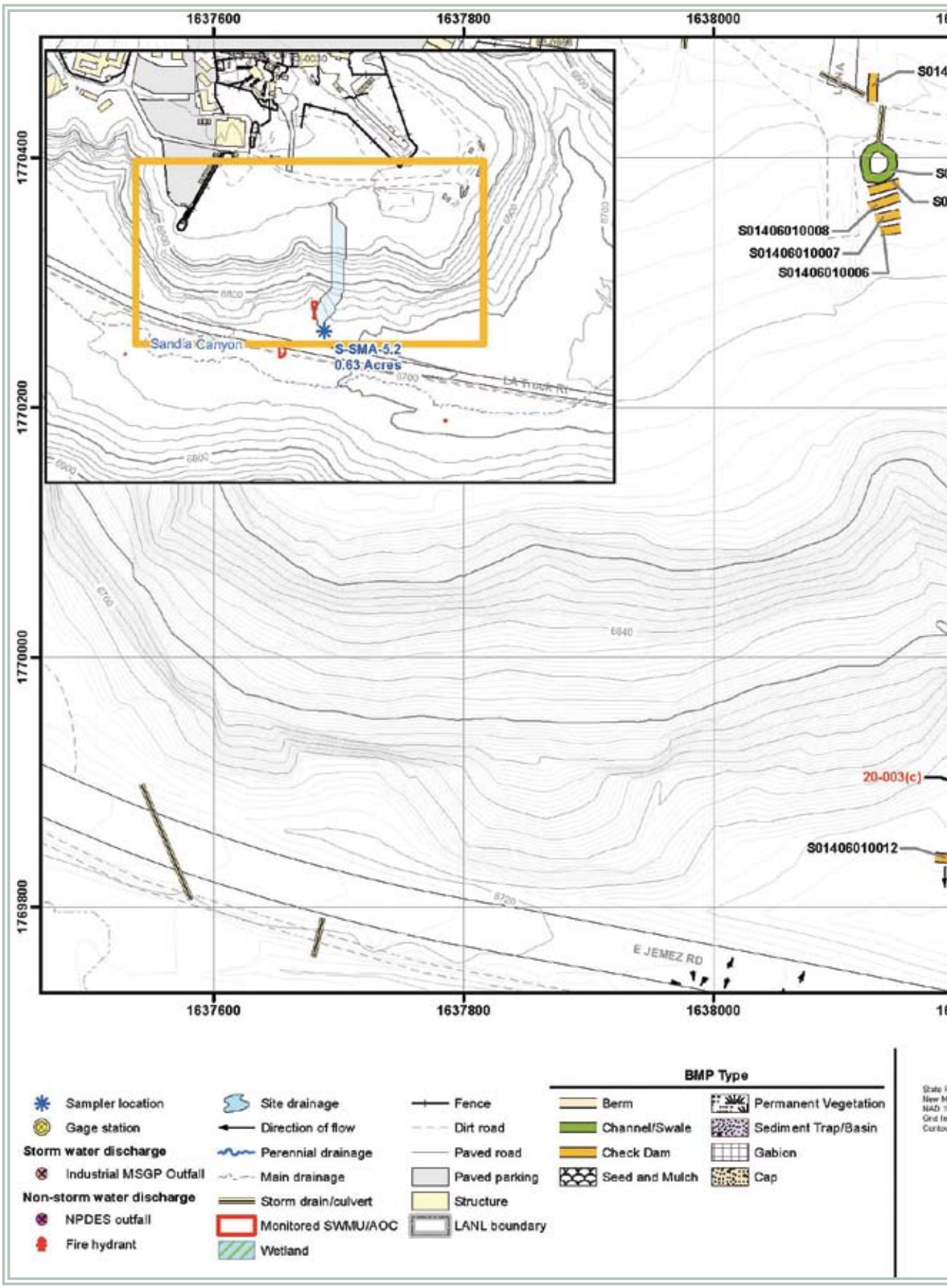
Rock Check Dams
(S014-06-01-0006, -0007, -0008, -0009, -0010)
This is a group of five check dams that are located near the edge of the mesa top west of the SMA footprint. They are in place to help control storm water run-on from the developed areas above the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam
(S014-06-01-0012)
Placed northwest of the sampler, this check damn interrupts run-off and helps control sediment. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.52.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S014, S-SMA-5.2. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.52.4 Project Map



1638200
1638400
1638600
1638800
1770400
1770200
1770000
1769800
06010010
01404060011
01406010009
LEDA
6940
6920
6900
6880
6860
6840
6820
6780
6740
S01403060005
S01403060004
S-SMA-5.2
0.63 Acres
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S014:S-SMA-5.2
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #S014-10-0017-174-S5.2-R6

1000.52.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) HE (2) SVC (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.52.6 Corrective Action Status

The Site associated with S-SMA-5.2 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.53 S-SMA-5.5

1000.53.1 Area Description

1000.53.2 Potential Pollutant Sources

1000.53.2.1 Historical Industrial Activity Areas

1000.53.2.2 Public Influences

1000.53.3 Control Measures

1000.53.3.1 Control Measures for Public Influences

1000.53.4 Project Map

1000.53.5 Storm Water Monitoring Plan and Schedule

1000.53.6 Corrective Action Status



1000.53 S-SMA-5.5

1000.53.1 Area Description

S-SMA-5.5 is a small area located on the floor of Sandia Canyon. The area is flat and run-off flows a short distance to the main drainage channel of Sandia Canyon. The SMA may be influenced by the steep north facing slope of Sandia Canyon located to the south of the area. All boundaries of the SMA are undeveloped land.

1000.53.2 Potential Pollutant Sources

1000.53.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S015, S-SMA-5.5, Site 20-005.

SWMU 20-005 is a former septic system (septic tank and drainlines) that was located south of East Jemez Road in the central portion of the aggregate area. The system served a toilet, restroom sink, and darkroom sink in building 20-1. The system was constructed in 1945, and its use was discontinued in 1948. Engineering drawings show the tank (structure 20-27) as having 6-in.-thick concrete walls with interior dimensions of 3 ft x 6 ft x 5 ft high and a capacity of 540 gal. The discharge point of the tank is not known. The septic system could not be located during a 1985 program conducted by the Laboratory to remove existing structures from Sandia Canyon. Although the tank could not be located, a pit-like depression was noted in the tuff in the area where the tank was believed to have been located. According to the 1985 report, excavation surrounding the area of the "pit" turned up no evidence of the tank or associated drainlines.

1000.53.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
20-005	Septic tank	Discrete Location, No overlap	Individual	•		•	

1000.53.2.2 Public Influences

The SMA is just south of East Jemez road, which receives heavy traffic. This SMA will be inspected for litter and floatable debris.

1000.53.3 Control Measures

There is minimal potential for run-on impacts at this SMA. Potential run-on in the form of sheet flow may be generated in the vegetated area north of the SWMU.

Subsections to 1000.53.3 list all control measures used to control pollutant sources identified in Section 1000.53.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.53.4.

1000.53.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S015 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
S015 03 01 0004	Berms - Earthen		•		•

Established Vegetation (S015-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

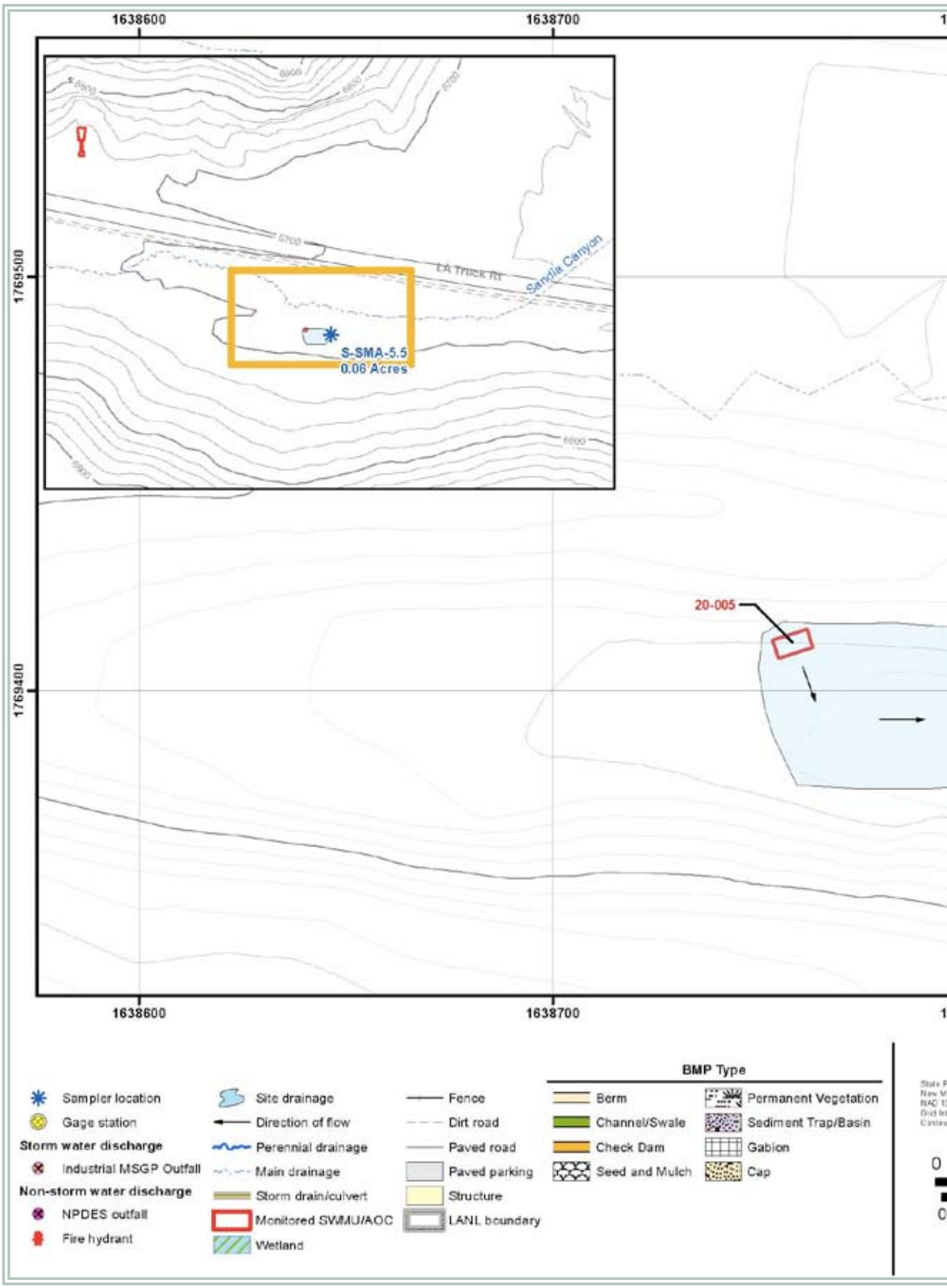
Earthen Berm (S015-03-01-0004)

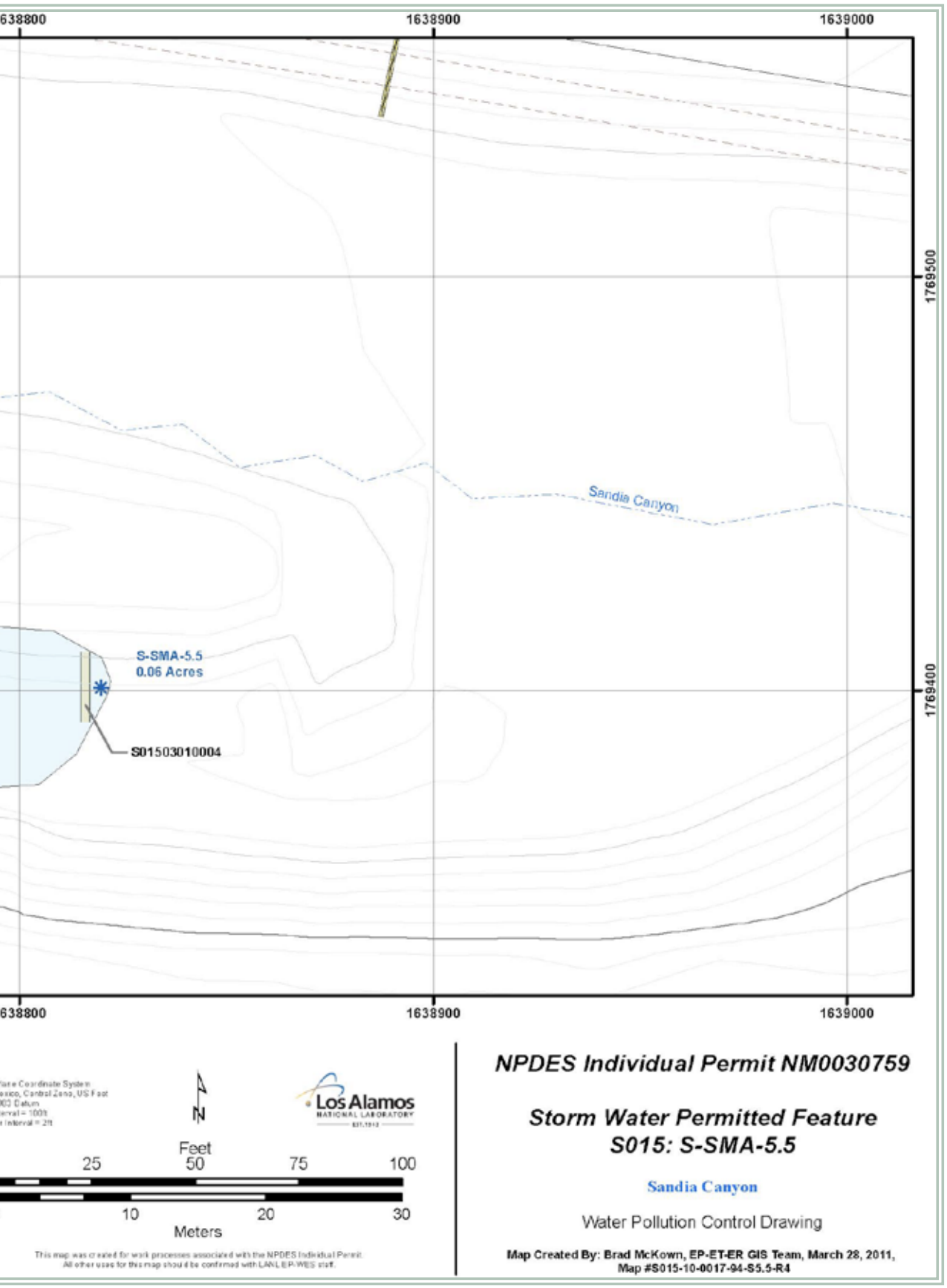
This berm is located on the eastern portion of the SMA and east of the Site. It is used to help control run-off from the area. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

1000.53.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S015, S-SMA-5.5. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.53.4 Project Map




1638800
1638900
1639000
1769500
1769400
Sandia Canyon
S-SMA-5.5
0.06 Acres
S01503010004
Los Alamos
NATIONAL LABORATORY
Feet
25
50
75
100
10
20
30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S015: S-SMA-5.5
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, March 28, 2011,
Map #S015-10-0017-94-S5.5-R4

1000.53.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.53.6 Corrective Action Status

The Site associated with S-SMA-5.5 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.54 S-SMA-6

1000.54.1 Area Description

1000.54.2 Potential Pollutant Sources

1000.54.2.1 Historical Industrial Activity Areas

1000.54.2.2 Public Influences

1000.54.3 Control Measures

1000.54.3.1 Control Measures for Public Influences

1000.54.4 Project Map

1000.54.5 Storm Water Monitoring Plan and Schedule

1000.54.6 Corrective Action Status



1000.54 S-SMA-6

1000.54.1 Area Description

S-SMA-6 is a large area located on the east end of TA-53 and TA-72. The mesa top component of the area is flat. The majority of this portion of the SMA is covered by structures and impervious surfaces. This developed area has the potential to influence SMA. Run-off flows north then east when away from the sloped portion. The southern boundary of the area is marked by the top of the north facing slope of Sandia Canyon. Run-off from this portion flows down this steep slope to the canyon floor and main canyon drainage. Within the main drainage, run-off is influenced by East Jemez Road and a small amount of developed land at the eastern end. This developed area is the active firing range used for training security personnel.

1000.54.2 Potential Pollutant Sources

1000.54.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF S016, S-SMA-6, Site 72-001.

AOC 72-001 consists of an active small arms firing and training range used by the Laboratory's security force. The firing range is located in Sandia Canyon at the west end of TA-72 and has been operational since 1966. It includes a 175-ft x 250-ft firing range surrounded by earthen berms, an adjacent skeet-shooting range, and administrative buildings. The drainage channel and flood plain of Sandia Canyon run through the middle of the firing range. Structures at this site include an office building (building 72-8, a former guard station), range house (building 72-9), scoring area (building 72-10), firing station (building 72-11), weapons-cleaning area (building 72-12), storage buildings (72-13 and 72-14), and canopies 3 and 4 (buildings 72-15 and 72-16). Lead is present within the firing range because bullets are scattered at the base of the berms and cliffs, and lead shot from skeet shooting is visible on the ground.

In 1995, as part of a VCA conducted at SWMU 00-016 (an inactive small-arms firing range), NMED concurred with the Laboratory's request to move lead-contaminated soil from the inactive range to the active AOC 72-001 firing range. During the second phase of the VCA implemented at SWMU 00-016 in 1996 and 1997, lead was removed from soil stockpiled from berms at the former firing range using dry sieving. Approximately 4660 yd^3 of soil from SWMU 00-016 was transported to TA 72 and placed on the berms located along the north side of the AOC 72-001 firing range and along the berm located between, and north of, canopies 3 and 4.

1000.54.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
72-001	Firing range	Discrete Location, No overlap	Individual	•	•	•	HE PCBs

1000.54.2.2 Public Influences

The heavily traveled East Jemez Road bisects SMA-S-6. All boundaries of the SMA are accessible to the public. This SMA will be regularly inspected for litter and visible debris.

1000.54.3 Control Measures

Potential run-on at this SMA originates at the CMPs discharging urban flow onto the SMA. There is also potential for flow from the Sandia Canyon main channel onto the southern portion of the SMA.

Subsections to 1000.54.3 list all control measures used to control pollutant sources identified in Section 1000.54.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.54.4.

1000.54.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
S016 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
S016 03 01 0002	Berms - Earthen		•		•
S016 04 06 0004	Channel/Swale - Rip Rap	•		•	
S016 06 01 0005	Check Dam - Rock	•			•

Established Vegetation (S016-02-01-0003)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm (S016-03-01-0002)

This berm is located along the northern boundary of the PTLA firing range running parallel to the main Sandia Canyon drainage. It is in place to control run-off from the SMA. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rip-Rap (S016-04-06-0004)

This rip-rap is located adjacent to the culvert inlet south of East Jemez Road. It controls run-on and erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

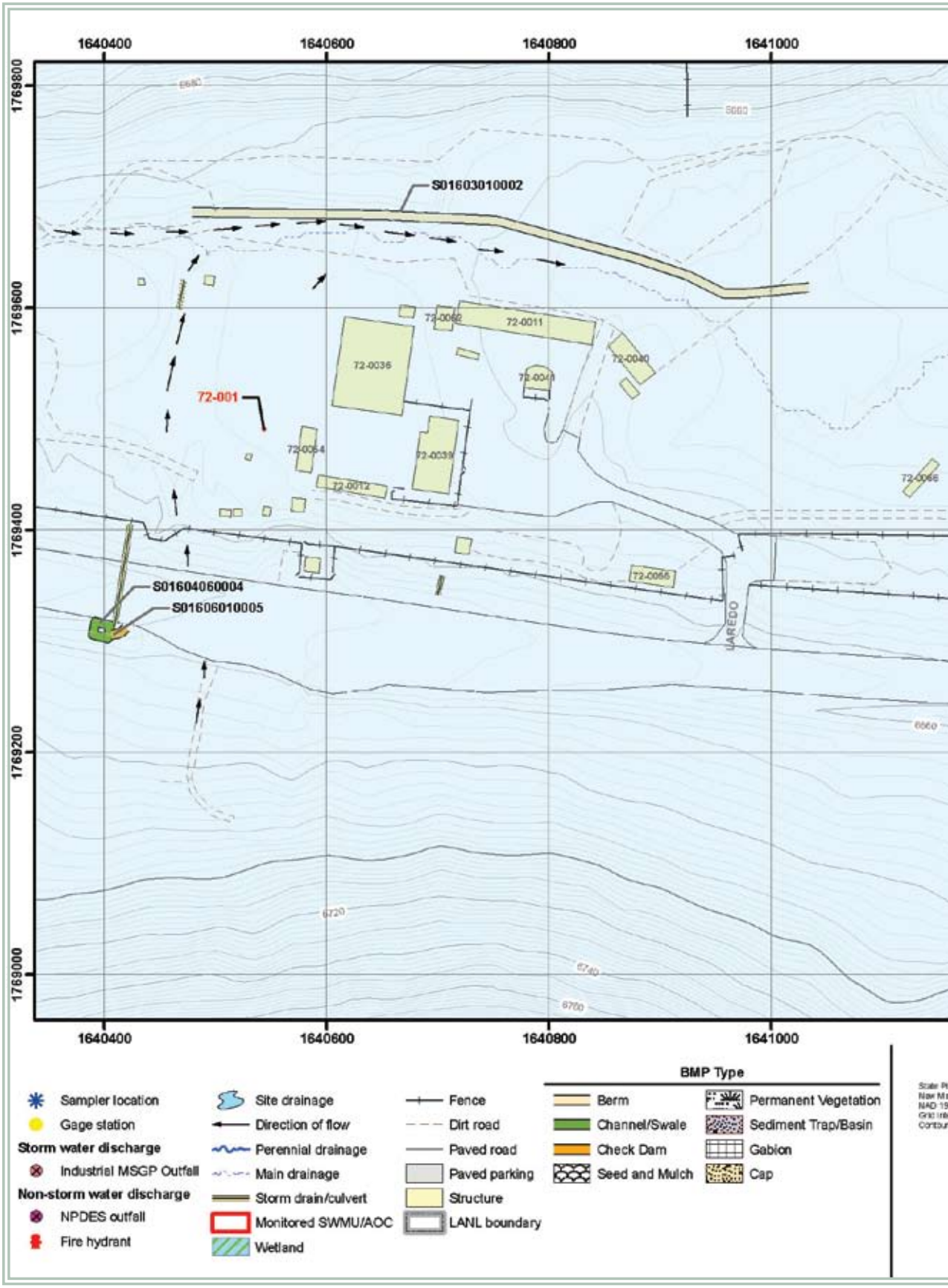
Rock Dam
(S016-06-01-0005)

This dam controls run-on and sediment and is located adjacent to the culvert inlet south of East Jemez Road. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.54.3.2 Control Measures for Public Influences

There are no control measures for public influences at PF S016, S-SMA-6. Although the potential for public influences at this SMA exists, no controls are necessary at this time.

1000.54.4 Project Map



1641200
1641400
1641600
1641800
1769800
1769600
1769400
1769200
1769000
Sandia Canyon
S-SMA-6
280.16 Acres
Sandia Canyon
S-SMA-6
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
S016: S-SMA-6
Sandia Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 17, 2010,
Map #S016-10-0017-169-S6-R2

1000.54.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2) HE (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.54.6 Corrective Action Status

The Site associated with S-SMA-6 is a high priority Site. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.55 PRATT-SMA-1.05

1000.55.1 Area Description

1000.55.2 Potential Pollutant Sources

1000.55.2.1 Historical Industrial Activity Areas

1000.55.3 Control Measures

1000.55.4 Project Map

1000.55.5 Storm Water Monitoring Plan and Schedule

1000.55.6 Corrective Action Status



1000.55 Pratt-SMA-1.05

1000.55.1 Area Description

Pratt-SMA-1.05 is within TA-35 and access to this area is controlled. The canyon includes steep north-facing and south-facing slopes that adjoin a relatively flat canyon bottom. The canyon bottom contains distinct floodplain terraces above a channel that is moderately incised in the upper portion of the canyon but becomes less well defined in the lower portion of the canyon.

1000.55.2 Potential Pollutant Sources

1000.55.2.1 Historical Industrial Activity Areas

There are eight historical industrial activity areas associated with PF T001, Pratt-SMA-1.05, Sites 35-003(h), 35-003(p), 35-003(r), 35-004(h), 35-009(d), 35-016(k), 35-016(l) and 35-016(m).

SWMU 35-003(h) is the site of a former concrete retention tank that was added to the TA-35 WWTP in 1961. The retention tank had dimensions of 8 x 12 x 10 ft deep and was connected to Buildings 35-10 and 35-41 by four inch diameter stainless-steel underground pipes. The retention tank and associated piping were removed in February 1985 during LANL's RLWLR project. During decommissioning, no leaks or discharges from the tank were observed.

SWMU 35-003(p) is the site of the TA-35 former air filter building (former Building 35-7). Radioactive air was filtered in this building and the cleaning filters were washed by tap water and/or wastewater from the TA-35 WWTP tank farm. The wastewater was contaminated with strontium-89 and strontium-90. Buildup of strontium in the air filters became a problem and required numerous washings, which produced more radioactive wastewater. The large volumes of water overwhelmed the storage capacity of the system leading to spills, overflows, and unplanned releases to Pratt Canyon. The air-filter building was first subject to D&D in 1980. A second D&D event occurred in 1996, when the building and associated piping were removed.

AOC 35-003(r) is the site of the canyon disposal area for liquid sludge effluent associated with the structure 35-10 holding tanks, [SWMU 35-003(d)]. This AOC is located at TA-35 in Pratt Canyon and extends from the eastern edge of Ten Site Mesa, from the headwall of Pratt Canyon, to the confluence of Pratt and Ten Site Canyons. The WWTP that released the effluent ceased operation in 1963.

SWMU 35-004(h) is the former location of a container storage area near the northeast corner of the TA-35 former air filter building (former Building 35-7). The container storage area was used to store containers of oils, capacitors, and organic chemicals, including Freon. The area is no longer used as a storage area. The date of closure and the disposition of the containers are not documented. Stained soil was observed at the site during a 1988 site visit. During D&D activities in 1996, Building 35-7, its foundation, and its associated inactive buried waste lines were removed to a depth of approximately 15 feet. The SWMU 35-004(h) storage area was situated over Building 35-7 waste lines. When Building 35-7 and its waste lines were removed, the location of the storage area was also removed. After removal of these structures, the entire area was backfilled with clean fill and regraded.

SWMU 35-009(d) is the site of a 1,600 gallon septic tank (structure 35-65) which has been taken out-of-service, cleanout manhole (structure 35-64), and associated leach field. The tank is located at the northeast corner of Ten Site Mesa, and the leach field extends from the tank toward the east, an outfall from the eastern end of the septic system drains southward into an extension of Ten Site Canyon informally designated as Pratt Canyon. The leach field covers an area of approximately 1,800 square feet and consists of fine to coarse grained sandstone and cobble filter bed material. Consoli-

dated tuff is reached at depths of eight to ten feet in the leach field. The tank was reportedly pumped on a weekly basis. This septic system served TA-35 from 1966 to 1990 and handled sanitary wastes from the Nuclear Safeguards Research Building (Building 35-27), and possibly from other laboratory buildings. The system may also have received a variety of industrial wastes including radionuclides.

Phase I RFI sampling was collected in February 1994 and December 1995. A total of ten soil locations were sampled and 27 soil samples were collected for field screening, mobile laboratory analysis and fixed laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Three organic chemicals were detected. Seven inorganic chemicals were detected above BVs. Isotopic uranium results were below FVs. No sample results for any chemical exceeded SAL values.

A VCA was conducted at this site in 1996. The contents of the tank were removed using a vacuum suction truck. After the contents were removed, the tank was pressure sprayed and rinsed with fresh water; the rinse water was also removed with the vacuum suction truck. The vacuum suction truck disposed of the liquid at an appropriate off-site waste disposal area. Because this VCA was not conducted in response to known or potential releases, no confirmation sampling was conducted.

Additional sampling was conducted at this site in 1997. Fourteen surface and subsurface samples were collected and submitted to an off-site analytical laboratory for radionuclide analysis. The purpose of this sampling event was to determine if radionuclides are present, at the leach field or in the drainage below the leach field, above FVs or at levels that pose a threat to human health or the environment.

Additional sampling was proposed for SWMU 35-009(d) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.

SWMU 35-016(k) is a formerly NPDES permitted outfall that handled cooling water from the gas laser building (Building 35-29) at TA-35. The outfall was installed in 1961 and deactivated in 1987. It handled once-through cooling water from a closed heat-exchange system that served a gas laser in Building 35-29. The drain-line runs eastward and discharges into a rip rap lined channel, which drains into a small tributary of Ten Site Canyon informally known as Pratt Canyon.

SWMU 35-016(l) consists of active daylight discharge channels that were established at TA-35 in 1961 to handle rain water run-off from Building 35-29 and water leaks from an ultraviolet water sterilizer in Room 001A of Building 35-29. Stained areas from past dielectric oil spills are present in the source areas for these channels. One of the areas at the head of the channel is the site of a transformer near the southwest corner of Building 35-29 that leaked transformer oil. A VCA conducted there removed soil contaminated with PCBs and PAHs. The drainages flow eastward to a 24 inch CMP outfall located on the north side of the security fence for Building 35-27, discharging to the same rip rap lined channel draining into Pratt Canyon as SWMU 35-016(k).

SWMU 35-016(m) consists of a 1.5 inch diameter metal blowdown line and a four inch diameter metal drain-line that was intended to serve an inactive non-contact cooling tower outfall established at TA-35 in 1966 and deactivated in 1982. The SWMU 35-016(m) outfall is a formerly NPDES permitted outfall. SWMU 35-016(m) is located on the east end of the TA-35 mesa top south of a cooling tower, structure 35-33, and east of the Nuclear Safeguards Research Building (Building 35-27). The permitted outfall associated with the cooling tower was intended for discharging treated cooling tower blowdown from two planned reactors in Building 35-27. However, the reactors were never installed, the cooling tower never operated, and the outfall never served its intended purpose. Instead it discharged storm water run-off from parking areas at the east end of the TA-35 mesa top.

1000.55.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-003(h)	Soil contamination from former Retention tank	Co-located, Overlapping	Shared	•	•	•	PCBs
35-003(p)	Former air-filter building	Co-located, Overlapping	Shared	•	•	•	PCBs
35-003(r)	Outfall associated with former Building 35-10	Co-located, Overlapping	Shared	•	•	•	PCBs
35-004(h)	Container storage area	Co-located, Overlapping	Shared	•	•	•	PCBs
35-009(d)	Septic system	Co-located, Overlapping	Shared	•	•	•	PCBs
35-016(k)	Drainline and outfall from Building 35-29	Co-located, Overlapping	Shared	•	•	•	PCBs
35-016(l)	Storm drain	Co-located, Overlapping	Shared	•	•	•	PCBs
35-016(m)	Drain lines and Outfall associated with Cooling Tower 35-33	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites grouped within this SMA are primarily related to the operation of the TA-35 Waste Water Treatment Plant. These Sites are co-located, overlapping, and have been subject to remedial actions. Because of these characteristics, Sites grouped within this SMA will discharge substantially identical effluent.

1000.55.3 Control Measures

Potential contributions to run-on at this SMA originate from the paved areas to the west, as well as the roof drains of buildings in the area. Existing controls address these run-on sources.

Subsections to 1000.55.3 list all control measures used to control pollutant sources identified in Section 1000.55.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.55.4.

1000.55.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T001 01 01 0019	Seed and Mulch - Seed and Wood Mulch			•	
T001 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
T001 02 02 0009	Established Vegetation - Forested/Needle Cast			•	
T001 03 01 0002	Berms - Earthen		•		•
T001 03 01 0017	Berms - Earthen	•			•
T001 03 02 0013	Berms - Base Course	•			•
T001 03 02 0018	Berms - Base Course	•			•
T001 03 04 0014	Berms - Asphalt	•			•
T001 03 04 0015	Berms - Asphalt	•			•
T001 03 04 0016	Berms - Asphalt	•			•
T001 03 09 0004	Berms - Curbing	•			•
T001 03 12 0008	Berms - Rock		•		•
T001 04 02 0006	Channel/Swale - Concrete/Asphalt	•		•	
T001 06 01 0011	Check Dam - Rock		•		•
T001 06 01 0012	Check Dam - Rock	•			•
T001 07 01 0003	Gabions - Gabions		•		•
T001 08 02 0005	Cap - Rock	•		•	

Seed and Wood Mulch (T001-01-01-0019)

Seed and wood mulch was applied around the sampler and surrounding area as an erosion control.Wood mulching consists of applying a mixture of shredded wood

mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (T001-02-01-0001, -02-0009)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Earthen Berm - East (T001-03-01-0002)

This berm is located near the eastern boundary of the SMA above the sampler and mitigates run-off from the Site. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Berm (T001-03-01-0017)

This is a berm located north of the sampler that is used as a storm water run-on control. An earthen berm is a temporary containment control constructed of compacted soil. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Base Course Berms (T001-03-02-0013, -0014, -0015, -0016)

This is a series of four berms located on the northern unpaved access road. They are used to help control storm water run-on. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Base Course Berm (T001-03-02-0018)

This berm serves to control storm water run-on originating from developed areas west of the SMA. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Curbing (T001-03-09-0004)

This curbing is located along the northern edge of the rock cap. It is in place to mitigate run-on in the area. Curbing is an engineered device used to direct, convey, or divert storm water flow and prevent erosion.

Rock Berm (T001-03-12-0008)

The berm is located in a natural drainage channel in the central portion of the SMA. It is in place to control run-off from the associated Site. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Concrete/Asphalt Swale (T001-04-02-0006)

The swale is located on the paved area east of building 35-0029. It is used to divert run-on away from the adjacent Site. Channels and swales are natural or constructed diversions that collect

and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Rock Check Dam - West (T001-06-01-0011)

This check dam is located in the drainage channel west of the sampler. It is used to help with run-off control in the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam (T001-06-01-0012)

The check dam is located south of the unpaved access road and northeast of the sampler. It is in place to help mitigate run-on from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

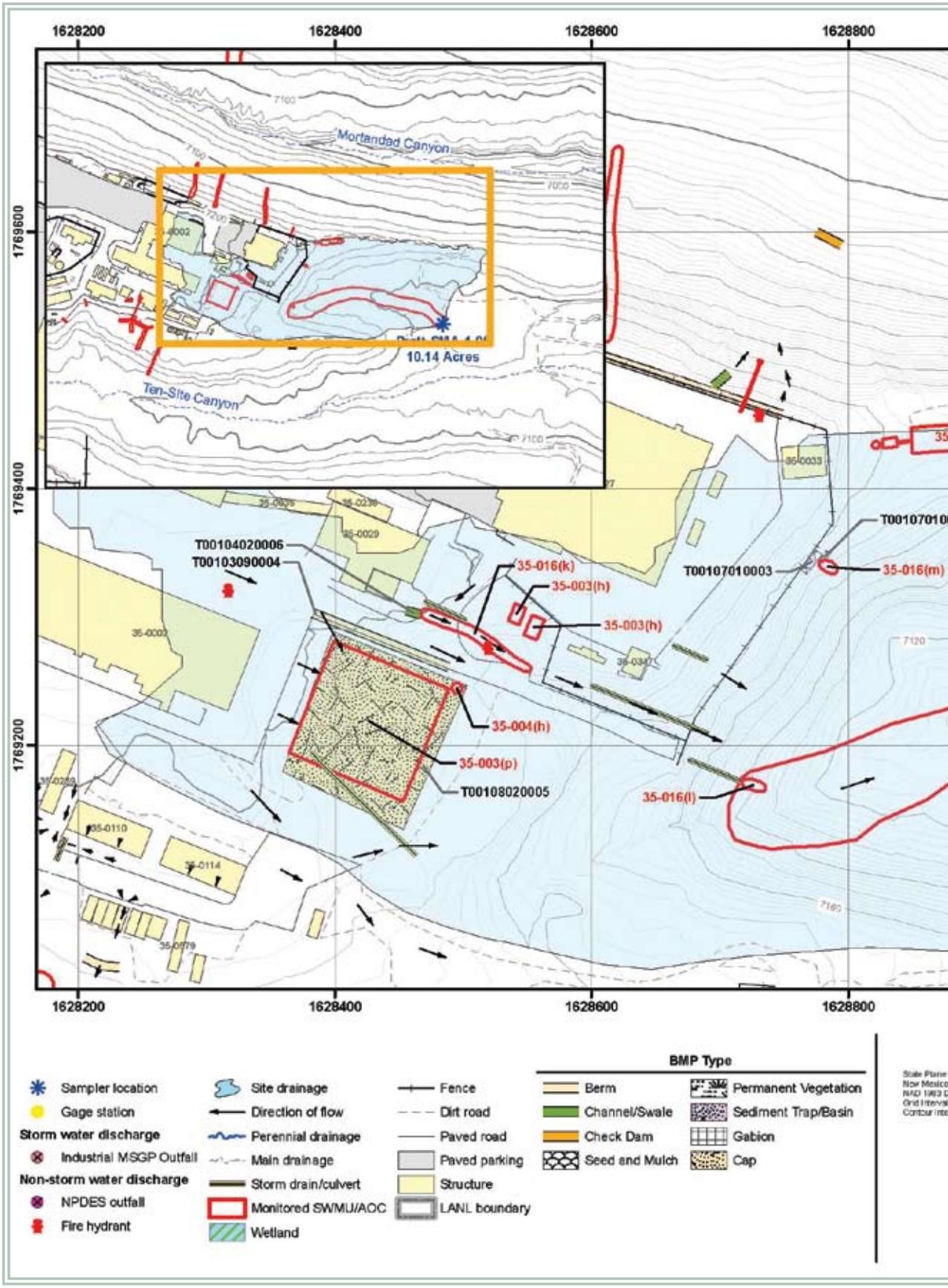
Gabions (T001-07-01-0003)

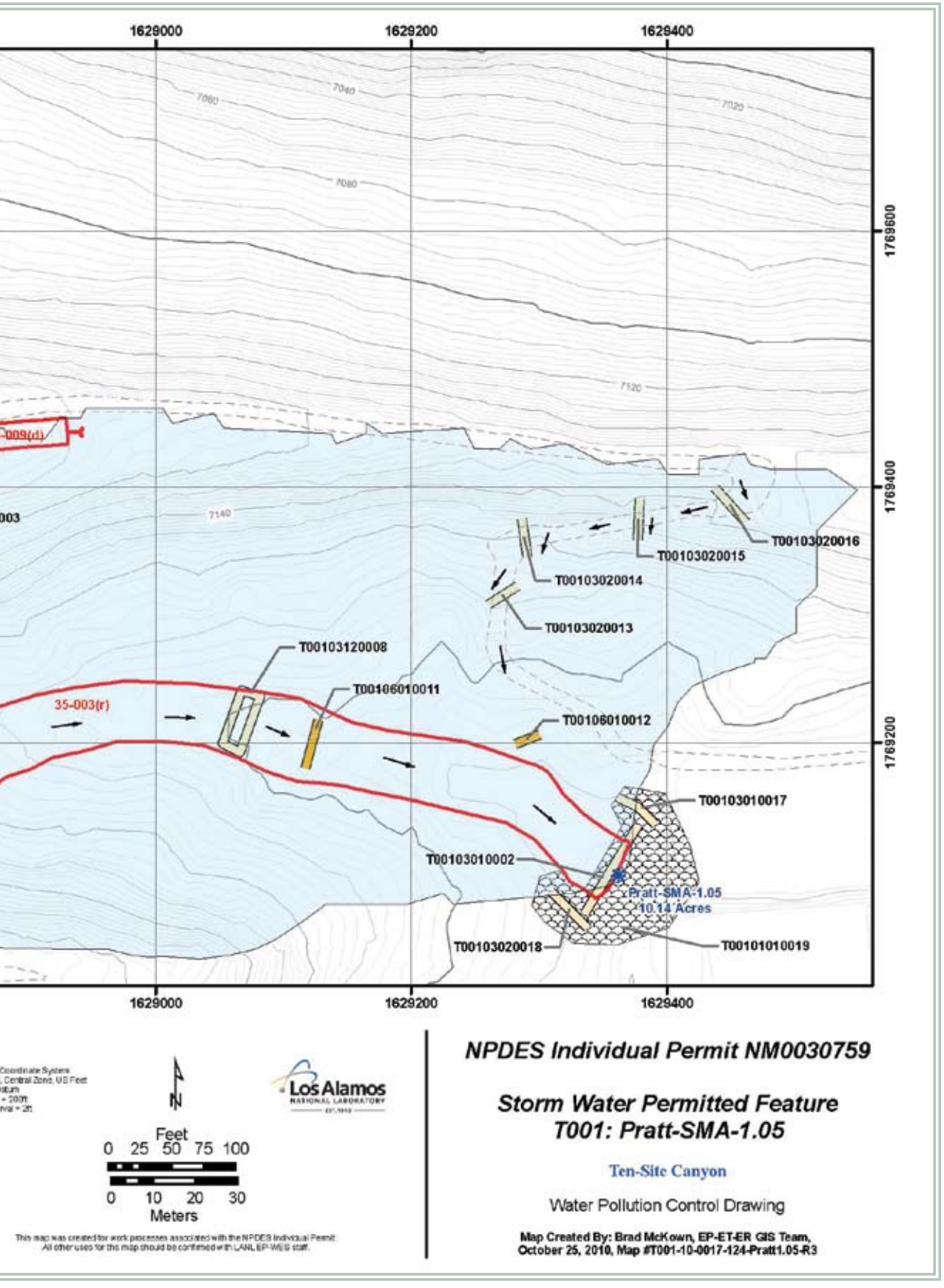
The gabions are located to the east of building 36-0027 in the natural area. They are used to control run-off from the paved areas. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

Rock Cap (T001-08-02-0005)

This rock cap is located over the footprint of SWMU 35-003(p) and is in place to prevent erosion at the location. A rock cap consists of clean non-native rock material (i.e. base course, cobble, etc.) generally 1 foot or greater in depth that is properly compacted. Generally used to cap potential soil contamination areas. This category of storm water control includes earth, rock and asphalt caps. Caps are used primarily for erosion control and to isolate areas of potential soil contamination from storm water.

1000.55.4 Project Map




1629000
1629200
1629400
1769600
1769400
1769200
7060
7040
7080
7020
7120
7140
35-003(r)
T00103120008
T00106010011
T00106010012
T00103020013
T00103020014
T00103020015
T00103020016
T00103010017
T00103010002
T00103020018
T00101010019
Pratt-SMA-1.05
10.14 Acres
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T001: Pratt-SMA-1.05
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team,
October 25, 2010, Map #T001-10-0017-124-Pratt1.05-R3

1000.55.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.55.6 Corrective Action Status

The Sites associated with Pratt-SMA-1.05 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.56 T-SMA-1

1000.56.1 Area Description

1000.56.2 Potential Pollutant Sources

1000.56.2.1 Historical Industrial Activity Areas

1000.56.3 Control Measures

1000.56.4 Project Map

1000.56.5 Storm Water Monitoring Plan and Schedule

1000.56.6 Corrective Action Status



1000.56 T-SMA-1

1000.56.1 Area Description

T-SMA-1 is located within TA-35 and access to the area is controlled. The northern boundary is the head cut of Ten Site Canyon. The southern boundary is the NES fence surrounding MDA C. Pajarito Road is approximately 30 feet south of this fence area. The eastern boundary is undeveloped land within MDA C. The western boundary is undeveloped land within MDA C.

1000.56.2 Potential Pollutant Sources

1000.56.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF T002, T-SMA-1, Sites 50-006(a) and 50-009.

SWMU 50-006(a) is the outfall area at the head of Ten Site Canyon impacted by two accidental operational releases when a sump in a pumping station (building 50-0002) overflowed, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent). The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. A soil sample collected from the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient of the outfall. In 1981, both waste lines 55 and 67 were completely removed. During waste line removal, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially remediated by the removal of 70 m3 of contaminated soil from the outfall location.

SWMU 50-009 consists of decommissioned MDA C, established to replace MDA B at TA-21 as a disposal area for Laboratory derived waste. MDA C operated from May 1948 to April 1974. Wastes disposed at MDA C included liquids, solids, and gases generated from a broad range of nuclear energy research and development activities conducted at the Laboratory; waste included uncontaminated classified materials, metals, hazardous materials, and radionuclides. Historical reports indicate it was common practice for chemicals to be burned in the chemical disposal pit at MDA C. At MDA C, 7 pits (6 pits and 1 chemical pit) and 108 shafts were excavated into the overlying soil and tuff.

1000.56.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
50-006(a)	Operational release	Co-located, Overlapping	Shared	•	•	•	PCBs
50-009	Material disposal area (MDA C)	Co-located, Overlapping	Shared	•	•	•	PCBs

Substantially Identical Determination

Sites grouped within this SMA are associated with historical waste treatment activities at TA-50. The Sites have similar contaminants, share a common drainage, and will discharge substantially identical effluent.

1000.56.3 Control Measures

The potential for run-on from surrounding roads is minimal. However, there is potential run-on from the paved areas below, especially the northeast portion of the SMA. A corrective action plan has been developed for this monitored area.

Subsections to 1000.56.3 list all control measures used to control pollutant sources identified in Section 1000.56.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.56.4.

1000.56.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T002 02 01 0004	Established Vegetation - Grasses and Shrubs			•	
T002 03 06 0003	Berms - Straw Wattles		•		•
T002 04 06 0006	Channel/Swale - Rip Rap		•	•	
T002 08 01 0001	Cap - Earth	•		•	

Established Vegetation (T002-02-01-0004)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Straw Wattles (T002-03-06-0003)

The wattles are located to the east of the SMA on the slope and control run-off from the area. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Eastern Rip Rap (T002-04-06-0006)

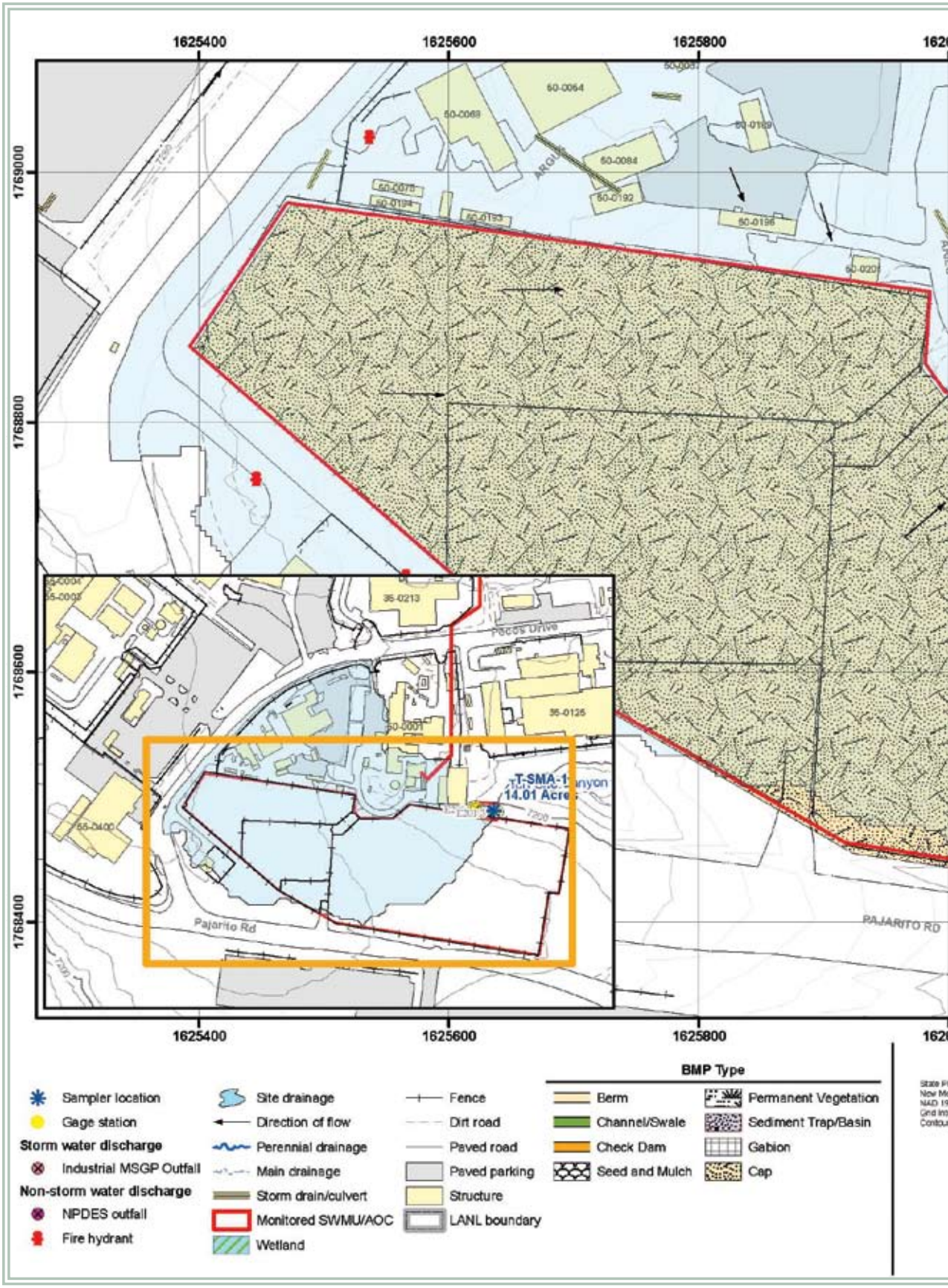
This rip rap is installed to the east of building 50-0250. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

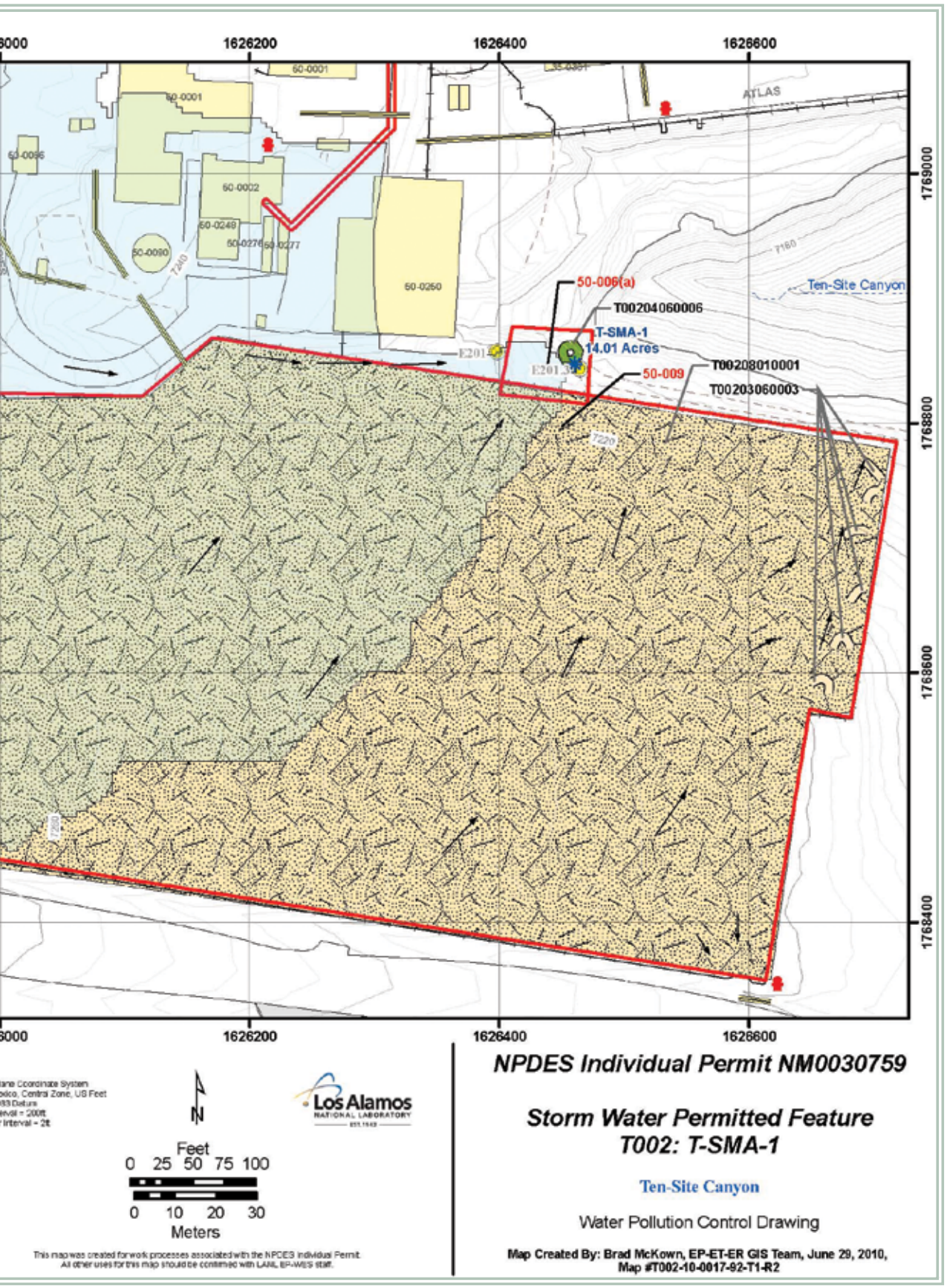
Earth Cap (T002-08-01-0001)

The earth cap is located on top of the entire SMA and prevents erosion. An earthen

cap consists of clean fill material generally 1 foot or greater in depth that is properly compacted. Generally used to cap subsurface areas such as shafts or boreholes. This category of storm water control includes earth, rock and asphalt caps. Caps are used primarily for erosion control and to isolate areas of potential soil contamination from storm water.

1000.56.4 Project Map




1626200
1626400
1626600
1769000
1768800
1768600
1768400
ATLAS
Ten-Site Canyon
50-006(a)
T00204060006
T-SMA-1
14.01 Acres
50-009
T00208010001
T00203060003
50-0001
50-0002
50-0096
50-0249
50-0276
50-0277
50-0080
50-0250
E201
E201.3
7240
7220
7180
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T002: T-SMA-1
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, June 29, 2010,
Map #T002-10-0017-92-T1-R2

1000.56.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	PCBs (2)

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.56.6 Corrective Action Status

The Sites associated with T-SMA-1 are high priority Sites. Corrective action is to be certified complete within three years of the effective date of the IP.

1000.57 T-SMA-2.5

1000.57.1 Area Description

1000.57.2 Potential Pollutant Sources

1000.57.2.1 Historical Industrial Activity Areas

1000.57.3 Control Measures

1000.57.4 Project Map

1000.57.5 Storm Water Monitoring Plan and Schedule

1000.57.6 Corrective Action Status



1000.57 T-SMA-2.5

1000.57.1 Area Description

T-SMA-2.5 is located within TA-35 and access to the area is controlled. The northern boundary is Pecos Drive, a paved access road to TA-35. The southern boundary is the steep south facing slope of Ten Site Canyon. The eastern boundary is on developed administrative area of TA-35. The western boundary is on developed administrative area of TA-35.

1000.57.2 Potential Pollutant Sources

1000.57.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF T003, T-SMA-2.5, Site 35-014(g3).

AOC 35-014(g3) is an oil-stained area resulting from a major oil spill that occurred near the former tank farm, SWMU 35-015(a), on the west side of the carbon dioxide laser building, Building 35-86, located adjacent to the north slope of Ten Site Canyon. The amount of oil that was released is not specified, but the source of the spill was reportedly an oil tank truck. The spill flowed southward through a culvert under the road on the south side of Building 35-86, across the parking lot west of Building 35-207, and south through a natural drainage pathway, former AOC 35-016(n), into Ten Site Canyon. The spill occurred some time prior to May 9, 1984, the date of documentation photographs. The path of the spill was clearly visible in a 1986 aerial photograph. Eleven samples were collected in 1987 along the trace of the spill to the canyon bottom and 100 feet downstream as part of "Environmental Problem 25-Spills and/or Unplanned Releases of Liquids". Inorganic chemicals, radionuclides, and organic chemicals were detected in the samples. The tank farm underwent D&D in 1988 and 1989. The stained area was also observed in August of 1991. At that time, all vegetation in the path of the spill was dead and the area still smelled strongly of oil. In April 1995, 11 soil samples were collected from six locations as part of the Phase I RFI and sent to both mobile and fixed-site laboratories. Sample analysis was for inorganic chemicals, radionuclides, and organic chemicals. PAHs were also tested for in the mobile laboratory. The inorganic chemicals, chromium, nickel, uranium, and zinc, were detected above BVs. Several organic chemicals were detected. According to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002, the ER Project collected additional samples from this SWMU area in 1997. Historical ER Project data has been reviewed in the SAP and potential contaminants exist at this AOC at greater than BVs. Analysis was completed for organic and inorganic chemicals, and radionuclides. SVOCs were detected in 12 of 16 samples with LROs detected at concentrations up to 20,000 ppm. VOCs were detected in five of ten samples. Alpha spectroscopy analysis was completed for two samples; nothing was detected greater than FVs. Gamma spectroscopy analysis was completed for 14 samples with no detects greater than FVs. Additional sampling was proposed for AOC 35-014(g3) in the SAP.

1000.57.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-014(g3)	Spill/Non-intentional release area	Discrete Location, No overlap	Individual	•		•	

1000.57.3 Control Measures

The earthen channel above the ground cap diverts parking, culvert, and roof run-on to the east away from the SWMU. Road run-on from the north of the SWMU is captured by the cement channel west of the paved access road and is diverted to the west of the SWMU.

Subsections to 1000.57.3 list all control measures used to control pollutant sources identified in Section 1000.57.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.57.4.

1000.57.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T003 04 01 0002	Channel/Swale - Earthen	•		•	
T003 06 01 0003	Check Dam - Rock		•		•
T003 06 01 0004	Check Dam - Rock		•		•
T003 06 01 0005	Check Dam - Rock		•		•
T003 08 02 0001	Cap - Rock		•	•	

Earthen Channel (T003-04-01-0002)

The earthen channel is located just south of the paved area to the west of building 36-0207, adjacent to the natural area. It is diverting run-on away from the SMA. Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water run-off around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU without contacting it.

Northern Check Dam (T003-06-01-0003)

This is the northern most check dam in a series of three. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Middle Check Dam (T003-06-01-0004)

This is the middle check dam in a series of three. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

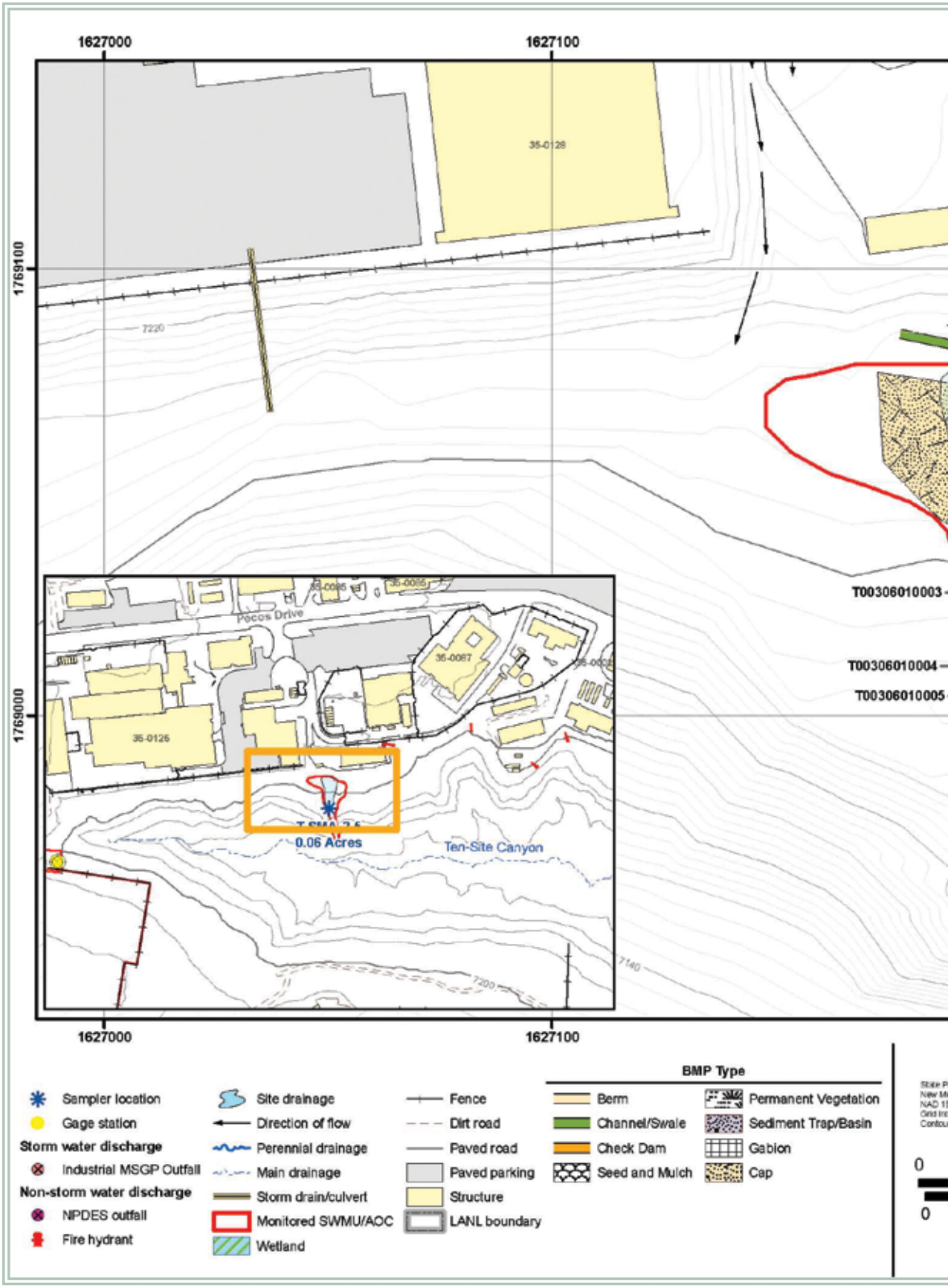
Southern Check Dam (T003-06-01-0005)

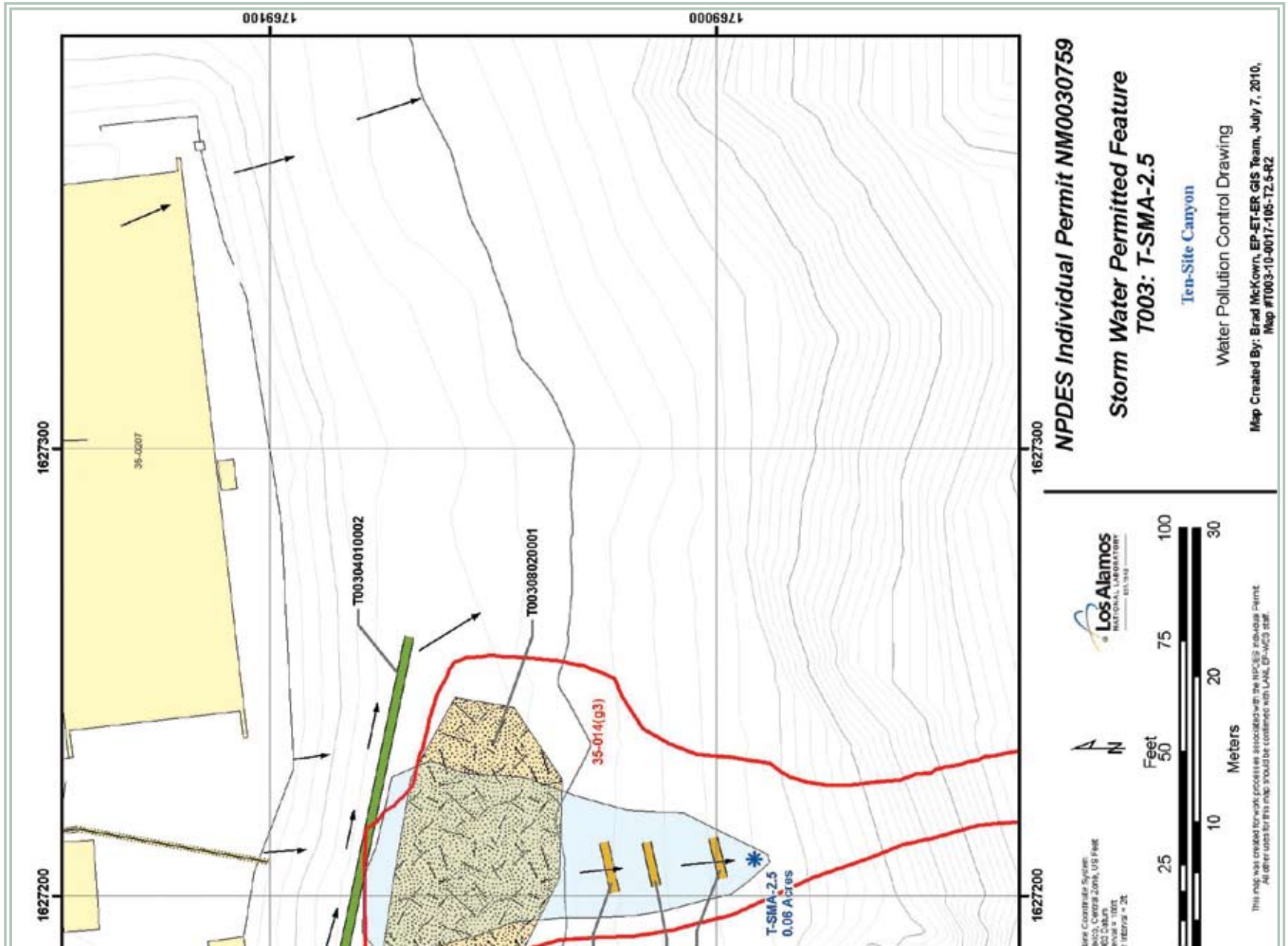
This is the third and southernmost check dam in a series of three, located at the southern tip of the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Cap (T003-08-02-0001)

The cap is located in the northern portion of the SMA, above the sampler. It mitigates run-off and erosion in the area. A rock cap consists of clean non-native rock material (i.e. base course, cobble, etc.) generally 1 foot or greater in depth that is properly compacted. Generally used to cap potential soil contamination areas. This category of storm water control includes earth, rock and asphalt caps. Caps are used primarily for erosion control and to isolate areas of potential soil contamination from storm water.

1000.57.4 Project Map




1769100
1769000
1627300
1627200
35-0007
T0030410002
T0030820001
35-014(g3)
T-SMA-2.5
0.06 Acres
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T003: T-SMA-2.5
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #T003-10-0017-105-12.5-R2
Los Alamos
NATIONAL LABORATORY
N
Feet
50
25
0
75
100
Meters
30
20
10
0

1000.57.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.57.6 Corrective Action Status

The Site associated with T-SMA-2.5 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.58 T-SMA-2.85

1000.58.1 Area Description

1000.58.2 Potential Pollutant Sources

1000.58.2.1 Historical Industrial Activity Areas

1000.58.3 Control Measures

1000.58.4 Project Map

1000.58.5 Storm Water Monitoring Plan and Schedule

1000.58.6 Corrective Action Status



1000.58 T-SMA-2.85

1000.58.1 Area Description

T-SMA-2.85 is located within TA-35 and access to the area is controlled. The northern boundary is developed administrative area at TA-35. The southern boundary is the canyon floor of Ten Site Canyon. A portion of the eastern boundary is developed administrative area at TA-35. The remainder is undeveloped canyon slope. A portion of the western boundary is developed administrative area at TA-35. The remainder is undeveloped canyon slope.

1000.58.2 Potential Pollutant Sources

1000.58.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF T004, T-SMA-2.85, Sites 35-014(g) and 35-016(n).

SWMU 35-014(g) is consolidated with AOCs 35-004(m), 35-014(g2), and 35-016(n) as consolidated unit 35-014(g)-00 . The SWMU and AOCs in this consolidation are either located on, or adjacent to, the north slope of Ten Site Canyon or are outfalls that discharge onto that slope. The sites are associated primarily with SWMU 35-015(a), the site of a former tank farm and former waste-oil treatment facility, which were located west of the carbon dioxide laser building (Building 35-86) and an experimental support laboratory (Building 35-207). The tank farm and treatment facility were removed in late 1988 or 1989. The former waste-oil treatment facility reprocessed used dielectric oil from the Helios carbon dioxide laser in Building 35-86. When the oil recycling process was complete, separated water was discharged into Ten Site Canyon through a storm sewer that eventually merged with AOC 35-016(n). Spills from the tank farm were also discharged to a storm sewer and into Ten Site Canyon near Building 35-207.

SWMU 35-014(g) is stained concrete adjacent to an asphalt-paved catchment basin located at the northeast corner of an experimental support laboratory (Building 35-207). The concrete is stained as a result of a former oil spill. The origin and date of the spill are unknown. The spill was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. A catchment basin directs stormwater flow to a CMP outfall and daylight drainage channel [AOC 35-016(n)]. A small oil stain remains visible on the concrete. However, no obvious oil staining is apparent in the catchment basin or the outfall. There is currently no visible sign of the spill or any sign of continued releases at the CMP outfall.

AOC 35-016(n) consists of a ten inch diameter CMP outfall and natural daylight drainage channel located at TA-35 that receives storm water run-off from the roof of the carbon dioxide laser building, a paved area south of the laser building (Building 35-86), and a grassy slope adjacent to an experimental support laboratory (Building 35-207). The source of the outfall is a daylight drainage channel that leads to an asphalt paved catchment basin. The outfall receives flow from the catchment basin through an intake grate. Recycled, separated water from the TA-35 tank farm and waste oil treatment facility was also discharged into Ten Site Canyon through a storm sewer that leads to AOC 35-016(n) outfall. The tank farm and treatment facility were decommissioned and removed in late 1988 or 1989.

1000.58.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-014(g)	Spill/Non-intentional release area	Co-located, Overlapping	Shared	•		•	
35-016(n)	Storm drain and Outfall associated with Building 35-86	Discrete Location, No overlap	Shared	•		•	

Substantially Identical Determination

Sites grouped within this SMA discharge to a slope of Ten Site Canyon. Because they are physically co-located, share a common drainage, and have similar contaminants, these Sites will discharge substantially identical effluent.

1000.58.3 Control Measures

The primary source of potential run-on at this SMA is the roof drainage to the channel north of building 36-0207.

Subsections to 1000.58.3 list all control measures used to control pollutant sources identified in Section 1000.58.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.58.4.

1000.58.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T004 02 01 0003	Established Vegetation - Grasses and Shrubs			•	
T004 02 02 0002	Established Vegetation - Forested/ Needle Cast			•	
T004 03 09 0004	Berms - Curbing	•			•
T004 06 01 0005	Check Dam - Rock		•		•
T004 06 01 0006	Check Dam - Rock	•			•

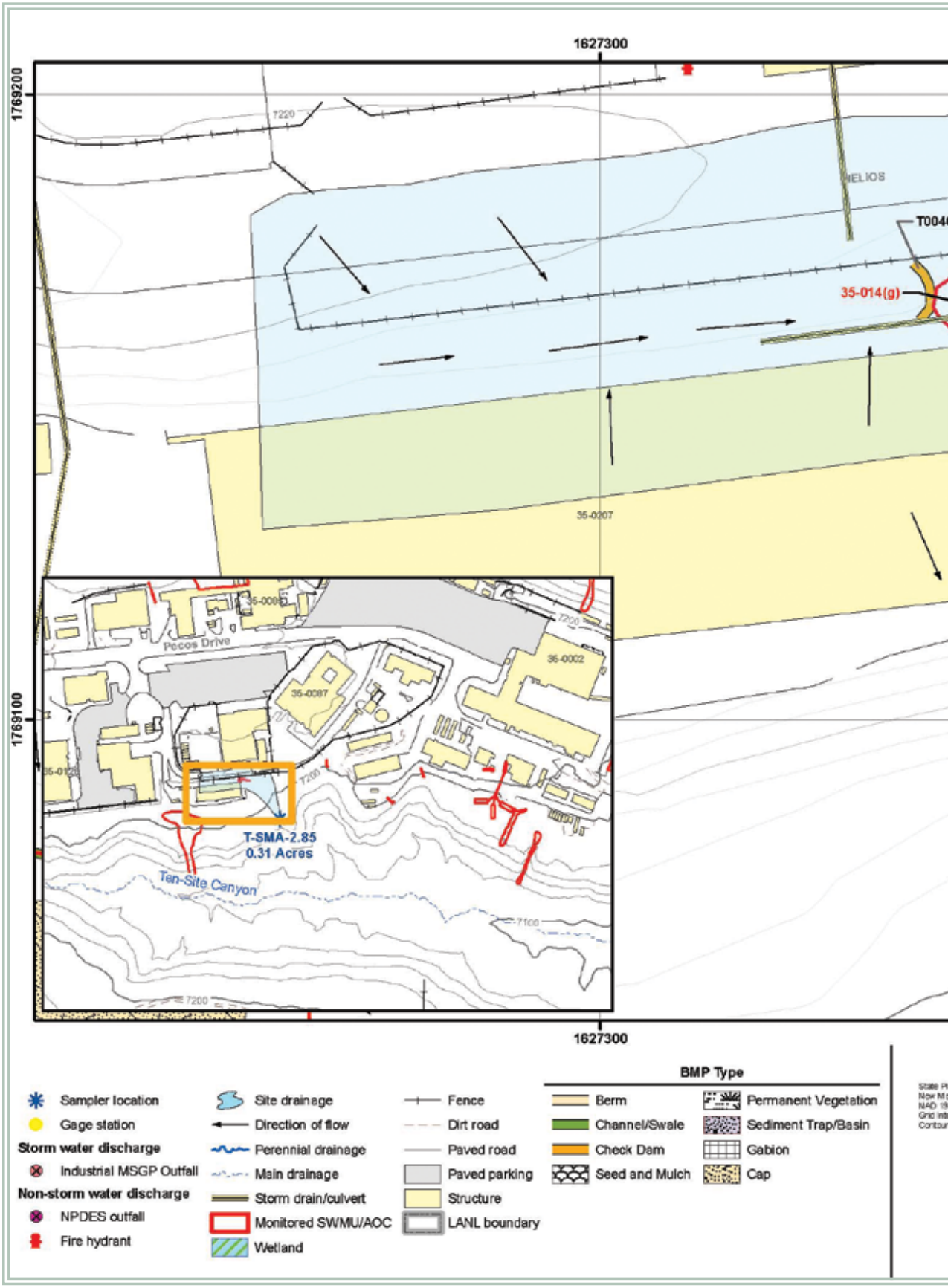
Established Vegetation (T004-02-01-0003, -02-0002)
Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

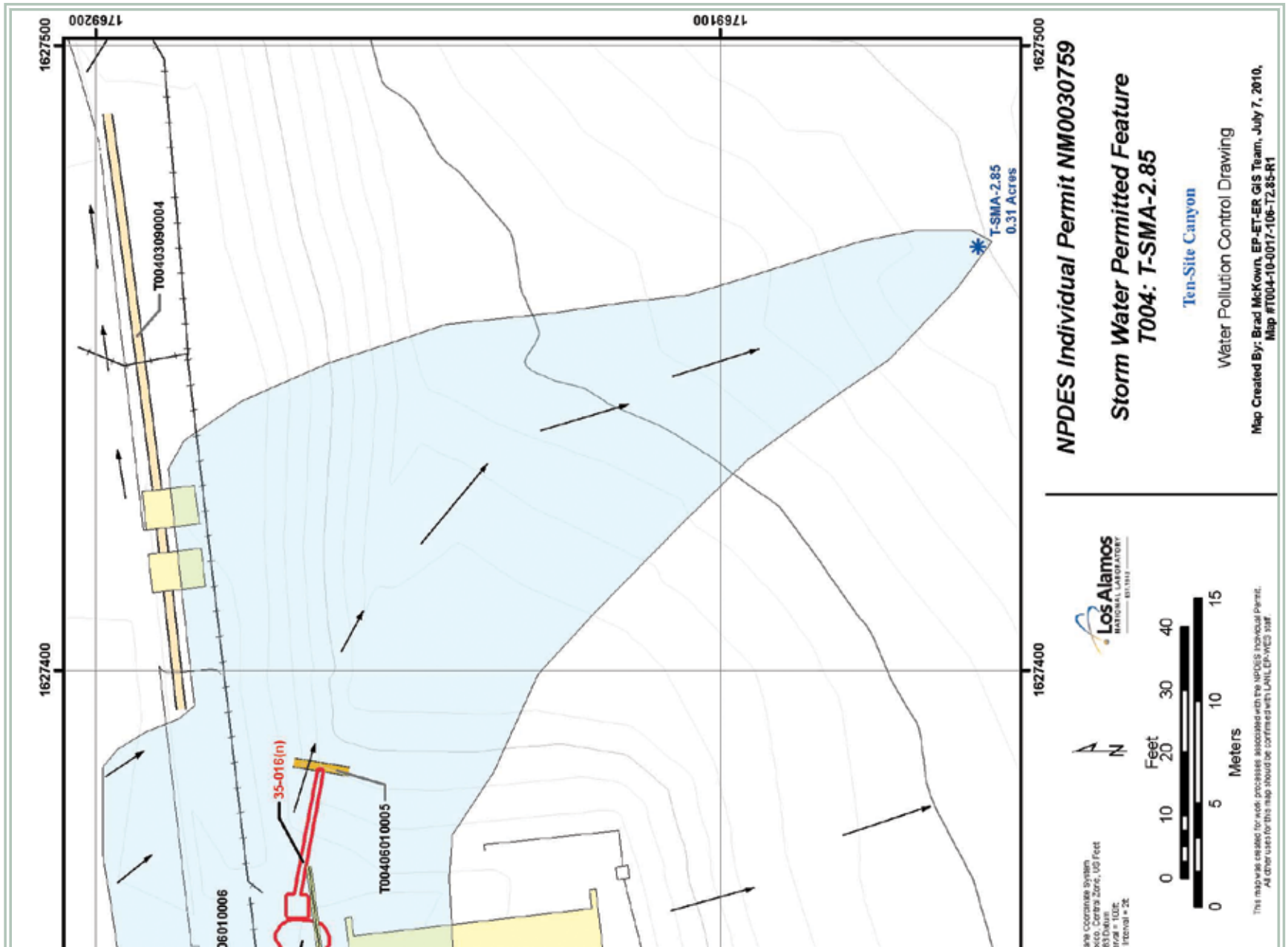
Curbing (T004-03-09-0004)
The curbing is located along the southern portion of the parking/storage area and diverts run-on away from the Sites. Curbing is an engineered device used to direct, convey, or divert storm water flow and prevent erosion.

Eastern Check Dam (T004-06-01-0005)
This check dam is installed east of building 36-0207. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Northern Check Dam (T004-06-01-0006)
This check dam is installed north of building 36-0207. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.58.4 Project Map




1627500
1627400
1769200
1769100
T00403090004
T-SMA-2.85
0.31 Acres
35-016(n)
T00406010005
T00406010006
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T004: T-SMA-2.85
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #T004-10-0017-106-T2.85-R1
Los Alamos
NATIONAL LABORATORY
N
Feet
0
10
20
30
40
Meters
0
5
10
15

1000.58.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.58.6 Corrective Action Status

The Sites associated with T-SMA-2.85 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.59 T-SMA-3

1000.59.1 Area Description

1000.59.2 Potential Pollutant Sources

1000.59.2.1 Historical Industrial Activity Areas

1000.59.3 Control Measures

1000.59.4 Project Map

1000.59.5 Storm Water Monitoring Plan and Schedule

1000.59.6 Corrective Action Status



1000.59 T-SMA-3

1000.59.1 Area Description

T-SMA-3 is located within TA-35 and access to the area is controlled. The northern boundary is developed administrative area of TA-35. The southern boundary is the south-facing slopes of Ten Site Canyon. The eastern boundary is developed administrative area of TA-35. A portion of the western boundary is developed administrative area of TA-35. The remainder is undeveloped land to the mesa edge.

1000.59.2 Potential Pollutant Sources

1000.59.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF T005, T-SMA-3, Site 35-016(b).

AOC 35-016(b) is an inactive outfall, which discharges storm water from the roof drains of a photo laboratory and office building (Building 35-87) at TA-35. This outfall is a formerly NPDES permitted outfall. The effluent discharge volume, limited to 3,000 gallon per day, was formerly released to Ten Site Canyon. Formerly photographic fluids that were processed through a silver and cyanide recovery process were released through this outfall. The six photographic laboratory waste drains (three floor, three sink) routed to this outfall were either plugged (floor) or rerouted (sink) to the sanitary sewer system.

1000.59.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-016(b)	Drain and Outfall from Building 35-87	Discrete Location, No overlap	Individual	•		•	

1000.59.3 Control Measures

The potential for run-on at this SMA is impacted by a culvert that captures storm water from the paved area west of building 35-0087 and roof drain run-on that is captured by the culvert west of building 35-0067. These are significant run-on sources for this monitored area.

Subsections to 1000.59.3 list all control measures used to control pollutant sources identified in Section 1000.59.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.59.4.

1000.59.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T005 02 01 0005	Established Vegetation - Grasses and Shrubs			•	
T005 02 02 0006	Established Vegetation - Forested/ Needle Cast			•	
T005 04 06 0001	Channel/Swale - Rip Rap	•		•	
T005 06 02 0007	Check Dam - Log		•		•
T005 06 02 0008	Check Dam - Log		•		•

Established Vegetation (T005-02-01-0005, -02-0006)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

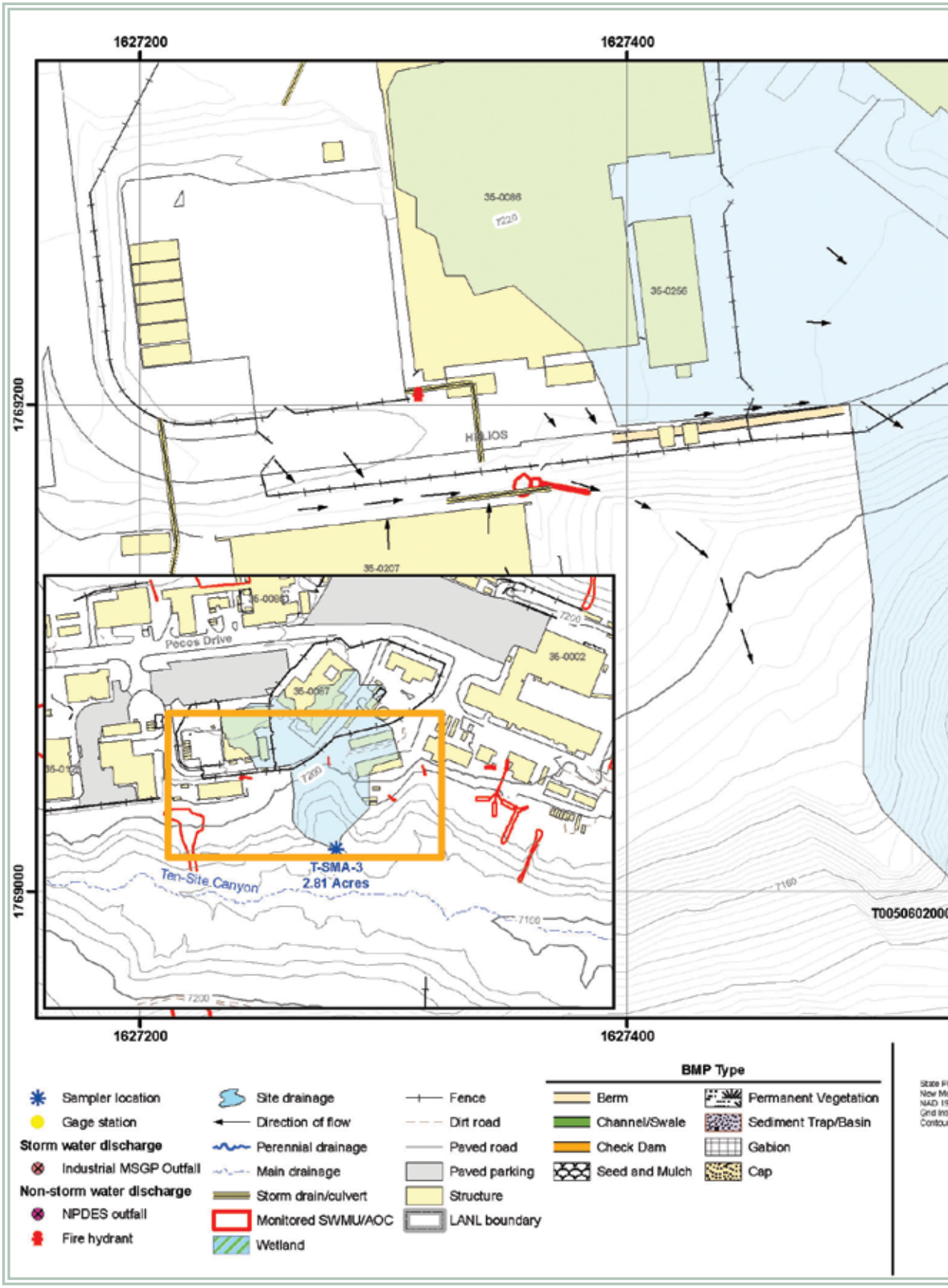
Rip Rap (T005-04-06-0001)

The rip rap is located in the natural drainage channel directly north of the sampler. It is aiding in erosion and run-on protection. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

Log Check Dams (T005-06-02-0007, -0008)

This is a pair of log check dams located in the drainage channel above, north, of the sampler. They are used to help control storm water run-off from the slope. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.59.4 Project Map



1627600
1627800
1769200
1769000
35-0129
35-0260
35-0196
35-0045
35-016(b)
35-0057
T00504060001
35-0685
T00506020008
T-SMA-3
2.81 Acres
7150
7140
7130
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T005: T-SMA-3
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #T005-10-0017-103-T3-R3

1000.59.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.59.6 Corrective Action Status

The Site associated with T-SMA-3 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.60 T-SMA-4

1000.60.1 Area Description

1000.60.2 Potential Pollutant Sources

1000.60.2.1 Historical Industrial Activity Areas

1000.60.3 Control Measures

1000.60.4 Project Map

1000.60.5 Storm Water Monitoring Plan and Schedule

1000.60.6 Corrective Action Status



1000.60 T-SMA-4

1000.60.1 Area Description

T-SMA-4 is located within TA-35 and access to the area is controlled. The northern boundary is developed administrative area of TA-35. The southern boundary is the south facing canyon slope of Ten Site Canyon. The main canyon drainage is approximately 100 feet further south. The eastern boundary is developed administrative area of TA-35. The western boundary is developed administrative area of TA-35.

1000.60.2 Potential Pollutant Sources

1000.60.2.1 Historical Industrial Activity Areas

There are four historical industrial activity areas associated with PF T006, T-SMA-4, Sites 35-004(a), 35-009(a), 35-016(c) and 35-016(d).

SWMU 35-004(a) is made up of an outdoor storage area previously used to store drums of oil and drums of organic chemicals. The area is located at the southeast corner of the sodium building (Building 35-25). Stained soil was observed at the site during a 1988 reconnaissance and evidence of releases was apparent during a 1990 site inspection, but they were reportedly cleaned up prior to the completion of the 1992 RFI work plan. A temporary, metal, hazardous storage structure, structure 35-386, was present at the time of the Phase I RFI.

SWMU 35-009(a) is a septic system that operated from 1951 to 1975. It is located near the southwest corner of Building 35-34 on the mesa. The structures that make up SWMU 35-009(a) are structures 35-14, a 1,500 gallon septic tank, approximately 10 ft long x 4 ft wide x 5 ft deep, buried about four feet below ground surface; 35-15, a dosing chamber; and 35-16, a distribution box. The septic system discharged to drain fields on the south-facing slope of Ten Site Canyon. A 1968 memo indicated that the drain field was plugged and the system was daylighted. The location of the drain-line is unknown. Releases from the septic system and leach field are hypothesized to span the boundary of the Ten Site slope. The septic system received sanitary wastes and possibly received industrial and radiological wastes from Building 35-2. Specific waste stream information is not available. Historical operations at Building 35-2 involved the use of lanthanum-140. Two nuclear reactors were housed in Building 35-2, as well as plutonium laboratories and lithium titride operations. In 1975, these structures were taken out of service but left in place and portions of the leach field were excavated when new sanitary sewer lines were routed to the sewage lagoons [SWMU 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

The site was cleaned up during a VCA in September 1996. The VCA included removal and disposal of the tank contents and filling the tank with concrete. Confirmation soil samples were collected after the VCA from below the septic tank for analysis of organic and inorganic chemicals. Copper and mercury were detected above BVs, but below SALs. There were no organic chemicals detected.

SWMU 35-016(c) consists of two former NPDES permitted outfalls at TA-35, established in 1964 to discharge non-contact cooling water from Building 35-67. The drain-line to one outfall ran about 75 feet southward to its point of discharge into Ten Site Canyon. The other outfall deactivated in 1987, ran about 125 feet from Building 35-67 to its point of discharge into Ten Site Canyon. The two outfalls were combined by 1985. Both buildings (35-46 and 35-67) housed offices and heating and cooling systems in support of other TA-35 buildings. The non-contact cooling water was from building cooling systems and was not process specific.

SWMU 35-016(d) is a formerly NPDES permitted outfall that was

constructed at TA-35 in 1962 to handle non-contact cooling water from the reactor components development building (Building 35-46). By 1990 this outfall had been removed from the NPDES permit. The drain-line runs about 50 feet southward to its point of discharge into Ten Site Canyon. Both buildings (35-46 and 35-67) housed offices and heating and cooling systems in support of other TA-35 buildings. The non-contact cooling water was from building cooling systems and was not process specific.

1000.60.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-004(a)	Container Storage Area	Co-located, Overlapping	Shared	•		•	
35-009(a)	Septic system	Co-located, Overlapping	Shared	•		•	
35-016(c)	Drain and Outfall from Building 35-67	Co-located, Overlapping	Shared	•		•	
35-016(d)	Drain and Outfall from Building 35-46	Co-located, Overlapping	Shared	•		•	

Substantially Identical Determination

Sites grouped within this SMA discharge to a slope of Ten Site Canyon. Because they have a shared common drainage and similar contaminants, these Sites will discharge substantially identical effluent.

1000.60.3 Control Measures

The major sources of potential run-on at this SMA are two storm culverts, roof drains, and paved areas in the northern portion of the SMA. This run-on contribution is significant.

Subsections to 1000.60.3 list all control measures used to control pollutant sources identified in Section 1000.60.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.60.4.

1000.60.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T006 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
T006 02 02 0002	Established Vegetation - Forested/Needle Cast			•	
T006 03 03 0009	Berms - Log		•		•
T006 03 03 0010	Berms - Log		•		•
T006 03 09 0005	Berms - Curbing	•			•
T006 04 06 0004	Channel/Swale - Rip Rap		•	•	
T006 06 01 0006	Check Dam - Rock	•			•
T006 06 01 0007	Check Dam - Rock	•			•
T006 06 01 0008	Check Dam - Rock	•			•
T006 07 01 0003	Gabions - Gabions		•		•

Established Vegetation (T006-02-01-0001, -02-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Log Berms (T006-03-03-0009, -0010)

This is a pair of log berms located in the drainage channel north of the sampler. They are in place to help reduce run-off from the area. A log berm is a temporary containment control constructed of logs. Log berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Curbing (T006-03-09-0005)

The curbing is located to the southwest of building 35-0046 along the edge of the paved area. It is diverting run-on away from the SMA. Curbing is an engineered device used to direct, convey, or divert storm water flow and prevent erosion.

Rip Rap(T006-04-06-0004)

This rip rap is located on the south side of the paved parking area southwest of building 35-0046. It is functioning as outlet protection and to dissipate flow and prevent erosion. Rip rap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated run-off.

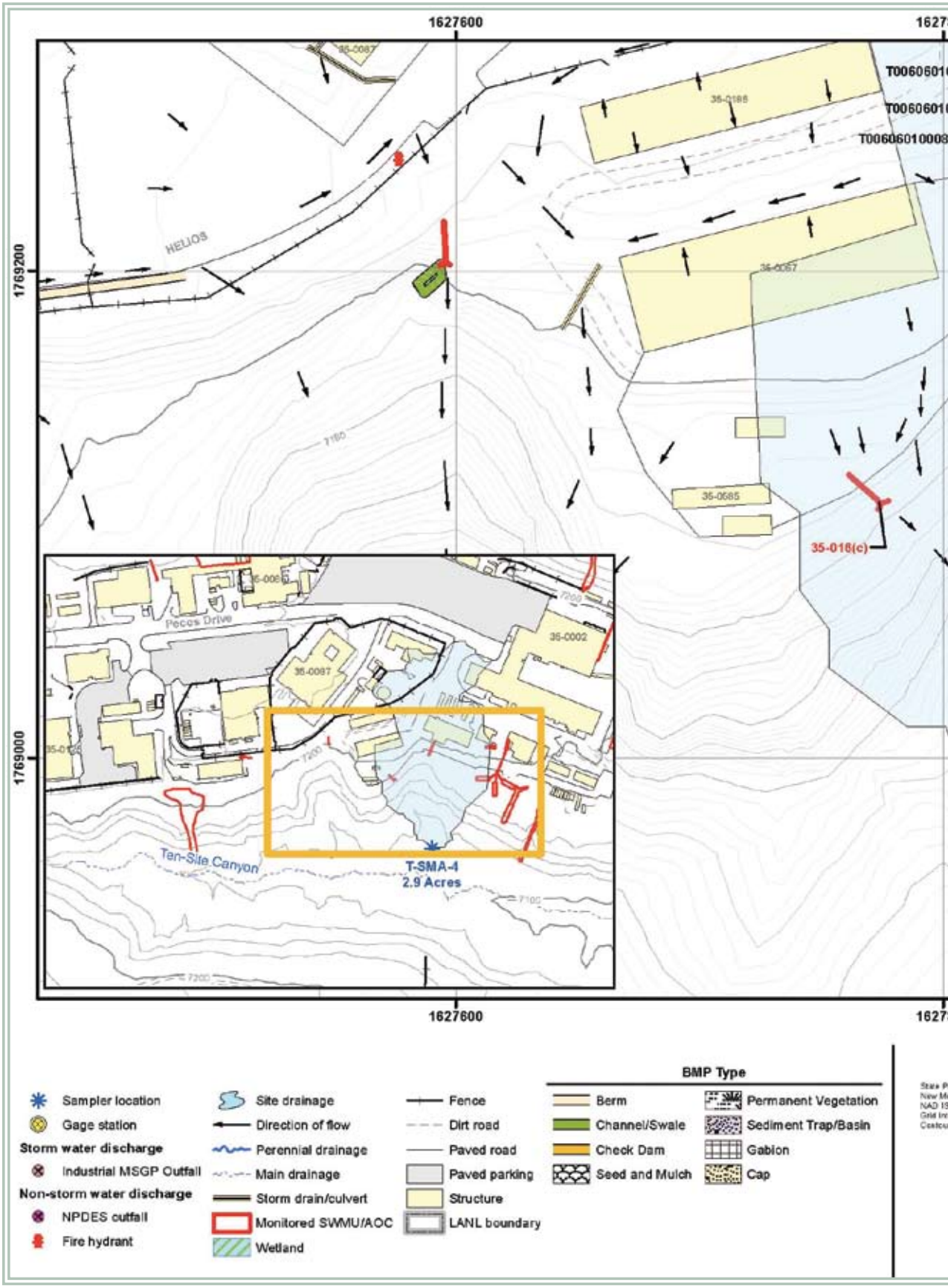
Rock Check Dams (T006-06-01-0006, -0007, -0008)

This is a series of three check dams located in the drainage channel west of 35-0046. They are used to help control storm water run-on from the slope above. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Gabions (T006-07-01-0003)

The gabion is associated with the rip rap southwest of building 35-0046. It is also dissipating flow and reducing sediment loading. Gabions are large, multi-celled, welded wire or rectangular wire mesh boxes, used in channel revetments, retaining walls, abutments, and check dams. Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam.

1000.60.4 Project Map



800
1628000
1769200
1769000
35-0045
35-0025
35-0034
ANTARES
35-016(d)
35-004(a)
35-009(a)
T00603090005
T00604060004
T00607010003
T00603030009
T00603030010
T-SMA-4
2.9 Acres
7120
7160
N
Feet
0 25 50 75 100
0 10 20 30
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T006: T-SMA-4
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team,
March 30, 2011, Map #T006-10-0017-131-T4-R3

1000.60.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.60.6 Corrective Action Status

The Sites associated with T-SMA-4 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.61 T-SMA-5

1000.61.1 Area Description

1000.61.2 Potential Pollutant Sources

1000.61.2.1 Historical Industrial Activity Areas

1000.61.3 Control Measures

1000.61.4 Project Map

1000.61.5 Storm Water Monitoring Plan and Schedule

1000.61.6 Corrective Action Status



1000.61 T-SMA-5

1000.61.1 Area Description

T-SMA-5 is located within TA-35 and access to the area is controlled. The northern boundary is developed administrative area of TA-35. The southern boundary is the south facing slope and floor of Ten Site Canyon. The eastern boundary is developed administrative area of TA-35. The western boundary is developed administrative area of TA-35.

1000.61.2 Potential Pollutant Sources

1000.61.2.1 Historical Industrial Activity Areas

There are four historical industrial activity areas associated with PF T007, T-SMA-5, Sites 35-004(a), 35-009(a), 35-016(a) and 35-016(q).

SWMU 35-004(a) is made up of an outdoor storage area previously used to store drums of oil and drums of organic chemicals. The area is located at the southeast corner of the sodium building (Building 35-25). Stained soil was observed at the site during a 1988 reconnaissance and evidence of releases was apparent during a 1990 site inspection, but they were reportedly cleaned up prior to the completion of the 1992 RFI work plan. A temporary, metal, hazardous storage structure, structure 35-386, was present at the time of the Phase I RFI.

SWMU 35-009(a) is a septic system that operated from 1951 to 1975. It is located near the southwest corner of Building 35-34 on the mesa. The structures that make up SWMU 35-009(a) are structures 35-14, a 1,500 gallon septic tank, approximately 10 ft long x 4 ft wide x 5 ft deep, buried about four feet below ground surface; 35-15, a dosing chamber; and 35-16, a distribution box. The septic system discharged to drain fields on the south-facing slope of Ten Site Canyon. A 1968 memo indicated that the drain field was plugged and the system was daylighted. The location of the drain-line is unknown. Releases from the septic system and leach field are hypothesized to span the boundary of the Ten Site slope. The septic system received sanitary wastes and possibly received industrial and radiological wastes from Building 35-2. Specific waste stream information is not available. Historical operations at Building 35-2 involved the use of lanthanum-140. Two nuclear reactors were housed in Building 35-2, as well as plutonium laboratories and lithium titride operations. In 1975, these structures were taken out of service but left in place and portions of the leach field were excavated when new sanitary sewer lines were routed to the sewage lagoons [SWMU 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

The site was cleaned up during a VCA in September 1996. The VCA included removal and disposal of the tank contents and filling the tank with concrete. Confirmation soil samples were collected after the VCA from below the septic tank for analysis of organic and inorganic chemicals. Copper and mercury were detected above BVs, but below SALs. There were no organic chemicals detected.

SWMU 35-016(a) originally consisted of an eight inch diameter metal pipe with a valve and a six inch VCP outfall that were placed in a trench cut into the tuff at TA-35 that discharged into Ten Site Canyon. SWMU 35-016(a) was established in 1958 to handle non-contact cooling water from the sodium testing building (Building 35-34). The SWMU 35-016(a) outfall is a formerly NPDES permitted outfall. The drain-lines were removed in 1987, and the trench now serves as a storm water collection channel for a small area on the south side of Ten Site Mesa. Aerial photographs from 1965 record a diagonal trench extending from the northern end of SWMU 35-016(a) in a southeasterly direction that appears to connect with the northern end of

SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the SWMU were no longer present and may have been backfilled. The 1974 aerial photographs show this site to be much the same as it appeared in the mid-1990s.

SWMU 35-016(q) is a trench cut into the tuff, parallel to and about 60 feet east of SWMU 35-016(a). The trench includes several active storm water collection basins that are located at TA-35 between Building 35-34 and the edge of Ten Site Canyon. The trench discharges storm water to the same area in Ten Site Canyon as SWMU 35-016(a). The SWMU 35-016(q) trench is likely to have been constructed in 1958. Aerial photographs from 1965 record a diagonal trench extending from the northern end of SWMU 35-016(a) in a southeasterly direction that appears to connect with the northern end of SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the SWMU were no longer present and may have been backfilled.

1000.61.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-004(a)	Container Storage Area	Co-located, Overlapping	Shared	•		•	
35-009(a)	Septic system	Co-located, Overlapping	Shared	•		•	
35-016(a)	Drain and outfall from Building 35-34	Co-located, Overlapping	Shared	•		•	
35-016(q)	Storm waster collection basins	Co-located, Overlapping	Shared	•		•	

Substantially Identical Determination

Sites grouped within this SMA discharge to a slope of Ten Site Canyon. Because they have a shared common drainage and similar contaminants, these Sites will discharge substantially identical effluent.

Sites grouped within this SMA have been subject to investigation and remediation, where warranted. The nature and extent of contamination has been defined. These Sites have been recommended for completion of corrective action activities [Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2, LA-UR-08-0336, EP2008-0035].

1000.61.3 Control Measures

The primary sources of potential run-on at this SMA are the storm culverts, roof drainage, and paved areas to the north of the SMA.

Subsections to 1000.61.3 list all control measures used to control pollutant sources identified in Section 1000.61.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.61.4.

1000.61.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T007 02 01 0005	Established Vegetation - Grasses and Shrubs			•	
T007 02 02 0007	Established Vegetation - Forested/Needle Cast			•	
T007 03 02 0003	Berms - Base Course	•			•
T007 03 02 0008	Berms - Base Course	•			•
T007 03 12 0010	Berms - Rock		•		•
T007 06 01 0002	Check Dam - Rock		•		•
T007 06 01 0004	Check Dam - Rock		•		•
T007 06 01 0009	Check Dam - Rock	•			•
T007 06 01 0011	Check Dam - Rock		•		•

Established Vegetation (T007-02-01-0005, -02-0007)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Base Course Berm (T007-03-02-0003)

The berm is located south of the paved area in the natural channel west of the storage containers. The berm is controlling run-on to the SMA. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Eastern Base Course Berm (T007-03-02-0008)

This base course berm is located southwest of building 35-0579. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock.

Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Rock Berm
(T007-03-12-0010)

The rock berm is located across the southern end of Site 35-016(q). It is in place to help manage storm water run-off from the slope above. Rock berms are used for flow reduction and sediment control in situations with unchannelized flow.

Rock Check Dams
(T007-06-01-0002, -0004)

There are two rock check dams which are located in the southern portion of the SMA just above the sampler. They are in place to mitigate run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

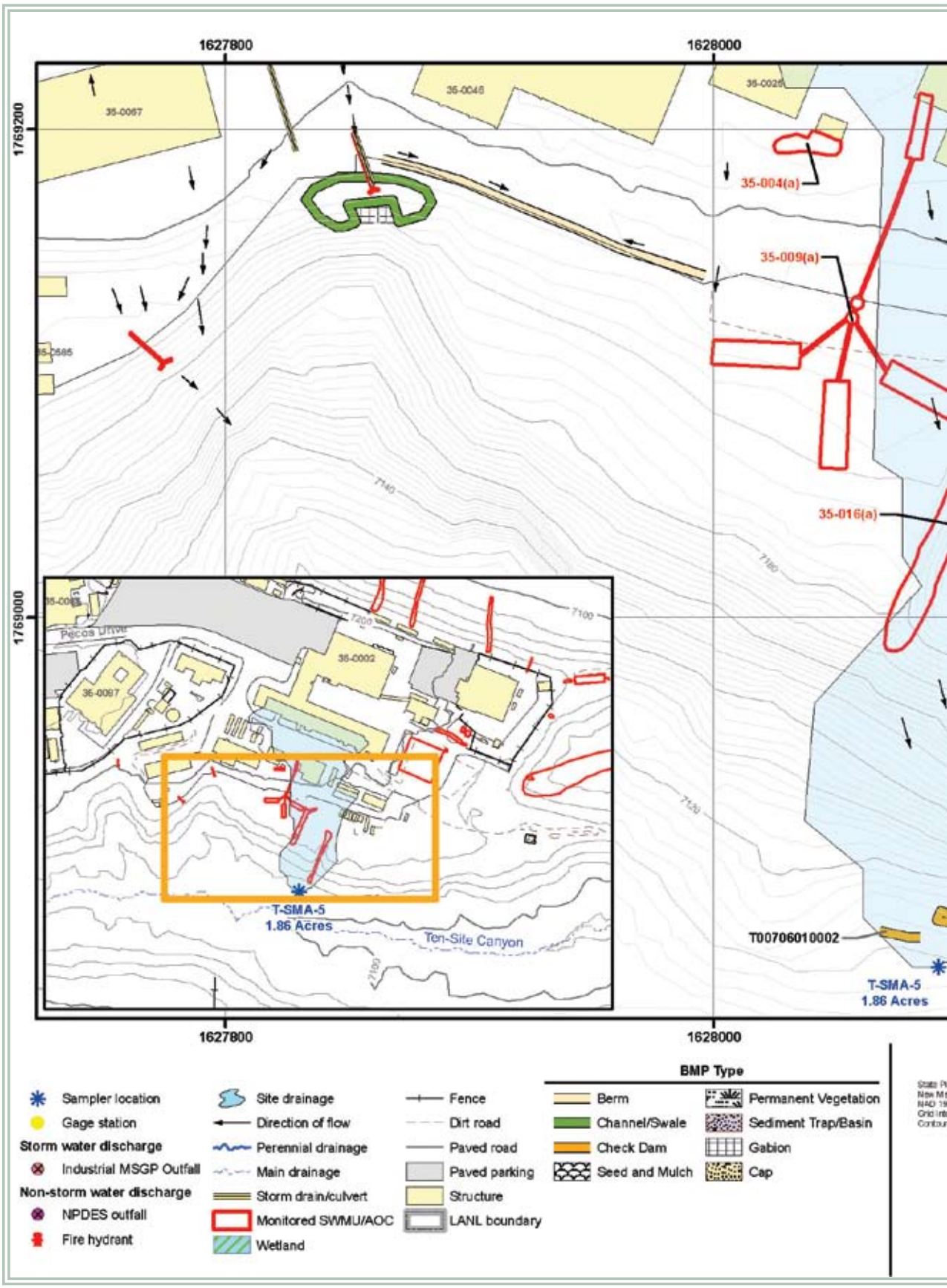
Rock Check Dam
(T007-06-01-0009)

This check dam is within the channel east of 35-016(q). Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam - South
(T007-06-01-0011)

This check dam is located at the southern extent of Site 35-016(q) and is used to help control storm water run-off flowing through the channel. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.61.4 Project Map



1628200
1628400
1769200
1769000
35-0034
35-0239
35-0592
ANTARES
35-0110
35-0114
35-0579
T00703020003
T00703020008
T00706010009
35-016(q)
T00706010011
T00703120010
T00706010004
N
Feet
0 10 20 30 40
0 5 10 15
Meters
Los Alamos
NATIONAL LABORATORY
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T007: T-SMA-5
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, August 24, 2010,
Map #T007-10-0017-91-T5-R4

1000.61.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.61.6 Corrective Action Status

The Sites associated with T-SMA-5 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.62 T-SMA-6.8

1000.62.1 Area Description

1000.62.2 Potential Pollutant Sources

1000.62.2.1 Historical Industrial Activity Areas

1000.62.3 Control Measures

1000.62.4 Project Map

1000.62.5 Storm Water Monitoring Plan and Schedule

1000.62.6 Corrective Action Status



1000.62 T-SMA-6.8

1000.62.1 Area Description

T-SMA-6.8 is located within TA-35 and access to the area is controlled. The northern boundary is an unpaved access road to the bottom of Ten Site Canyon. The southern boundary is the main drainage channel of Ten-Site Canyon. The eastern boundary is undeveloped land on the canyon floor. The western boundary is undeveloped land on the canyon floor.

1000.62.2 Potential Pollutant Sources

1000.62.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF T008, T-SMA-6.8, Site 35-010(e).

SWMU 35-010(e) is a former permitted outfall from the sand filter beds that discharged into Ten Site Canyon. A depth recording gauge station is located at the outfall and measures the effluent level above a small v-shaped weir discharge point. A rock dissipater apron is present at the discharge point. Compiled flow records of the outfall indicate an average flow rate of approximately 45,000 gal. per day, however, the planned capacity of the facility was 12,000 gal. per day.

1000.62.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
35-010(e)	Discharge headwall and sand filter associated with Structure 35-215 (includes 35-010(misc))	Discrete Location, No overlap	Individual	•		•	

1000.62.3 Control Measures

The primary source of potential run-on at this SMA is the channel west of the SWMU. The sand beds are surrounded by a cement retaining wall and are not impacted by run-on. The outfall pipe associated with these sand filters was plugged in 2008.

Subsections to 1000.62.3 list all control measures used to control pollutant sources identified in Section 1000.62.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.62.4.

1000.62.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T008 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
T008 03 06 0002	Berms - Straw Wattles	•			•
T008 03 10 0003	Berms - Gravel Bags		•		•

Established Vegetation (T008-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

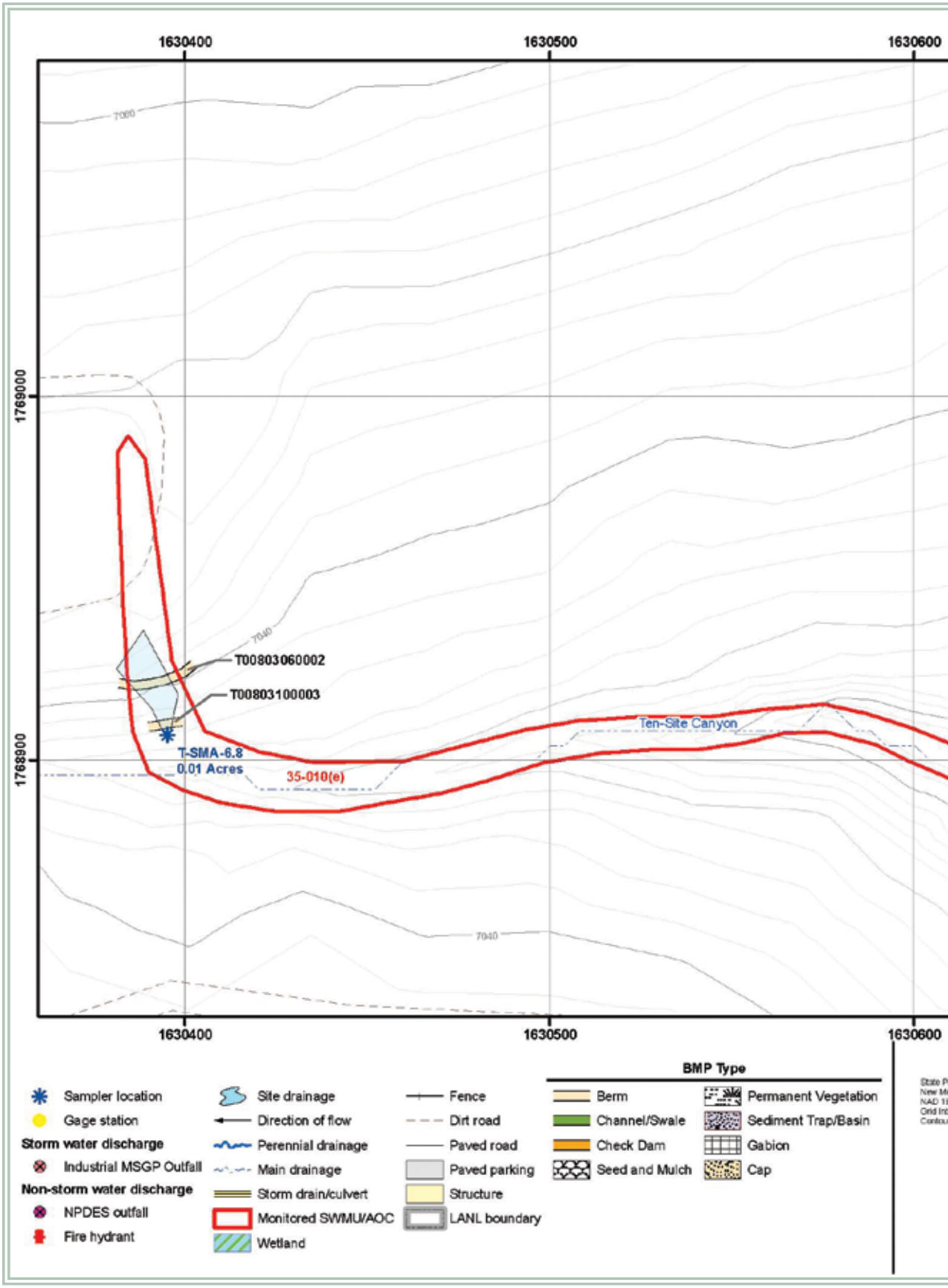
Straw Wattles (T008-03-06-0002)

Installed northwest of 35-010(e). Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Gravel Bags (T008-03-10-0003)

Installed northwest of 35-010(e). A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow run-off, allowing sediment to settle out, and release run-off slowly as sheet flows, preventing erosion.

1000.62.4 Project Map



1630700
1630800
1769000
1768900
Ten-Site Canyon
T-SMA-6.8
0.01 Acres
7100
7020
Los Alamos
NATIONAL LABORATORY
N
Feet
0 10 20 30 40
0 5 10 15
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T008: T-SMA-6.8
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, July 7, 2010,
Map #T008-10-0017-104-T6.8-R2

1000.62.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.62.6 Corrective Action Status

The Site associated with T-SMA-6.8 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.63 T-SMA-7

1000.63.1 Area Description

1000.63.2 Potential Pollutant Sources

1000.63.2.1 Historical Industrial Activity Areas

1000.63.3 Control Measures

1000.63.4 Project Map

1000.63.5 Storm Water Monitoring Plan and Schedule

1000.63.6 Corrective Action Status



1000.63 T-SMA-7

1000.63.1 Area Description

T-SMA-7 is located within former TA-04. The northern boundary is the canyon floor of Ten Site Canyon. The main drainage channel is approximately 100 feet further north. The southern boundary is an unpaved access road on the mesa top. The eastern boundary is undeveloped land, both on the mesa top and the north facing canyon slope. The western boundary is undeveloped land, both on the mesa top and the north facing canyon slope.

1000.63.2 Potential Pollutant Sources

1000.63.2.1 Historical Industrial Activity Areas

There is one historical industrial activity area associated with PF T009, T-SMA-7, Site 04-003(b).

SWMU 04-003(b) is the former drain-line and outfall from a former laboratory control building (Building 04-03) located at former TA-04. The outfall discharged about 20 feet north of Building 04-03 into Mortandad Canyon. No radioactivity was detected in a 1953 survey. The building was demolished and partially removed in 1956. The remaining building components (concrete storm drain, electrical conduit, wood and other surface debris, and the drain pipe) were removed in 1985.

Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Within one year after the fire, the site was observed to be in good condition, with a vegetative cover of approximately 50%. The area was stable, with minimal evidence of sediment migration.

1000.63.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
04-003(b)	Drainline and outfall from former Building 4-03	Discrete Location, No overlap	Individual	•		•	

1000.63.3 Control Measures

There are minimal run-on contributions from sources at this SMA. The paved access road is crowned to the north and south and is flat.

Subsections to 1000.63.3 list all control measures used to control pollutant sources identified in Section 1000.63.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.63.4.

1000.63.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T009 01 01 0005	Seed and Mulch - Seed and Wood Mulch			•	
T009 02 01 0001	Established Vegetation - Grasses and Shrubs			•	
T009 03 02 0008	Berms - Base Course	•			•
T009 03 06 0004	Berms - Straw Wattles	•			•
T009 06 01 0002	Check Dam - Rock		•		•
T009 06 01 0003	Check Dam - Rock		•		•
T009 06 01 0006	Check Dam - Rock		•		•
T009 06 01 0007	Check Dam - Rock		•		•

Seed and Wood Mulch (T009-01-01-0005)

This application of seed and mulch is located south of the SMA and is used to help control erosion of the slope. Wood mulching consists of applying a mixture of shredded wood mulch, bark or compost. The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing run-off. Seed and mulch will always be used in combination. Mulch includes wood, hydromulch, gravel, erosion control blankets, and turf reinforcement blankets. Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from storm water run-off, with an average removal of 90 percent (USEPA, 1993).

Established Vegetation (T009-02-01-0001)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Base Course Berm (T009-03-02-0008)

This berm runs parallel to the southern most boundary of the SMA it is used to help control run-on from the area above. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for

run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattles (T009-03-06-0004)

These straw wattles are located south of the SMA near the edge of the mesa top. They are used to help manage run-on to the area below. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

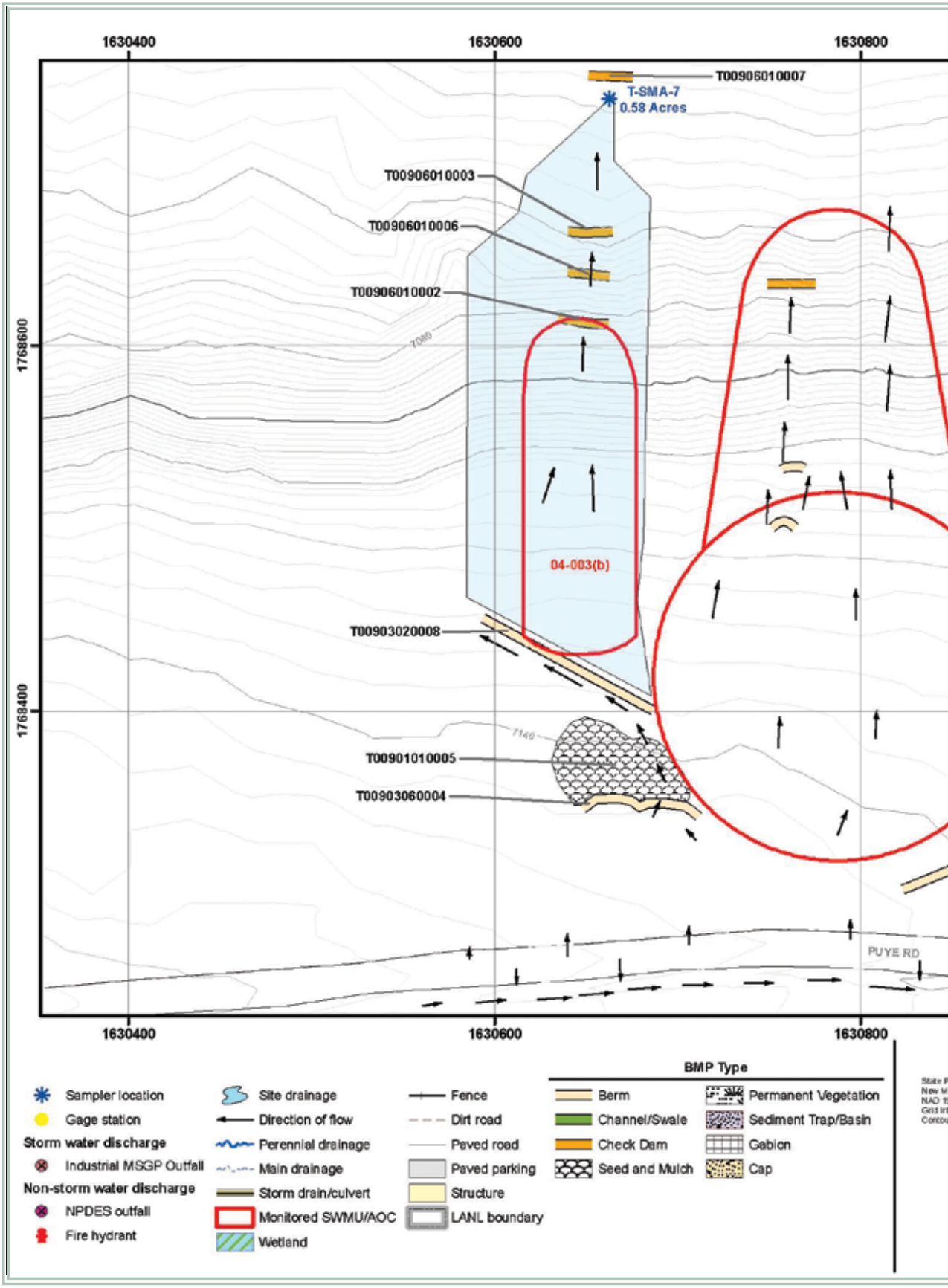
Rock Check Dams (T009-06-01-0002, -0003, -0006)

This is a series of three rock check dams located in the channel above the sampler. These are functioning as run-off controls and are in place to reduce the sediment migration from the SMA. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Rock Check Dam (T009-06-01-0007)

This check dam is located just north of the sampler and is used to help manage storm water run-off from the area. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.63.4 Project Map



1631000
1631200
1768600
1768400
Ten-Site Canyon
7000
T-SMA-7
0.58 Acres
7100
7120
1631000
1631200
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T009: T-SMA-7
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 10, 2010,
Map #T009-10-0017-98-T7-R3

1000.63.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

1000.63.6 Corrective Action Status

The Site associated with T-SMA-7 is a moderate priority Site. Corrective action is to be certified complete within five years of the effective date of the IP.

1000.64 T-SMA-7.1

1000.64.1 Area Description

1000.64.2 Potential Pollutant Sources

1000.64.2.1 Historical Industrial Activity Areas

1000.64.3 Control Measures

1000.64.4 Project Map

1000.64.5 Storm Water Monitoring Plan and Schedule

1000.64.6 Corrective Action Status



1000.64 T-SMA-7.1

1000.64.1 Area Description

T-SMA-7.1 is located within former TA-04. The northern boundary of the SMA is undeveloped and gently slopes towards the receiving waters. The southern boundary of the SMA is undeveloped mesa top. The eastern and western boundaries of the SMA are undeveloped.

1000.64.2 Potential Pollutant Sources

1000.64.2.1 Historical Industrial Activity Areas

There are two historical industrial activity areas associated with PF T010, T-SMA-7.1, Sites 04-001 and 04-002.

SWMU 04-001 is a former ten square foot firing pit that was built at TA-04 in 1945. The pit contained associated conduit and firing lines. The energy source for the firing experiments was HE, and shot sizes ranged from 0.5 to 200 pounds of this material. The pit was cleaned of all debris, backfilled, and contoured in 1985.

Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on, at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Spot hand raking, reseeding, and straw mulch also were applied. Within one year after the fire, the site was observed to be in good condition, with a vegetative cover of approximately 50%. The area was stable, with minimal evidence of sediment migration.

SWMU 04-002 is a 20 foot wide canyon side disposal site associated with SWMU 04-001. The site is located at TA-04 on the north-facing slope of Mortandad Canyon immediately north of SWMU 04-001. After a shot, residual material from the firing site was bulldozed over the edge of the canyon to the area designated as the surface disposal site. The shot debris consisted of cables, wires, and possibly small amounts of uranium, beryllium, lead, aluminum, and HE. Engineering surveys, conducted in 1994 and 1995, revealed a dozer trench leading from the site of the former firing pit to the edge of the mesa. A pile of debris is located at the edge of the mesa and has potentially migrated over the edge of the mesa.

Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Within one year after the fire, the site was observed to be in good condition, with a vegetative cover of approximately 50%. The area was stable, with minimal evidence of sediment migration.

1000.64.2.1 Historical Industrial Areas within the Permitted Feature

Site	Description	Physical Configuration	Drainage Configuration	Pollutants of Concern			
				Inorg	Org	Rad	Other
04-001	Firing site	Co-located, Overlapping	Shared	•		•	
04-002	Surface Disposal site	Co-located, Overlapping	Shared	•		•	

Substantially Identical Determination

Sites grouped within this SMA were associated with firing site activities. Because of the extensive remediation in the area, a shared common drainage, and similar contaminants, these Sites will discharge substantially identical effluent.

1000.64.3 Control Measures

The primary potential source of run-on to the SMA is from the paved road and unpaved area northeast of the SMA.

Subsections to 1000.64.3 list all control measures used to control pollutant sources identified in Section 1000.64.2. Implementation and location of existing control measures, are shown on the Project Map provided in Section 1000.64.4.

1000.64.3.1 Control Measures for Historical Industrial Activity Areas

Control ID	Control Name	Purpose of Control			
		Run-On	Run-Off	Erosion	Sediment
T010 02 01 0002	Established Vegetation - Grasses and Shrubs			•	
T010 03 02 0005	Berms - Base Course	•			•
T010 03 06 0003	Berms - Straw Wattles		•		•
T010 03 06 0004	Berms - Straw Wattles		•		•
T010 06 02 0006	Check Dam - Log		•		•

Established Vegetation (T010-02-01-0002)

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of existing permanent vegetation at LANL, low-growing vegetation is classified as grasses and shrubs while piñon-juniper, ponderosa pine and mixed conifer vegetation is classified as forested.

Base Course Berm (T010-03-02-0005)

This berm is located to the east of the SMA and is in place to help divert storm water run-on to the east away from the area. A base course berm is a temporary containment control constructed of compacted soil, asphalt and rock. Berms are used primarily for run-on diversion of channelized flow and are also used for sediment control and run-off control in low-flow applications.

Straw Wattles (T010-03-06-0003, -0004)

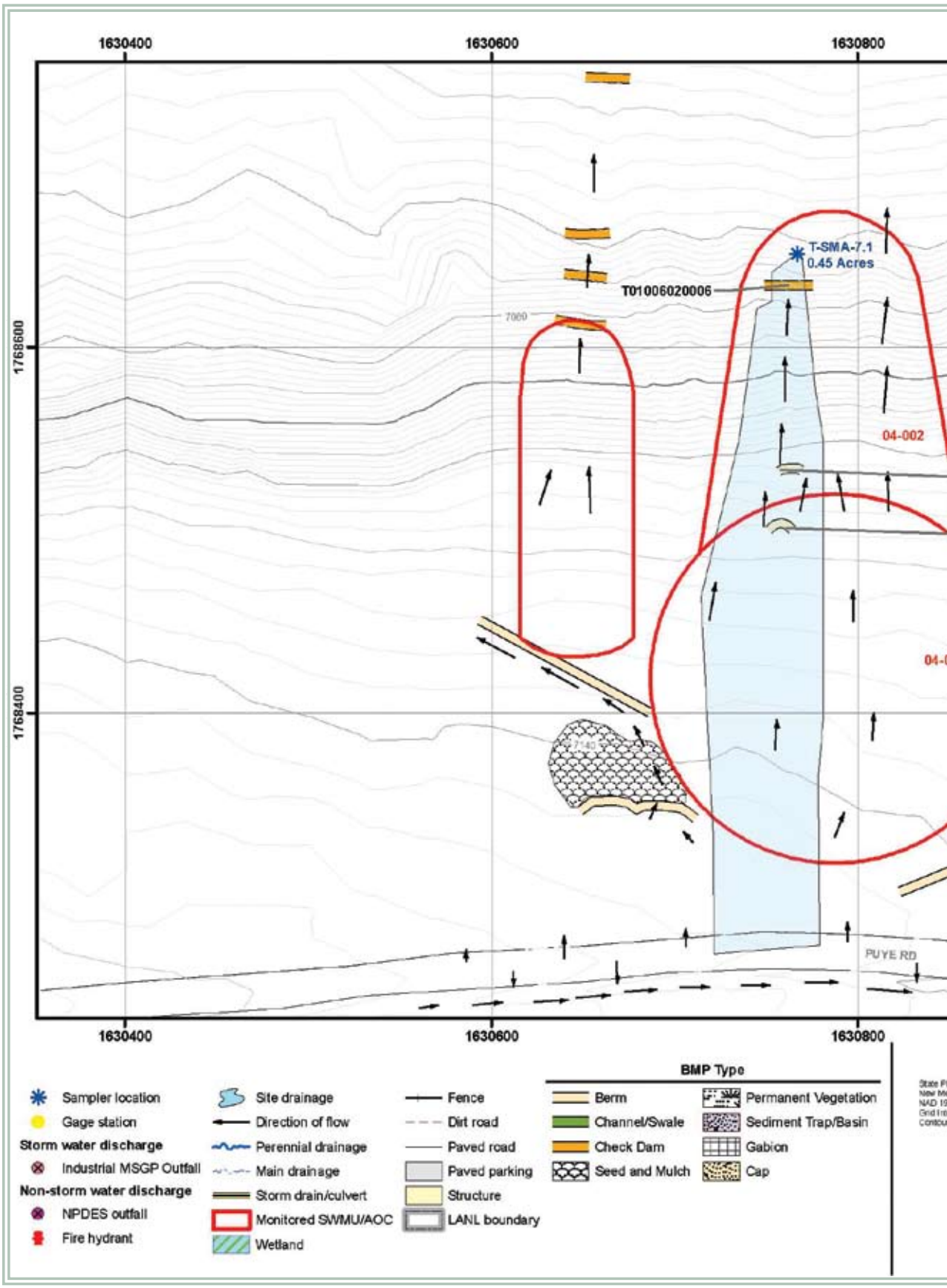
Two wattles are located on the mesa top at the northern end of the SWMU boundary. They are in place to mitigate run-off from the SMA. Straw wattles help to stabilize slopes by shortening the slope length and by slowing, spreading and filtering overland

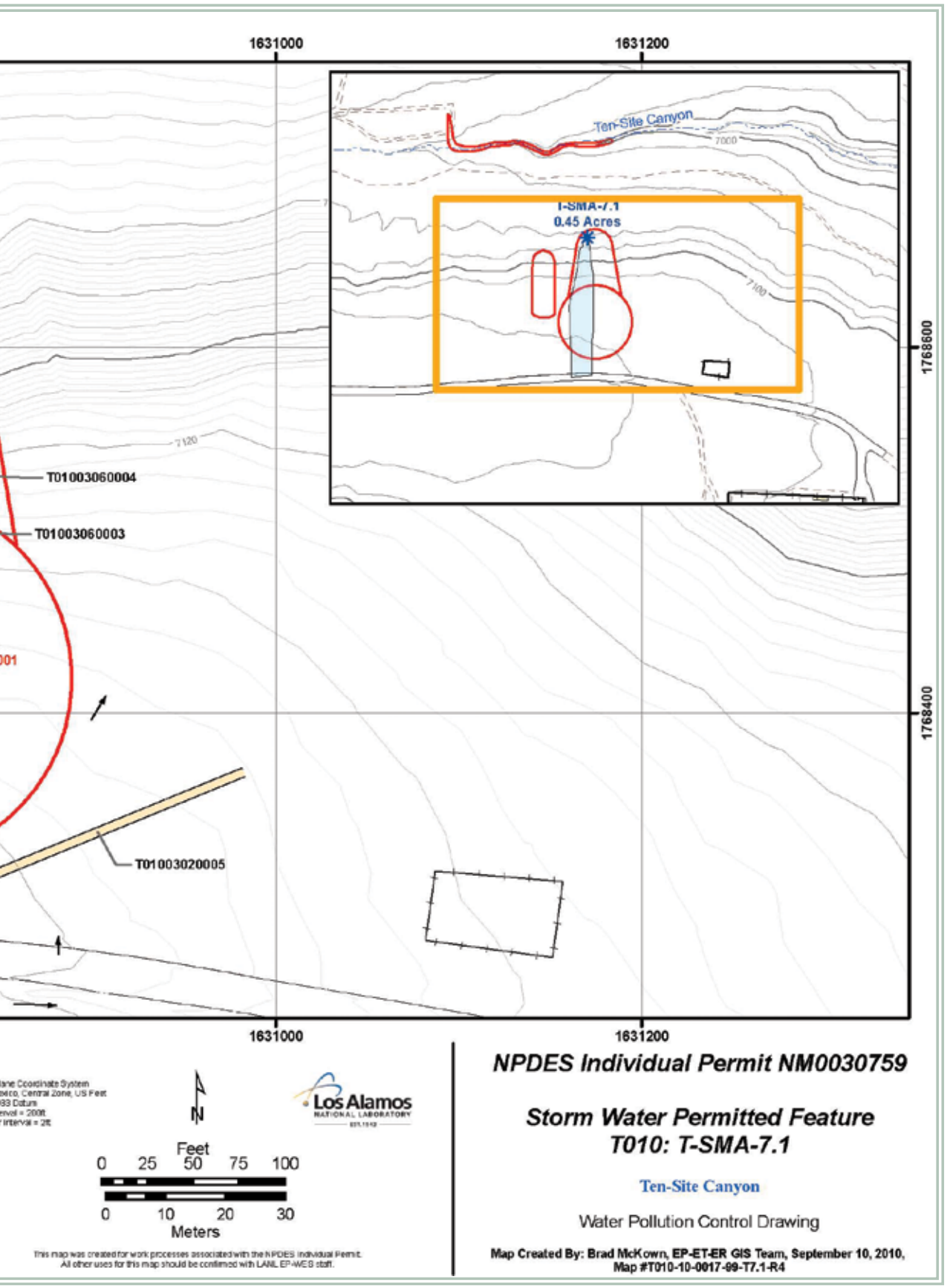
water flow. This helps to prevent sheet erosion as well as rill and gully development, both of which occur when run-off flows uninterrupted down a slope.

Log Check Dam (T010-06-02-0006)

This check dam is located in the drainage channel directly above, south, of the sampler. It is place to assist with storm water run-off control. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

1000.64.4 Project Map




1631000
1631200
1768600
1768400
Ten-Site Canyon
7000
T-SMA-7.1
0.45 Acres
7100
7120
T01003060004
T01003060003
001
T01003020005
1631000
1631200
N
Los Alamos
NATIONAL LABORATORY
Feet
0 25 50 75 100
0 10 20 30
Meters
This map was created for work processes associated with the NPDES Individual Permit.
All other uses for this map should be confirmed with LANL EP-WES staff.
NPDES Individual Permit NM0030759
Storm Water Permitted Feature
T010: T-SMA-7.1
Ten-Site Canyon
Water Pollution Control Drawing
Map Created By: Brad McKown, EP-ET-ER GIS Team, September 10, 2010,
Map #T010-10-0017-09-T7.1-R4

1000.64.5 Storm Water Monitoring Plan and Schedule

Storm water monitoring under this IP shall commence following installation and certification of all baseline control measures. Analyses of collected samples (quantities are shown parenthetically) are to be conducted as shown in the following table.

Metals	Cyanide	Radioactivity	Other
•(2)	•(2)	•(2)	

One (1) confirmation sample shall be collected during each of at least two (2) separate measurable storm events occurring at least fifteen (15) days apart and within one (1) year after the effective date of the Permit (11/1/2010).

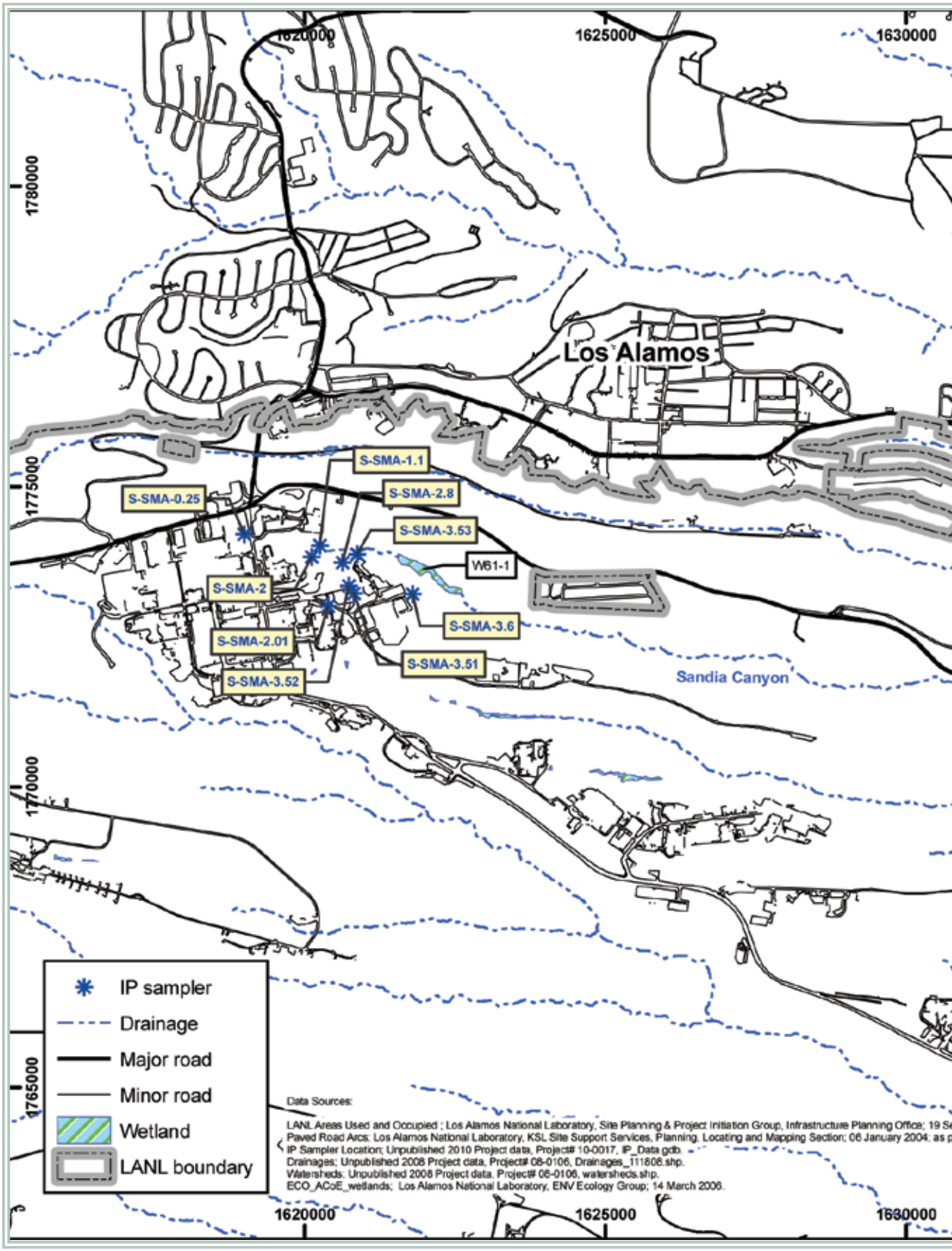
1000.64.6 Corrective Action Status

The Sites associated with T-SMA-7.1 are moderate priority Sites. Corrective action is to be certified complete within five years of the effective date of the IP.

ATTACHMENT A
AMENDMENTS

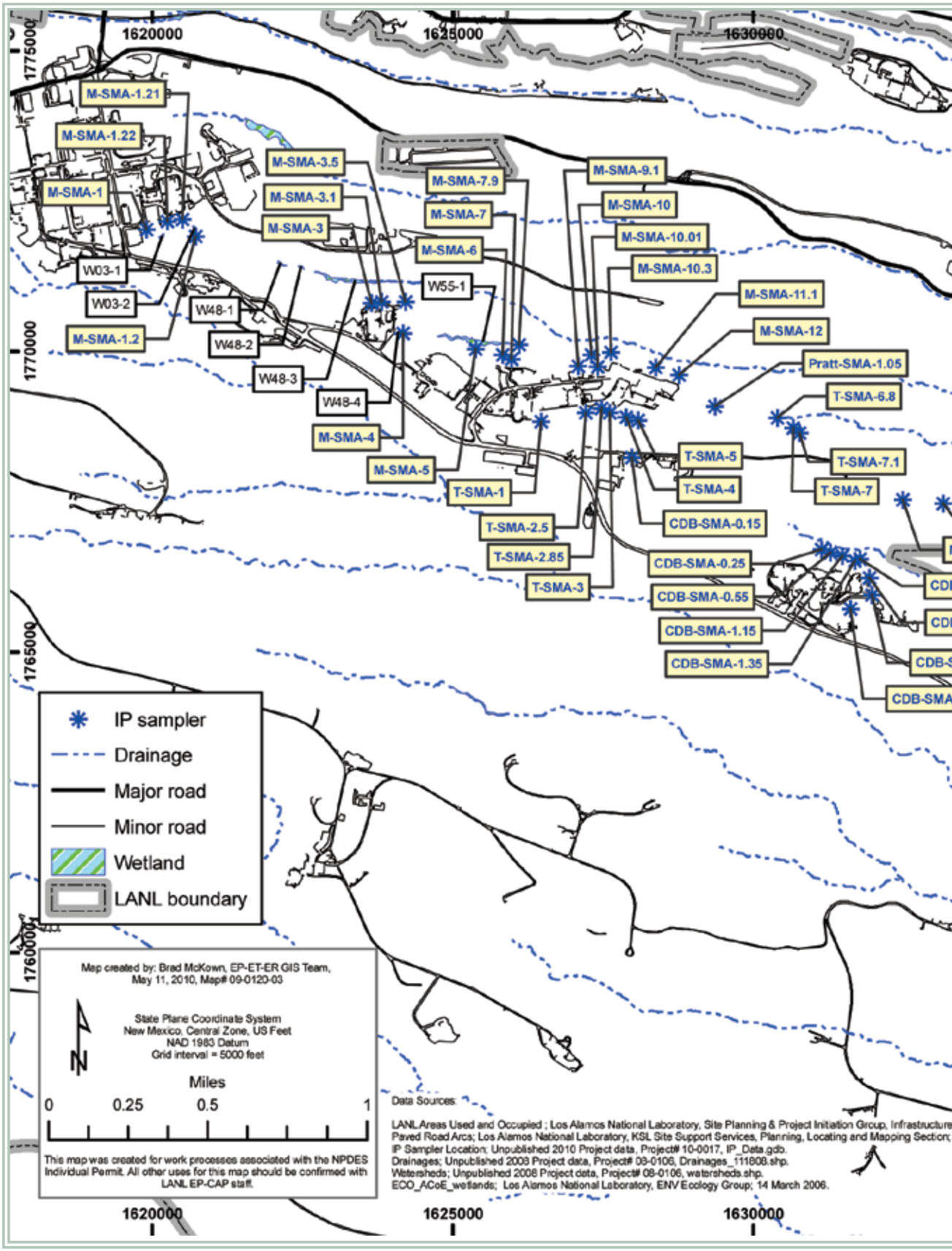
[Reserved]

ATTACHMENT B
VICINITY MAP



1635000
1640000
1645000
1780000
1775000
1770000
1765000
Sandia Watershed
Locator Map
Rio Grande
501
502
4
S-SMA-3.71
S-SMA-4.1
S-SMA-3.7
S-SMA-5.2
S-SMA-3.72
S-SMA-6
S-SMA-3.95
S-SMA-4.5
S-SMA-5.5
S-SMA-5
Map created by: Brad McKown, EP-ET-ER GIS Team,
May 11, 2010, Map# 09-0120-02
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid interval = 5000 feet
Miles
0
0.25
0.5
1
This map was created for work processes associated with the NPDES Individual Permit. All other uses for this map should be confirmed with LANL EP-CAP staff
ptember 2007; as published 04 December 2008.
ublished 28 May 2009.

ATTACHMENT B
VICINITY MAP (continued)



1635000
1640000
1645000
1775000
1770000
1765000
1760000
Mortandad Watershed
Locator Map
501
502
4
Rio Grande
M-SMA-12.7
M-SMA-12.8
M-SMA-12.92
M-SMA-12.9
M-SMA-13
Mortandad Canyon
M-SMA-12.6
M-SMA-12.5
B-SMA-1.54
B-SMA-1.55
SMA-1.65
San Ildefonso Pueblo
Cedro Canyon
Canada del Buey
CDB-SMA-4
Planning Office; 19 September 2007, as published 04 December 2008.
06 January 2004; as published 28 May 2009.

ATTACHMENT C
PRECIPITATION NETWORK

SMA Number	Rain Gage	Alternate Gage
CDB-SMA-0.15	RG200.5	RG-TA-06
CDB-SMA-0.25	RG245.5	RG-TA-53
CDB-SMA-0.55	RG245.5	RG-TA-53
CDB-SMA-1	RG245.5	RG-TA-53
CDB-SMA-1.15	RG245.5	RG-TA-53
CDB-SMA-1.35	RG245.5	RG-TA-53
CDB-SMA-1.54	RG245.5	RG-TA-53
CDB-SMA-1.55	RG245.5	RG-TA-53
CDB-SMA-1.65	RG245.5	RG-TA-53
CDB-SMA-4	RG-TA-54	RG-TA-54
M-SMA-1	RG121.9	RG-TA-06
M-SMA-1.2	RG121.9	RG-TA-06
M-SMA-1.21	RG121.9	RG-TA-06
M-SMA-1.22	RG121.9	RG-TA-06
M-SMA-3	RG-TA-06	RG-TA-06
M-SMA-3.1	RG-TA-06	RG-TA-06
M-SMA-3.5	RG200.5	RG-TA-06
M-SMA-4	RG200.5	RG-TA-06
M-SMA-5	RG200.5	RG-TA-06
M-SMA-6	RG200.5	RG-TA-06
M-SMA-7	RG200.5	RG-TA-06
M-SMA-7.9	RG200.5	RG-TA-06
M-SMA-9.1	RG200.5	RG-TA-06

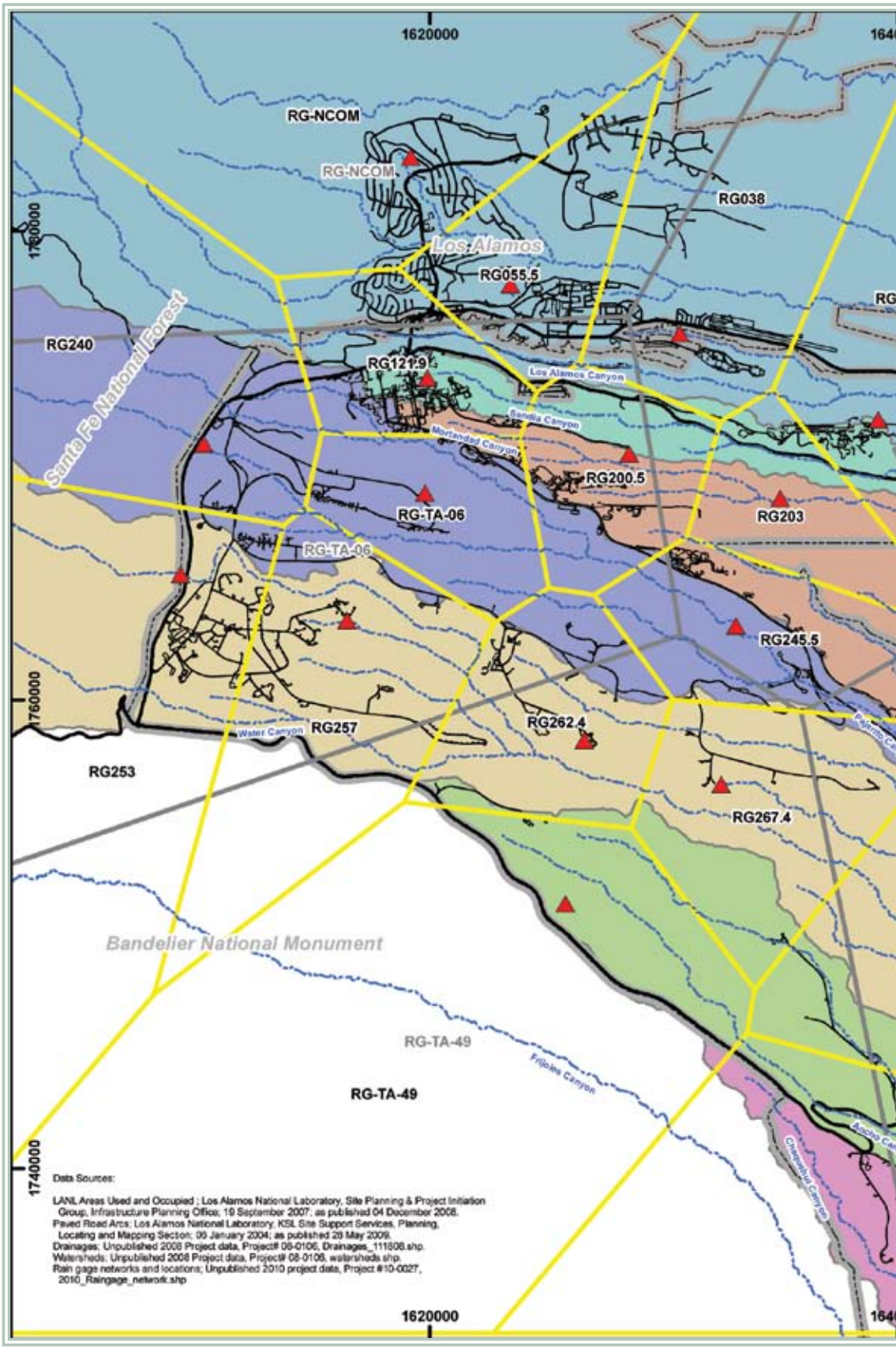
ATTACHMENT C
PRECIPITATION NETWORK (Continued)

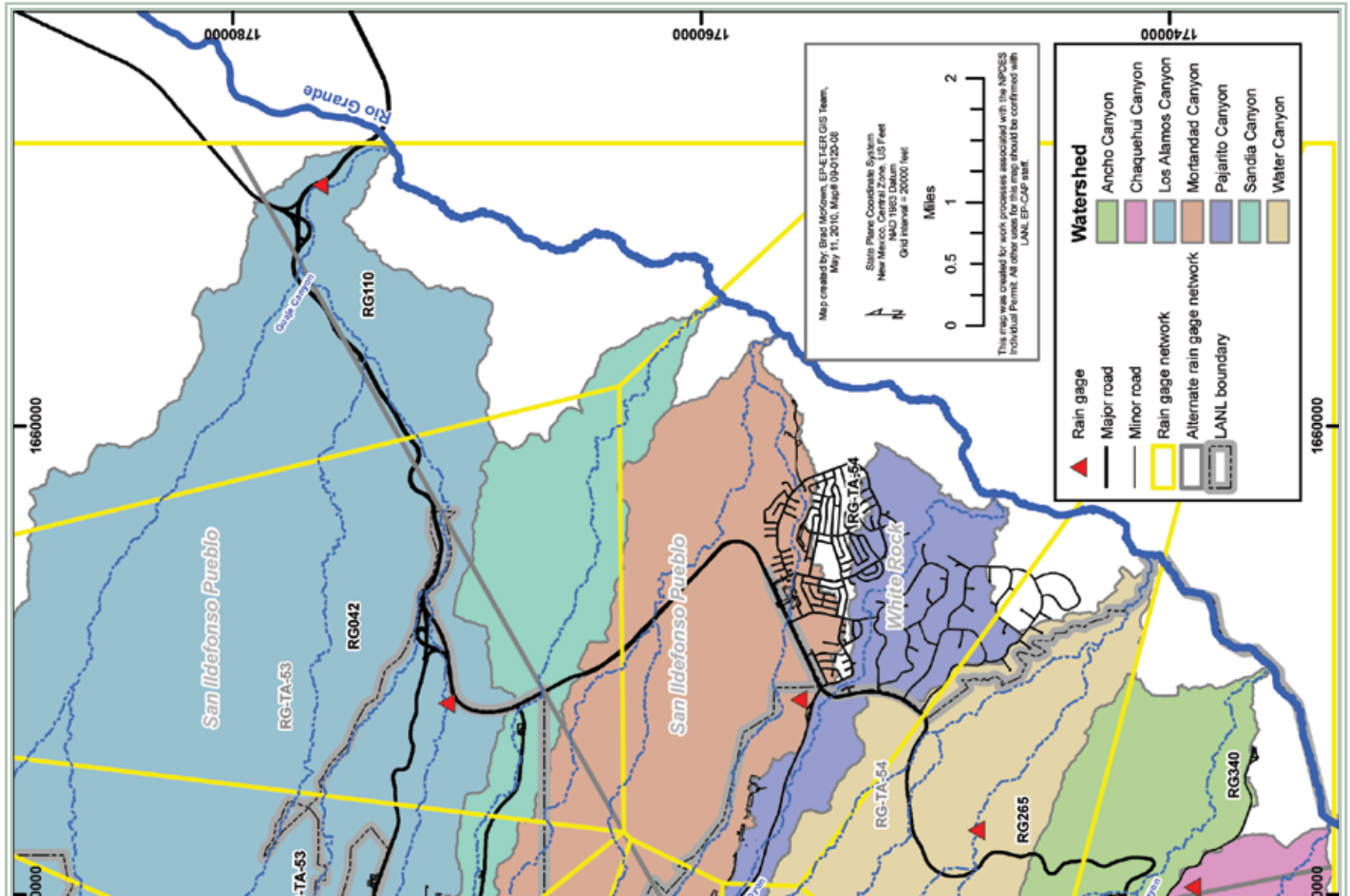
SMA Number	Rain Gage	Alternate Gage
M-SMA-10	RG200.5	RG-TA-06
M-SMA-10.01	RG200.5	RG-TA-06
M-SMA-10.3	RG200.5	RG-TA-06
M-SMA-11.1	RG200.5	RG-TA-06
M-SMA-12	RG200.5	RG-TA-06
M-SMA-12.5	RG203	RG-TA-53
M-SMA-12.6	RG203	RG-TA-53
M-SMA-12.7	RG203	RG-TA-53
M-SMA-12.8	RG203	RG-TA-53
M-SMA-12.9	RG203	RG-TA-53
M-SMA-12.92	RG203	RG-TA-53
M-SMA-13	RG203	RG-TA-53
S-SMA-0.25	RG121.9	RG-TA-06
S-SMA-1.1	RG121.9	RG-TA-06
S-SMA-2	RG121.9	RG-TA-06
S-SMA-2.01	RG121.9	RG-TA-06
S-SMA-2.8	RG121.9	RG-TA-06
S-SMA-3.51	RG121.9	RG-TA-06
S-SMA-3.52	RG121.9	RG-TA-06
S-SMA-3.53	RG121.9	RG-TA-06
S-SMA-3.6	RG121.9	RG-TA-06
S-SMA-3.7	RG203	RG-TA-53
S-SMA-3.71	RG203	RG-TA-53

ATTACHMENT C
PRECIPITATION NETWORK (Continued)

SMA Number	Rain Gage	Alternate Gage
S-SMA-3.72	RG203	RG-TA-53
S-SMA-3.95	RG203	RG-TA-53
S-SMA-4.1	RG-TA-53	RG-TA-53
S-SMA-4.5	RG203	RG-TA-53
S-SMA-5	RG-TA-53	RG-TA-53
S-SMA-5.2	RG-TA-53	RG-TA-53
S-SMA-5.5	RG-TA-53	RG-TA-53
S-SMA-6	RG-TA-53	RG-TA-53
Pratt-SMA-1.05	RG200.5	RG-TA-06
T-SMA-1	RG200.5	RG-TA-06
T-SMA-2.5	RG200.5	RG-TA-06
T-SMA-2.85	RG200.5	RG-TA-06
T-SMA-3	RG200.5	RG-TA-06
T-SMA-4	RG200.5	RG-TA-06
T-SMA-5	RG200.5	RG-TA-06
T-SMA-6.8	RG200.5	RG-TA-53
T-SMA-7	RG200.5	RG-TA-53
T-SMA-7.1	RG200.5	RG-TA-53

ATTACHMENT C
RAINGAGE NETWORK MAP




Rio Grande
Guaje Canyon
RG110
RG042
RG-TA-53
San Ildefonso Pueblo
San Ildefonso Pueblo
RG-TA-54
White Rock
RG-TA-54
RG265
RG340
1660000
1660000
1760000
1740000
Map created by: Brad McKown, EP-ET-ER GIS Team,
May 11, 2010, Map# 09-0120-08
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid interval = 20000 feet
Miles
0 0.5 1 2
This map was created for work processes associated with the NPDES
Individual Permit. All other uses for this map should be confirmed with
LANL EP-CAP staff.
Watershed
Ancho Canyon
Chaquehui Canyon
Los Alamos Canyon
Mortandad Canyon
Pajarito Canyon
Sandia Canyon
Water Canyon
Rain gage
Major road
Minor road
Rain gage network
Alternate rain gage network
LANL boundary

ATTACHMENT D
PHYSICAL CHARACTERISTICS

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate	Sampler Y Coordinate	SMA Drainage Area (Sq.Ft.)	Site Number	Site Drainage Area (Sq.Ft.)
Sandia	S001	S-SMA-0.25	1,618,998.16	1,774,219.51	1,439,520.77	03-013(a) 03-052(f)	12,001.00 11,851.27
Sandia	S002	S-SMA-1.1	1,620,251.01	1,774,023.05	378,931.78	03-029	6,027.33
Sandia	S003	S-SMA-2	1,620,125.03	1,773,839.05	2,211,428.68	03-012(b) 03-045(b) 03-045(c) 03-056(c)	0.78 0.78 0.78 8,138.48
Sandia	S003A	S-SMA-2.01	1,620,394.49	1,773,022.78	36,651.95	03-052(b)	1,160.69
Sandia	S004	S-SMA-2.8	1,620,633.63	1,773,746.75	3,894.03	03-014(c2)	2,266.82
Sandia	S005	S-SMA-3.51	1,620,818.17	1,773,232.25	816.64	03-009(i)	816.64
Sandia	S005A	S-SMA-3.52	1,620,741.65	1,773,352.12	365.18	03-021	0.00
Sandia	S005B	S-SMA-3.53	1,620,872.72	1,773,881.78	3,268.22	03-014(b2)	3,348.72
Sandia	S006	S-SMA-3.6	1,621,791.01	1,773,219.05	311,515.13	60-007(b)	49,900.40
Sandia	S007	S-SMA-3.7	1,633,174.14	1,771,323.00	3,182.72	53-012(e)	19.94
Sandia	S008	S-SMA-3.71	1,633,320.04	1,771,608.92	8,569.13	53-001(a)	0.77
Sandia	S009	S-SMA-3.72	1,633,284.31	1,771,233.67	11,118.90	53-001(b)	0.77
Sandia	S010	S-SMA-3.95	1,636,314.78	1,770,255.34	3,671.30	20-002(a)	455.16
Sandia	S011	S-SMA-4.1	1,636,843.01	1,771,035.05	13,554.34	53-014	181.24
Sandia	S012	S-SMA-4.5	1,637,422.73	1769742.45	945.51	20-002(d)	12.55
Sandia	S013	S-SMA-5	1,638,132.62	1,769,651.05	19,626.57	20-002(c)	981.72
Sandia	S014	S-SMA-5.2	1,638,251.01	1,769,787.05	27,443.48	20-003(c)	168.47
Sandia	S015	S-SMA-5.5	1,638,819.62	1,769,400.68	2,478.26	20-005	40.43
Sandia	S016	S-SMA-6	1,641,884.50	1,769,595.05	12,203,808.89	72-001	0.77
Mortandad	M001	M-SMA-1	1,619,892.32	1,772,039.05	1,288,357.11	03-050(a) 03-054(e)	0.77 5,163.02

ATTACHMENT D
PHYSICAL CHARACTERISTICS (Continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate	Sampler Y Coordinate	SMA Drainage Area (Sq.Ft.)	Site Number	Site Drainage Area (Sq.Ft.)
Mortandad	M001	M-SMA-1	1,619,892.32	1,772,039.05	1,288,357.11	03-050(a) 03-054(e)	0.77 5,163.02
Mortandad	M002	M-SMA-1.2	1,620,719.83	1,771,920.43	17,481.90	03-049(a)	16,266.72
Mortandad	M002A	M-SMA-1.21	1,620,503.40	1,772,202.61	23,029.92	03-049(e)	2.67
Mortandad	M002B	M-SMA-1.22	1,620,251.40	1,772,179.64	80,304.86	03-045(h)	16,506.92
Mortandad	M003	M-SMA-3	1,623,657.79	1,770,811.05	16,340.05	48-001 48-005 48-007(c)	19,394.77 6,547.64 0.00
Mortandad	M004	M-SMA-3.1	1,623,815.01	1,770,835.05	183.01	48-001 48-007(b)	183.01 0.00
Mortandad	M005	M-SMA-3.5	1,624,207.01	1,770,831.05	29,761.90	48-001 48-003	18,092.48 10,871.36
Mortandad	M006	M-SMA-4	1,624,160.23	1,770,307.05	327,735.93	48-001 48-005 48-007(a) 48-007(d) 48-010	317,281.54 13,656.97 0.00 0.00 6,130.81
Mortandad	M007	M-SMA-5	1,625,376.14	1,770,047.05	25,355.12	42-001(a) 42-001(b) 42-001(c) 42-002(a) 42-002(b)	1,209.21 539.47 539.47 1,209.21 0.00
Mortandad	M008	M-SMA-6	1,626,359.54	1,769,680.93	6,910.32	35-016(h)	7.07
Mortandad	M009	M-SMA-7	1,625,971.01	1,769,879.05	10,688.02	35-016(g)	1,478.11
Mortandad	M010	M-SMA-7.9	1,626,103.01	1,770,123.05	7,527.16	50-006(d)	3,184.78
Mortandad	M011	M-SMA-9.1	1,627,083.01	1,769,767.05	9,007.31	35-016(f)	56.59
Mortandad	M012	M-SMA-10	1,627,303.64	1,769,950.00	63,247.17	35-008 35-014(e)	3,378.65 11,885.37

ATTACHMENT D
PHYSICAL CHARACTERISTICS (Continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate	Sampler Y Coordinate	SMA Drainage Area (Sq.Ft.)	Site Number	Site Drainage Area (Sq.Ft.)
Mortandad	M012A	M-SMA-10.01	1,627,404.40	1,769,752.00	140.92	35-016(e)	11.59
Mortandad	M013	M-SMA-10.3	1,627,627.01	1,769,999.05	108,863.64	35-014(e2) 35-016(i)	808.25 48.80
Mortandad	M014	M-SMA-11.1	1,628,379.01	1,769,747.05	4,331.00	35-016(o)	60.55
Mortandad	M015	M-SMA-12	1,628,787.61	1,769,615.05	8,650.16	35-016(p)	65.20
Mortandad	M016	M-SMA-12.5	1,632,482.73	1,767,543.57	21,601.36	05-005(b) 05-006(c)	1,351.85 102.81
Mortandad	M017	M-SMA-12.6	1,633,156.58	1,767,475.14	24,968.29	05-004	276.18
Mortandad	M018	M-SMA-12.7	1,634,294.22	1,768,022.83	44,313.61	05-002 05-005(a) 05-006(b) 05-006(e)	3,397.13 3,258.27 651.29 731.88
Mortandad	M019	M-SMA-12.8	1,634,423.44	1,768,007.48	24,955.90	05-001(a) 05-002	5,322.52 5,521.99
Mortandad	M020	M-SMA-12.9	1,634,709.00	1,767,858.27	4,417.16	05-001(b) 05-002	1,066.37 2,083.83
Mortandad	M021	M-SMA-12.92	1,634,975.63	1,768,627.05	27,271,277.04	00-001	89,828.44
Mortandad	M022	M-SMA-13	1,635,856.08	1,767,235.05	178,918.24	05-001(c)	88,139.45
Ten-Site	T002	T-SMA-1	1,626,460.37	1,768,847.05	610,151.64	50-006(a) 50-009	2,069.34 305,022.50
Ten-Site	T003	T-SMA-2.5	1,627,208.07	1,768,991.71	2,437.93	35-014(g3)	2,400.23
Ten-Site	T004	T-SMA-2.85	1,627,467.72	1,769,058.86	13,508.69	35-014(g) 35-016(n)	45.45 33.82
Ten-Site	T005	T-SMA-3	1,627,616.78	1,768,991.05	122,397.15	35-016(b)	21.83

ATTACHMENT D
PHYSICAL CHARACTERISTICS (Continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate	Sampler Y Coordinate	SMA Drainage Area (Sq.Ft.)	Site Number	Site Drainage Area (Sq.Ft.)
Ten-Site	T006	T-SMA-4	1,627,879.15	1,768,911.05	126,172.00	35-004(a) 35-009(a) 35-016(c) 35-016(d)	71.63 319.36 24.30 84.58
Ten-Site	T007	T-SMA-5	1,628,091.85	1,768,859.05	80,932.13	35-004(a) 35-009(a) 35-016(a) 35-016(q)	0.00 573.58 1,199.97 1,026.72
Ten-Site	T008	T-SMA-6.8	1,630,395.01	1,768,907.05	218.20	35-010(e)	207.68
Ten-Site	T009	T-SMA-7	1,630,663.01	1,768,735.05	46,873.35	04-003(b)	10,542.24
Ten-Site	T010	T-SMA-7.1	1,630,767.01	1,768,651.05	19,644.64	04-001 04-002	11,424.02 4,967.88
Cañada del Buey	C001	CDB-SMA-0.15	1,627,975.34	1,768,240.88	9,844.24	04-003(a) 04-004	0.00 0.77
Cañada del Buey	C002	CDB-SMA-0.25	1,631,127.30	1,766,709.53	187,455.31	46-004(c2)	6,960.75
Cañada del Buey	C003	CDB-SMA-0.55	1,631,282.40	1,766,662.21	202,180.86	46-004(e2) 46-004(g) 46-004(m) 46-004(s) 46-006(f)	0.00 5,831.49 5,069.44 1,678.86 4,172.51
Cañada del Buey	C004	CDB-SMA-1	1,631,615.01	1,765,731.05	627,370.13	46-003(c) 46-004(d2) 46-004(f) 46-004(t) 46-004(w) 46-008(g) 46-009(a) C-46-001	5,743.69 0.77 1.54 1.54 1.54 5,278.73 39,136.49 2.31

ATTACHMENT D
PHYSICAL CHARACTERISTICS (Continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate	Sampler Y Coordinate	SMA Drainage Area (Sq.Ft.)	Site Number	Site Drainage Area (Sq.Ft.)
Cañada del Buey	C005	CDB-SMA-1.15	1,631,474.70	1,766,608.36	66,985.38	46-004(b) 46-004(y) 46-004(z) 46-006(d)	107.59 1,303.15 2,203.33 11,496.54
Cañada del Buey	C006	CDB-SMA-1.35	1,631,689.74	1,766,527.53	56,827.92	46-004(a2) 46-004(u) 46-004(v) 46-004(x) 46-006(d) 46-008(f)	3,015.74 1,725.98 1,920.24 7.97 2,536.78 1,822.09
Cañada del Buey	C007	CDB-SMA-1.54	1,631,772.00	1,766,553.47	45,195.61	46-004(h) 46-004(q) 46-006(d)	7.12 7.22 1,492.20
Cañada del Buey	C008	CDB-SMA-1.55	1,631,929.80	1,766,241.31	3,123.17	46-003(e)	531.64
Cañada del Buey	C009	CDB-SMA-1.65	1,631,972.64	1,765,962.39	214.18	46-003(b)	139.98
Cañada del Buey	C010	CDB-SMA-4	1,643,545.63	1,758,435.36	330,316.17	54-017 54-018 54-020	14,263.99 73,481.35 665.10
Ten-Site	T001	Pratt-SMA-1.05	1,629,362.08	1,769,096.13	441,552.83	35-003(h) 35-003(p) 35-003(r) 35-004(h) 35-009(d) 35-016(k) 35-016(l) 35-016(m)	296.75 9,123.84 37,468.17 50.03 1,166.43 787.48 128.28 104.57

ATTACHMENT E
PROCEDURAL DOCUMENTS

Procedure	Title	Summary
EP-SOP-5211	Surface Water Site Assessments	This SOP describes the process for conducting the annual erosion re-evaluation. The procedure identifies responsible participants and provides a detailed checklist to evaluate the erosion potential at a Site permitted under the IP. Erosion matrix scores range from 1 to 100 and are qualitatively determined based on a systematic assessment of the Site. The assessment involves an evaluation of the Site setting, examination of the Site for evidence of runoff and erosion, and documentation of structures and/or operations that are directing storm water onto the Site.
SOP-5213	Inspecting storm water runoff samplers and retrieving samples	This procedure describes the process for inspecting ISCO storm water runoff samplers and retrieving storm water runoff samples from all locations where the Los Alamos National Laboratory (LANL) conducts storm water sampling activities. This procedure applies to the storm water project technical staff and subcontractor personnel conducting activities at storm water sampler stations.
SOP-5215	Processing Storm Water Samples	Describes the processing of storm water samples in the laboratory at TA-59 and preparation of samples for shipping.

ATTACHMENT E
PROCEDURAL DOCUMENTS (continued)

Procedure	Title	Summary
SOP-5217	Inspecting, Maintaining, and Installing Control Measures	Describes the steps to inspect, maintain when necessary, and install new control measures (formerly called BMPs) for the Individual Permit Compliance Project.
SOP-5219	Photograph Management	Describes how to log in, process, and submit to records photos that are taken in the field.
SOP-5220, R0	EX-ID/PR-ID Project Reviews for the IP	Describes the assignment of review responsibilities, documentation of reviews, and followup actions for projects with potential impacts to SMAs.
EP-DIV-SOP-10004	Managing Electronic Precipitation Data for Storm Water Projects	This standard operating procedure (SOP) states the responsibilities and describes the process for managing electronic precipitation measurement data collected for use by LANL storm water programs. Electronic data management processes include: downloading electronic data from remote data loggers and/or the LANL Weather Machine; processing the raw data files; uploading electronic data from the remote data loggers into Hydstra ©; calculating the 24-hour cumulative amount, storm duration, and maximum 30-minute storm intensity; and transferring the calculated precipitation results to the Storm Water Tracking System (SWTS).

ATTACHMENT E
PROCEDURAL DOCUMENTS (continued)

Procedure	Title	Summary
EP-DIV-SOP-10005	Operation and Maintenance of Gage Stations for Storm Water Projects	This procedure describes the installation, verification, activation, inspection, maintenance, seasonal deactivation, and permanent decommissioning of surface water gaging stations and the rain gage that is installed at some gage stations. Gage station equipment and electronic instruments include flumes, weirs, stilling wells, electronic data loggers, transducers for stage (water level) measurement, digital cell phones and telemetry, solar battery-charging equipment, and electronic rain gages. This procedure also describes how to obtain supplemental flow measurements in flowing streams.
EP-DIV-SOP-10008	Installing, Setting Up, and Operating ISCO Samplers	This procedure describes the installation, setup, programming, and operation of Teledyne ISCO model 3700 full-size portable automated samplers used to collect storm water runoff samples. This procedure applies to the project and contractor personnel conducting operation and maintenance activities at stream gaging stations and single stage stations.

ATTACHMENT F
TRAINING LOG

(Reserved)

ATTACHMENT G
ACRONYMS AND REFERENCES

AOC	Area of Concern
ATAL	Average Target Action Level
Control	Best Management Practice
CEARP	Comprehensive Environmental Assessment and Response Program
CMP	Corrugated Metal Pipe
CWA	Clean Water Act
D & D	Decontamination and Decommissioning
DL	Detectable Level
DU	Depleted Uranium
EPA	Environmental Protection Agency
FFCA	Federal Facility Compliance Agreement
HEs	High Explosives
IP	NPDES Permit No. NM0030759
JCNNM	Johnson Controls Northern New Mexico
LACP	Los Alamos Characterization Program
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security
MDA	Material Disposal Area
MQL	Minimum Quantification Level
MSGP	Multi-Sector General Permit
MTAL	Maximum Target Action Level
NMED	New Mexico Environmental Department
NMFS	National Marine Fisheries Service
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
OEW	Ordnance and Explosive Waste
PCBs	Polychlorinated biphenyl
PF	Permitted Feature
PPT	Pollution Prevention Team
RADS	Radioactive Pollutants
RCRA	Resource Conservation and Recovery Act
RFI	Remedial Facilities Investigation
RLW	Radioactive Liquid Waste
SAA	Satellite Accumulation Area
SDPPP	Site Discharge Pollution Prevention Plan
SMA	Site Monitoring Area
SWMU	Solid Waste Management Unit
SWTS	Storm Water Tracking System
TA	Technical Area
TALs	Target Action Levels
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
USFWS	United States Fish & Wildlife Service
UXO	Unexploded Ordnance
VCA	Voluntary Corrective Action
VCP	Vitrified Clay Pipe
WPCD	Water Pollution Control Drawing
WQDB	Water Quality Database
WWTP	Waste Water Treatment Plan

REFERENCES

The following list includes documents used in the preparation of this plan. The reference list is provided to allow the reader to search additional sources of information and serves as a starting point for further research. Where provided, parenthetical information following each reference provides the author(s), publication date, and ER ID number. ER ID numbers are assigned by the Environmental Programs Directorate's Record Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set. Copies of these references are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate.

LANL (Los Alamos National Laboratory) 1990. "*Solid Waste Management Units Report*," Vol. I of IV (TA-00 through TA-09), Los Alamos National Laboratory document LA-UR-90-3400, prepared by International Technology Corporation under Contract 9-XS8-0062R-1, Los Alamos, New Mexico. (LANL 1990, 007512)

LANL (Los Alamos National Laboratory) 1990. "*Solid Waste Management Units Report*," Vol. II of IV (TA-10 through TA-25), Los Alamos National Laboratory document LA-UR-90-3400, prepared by International Technology Corporation under Contract 9-XS8-0062R-1, Los Alamos, New Mexico. (LANL 1990, 007512)

LANL (Los Alamos National Laboratory) 1990. "*Solid Waste Management Units Report*," Vol. III of IV (TA-26 through TA-50), Los Alamos National Laboratory document LA-UR-90-3400, prepared by International Technology Corporation under Contract 9-XS8-0062R-1, Los Alamos, New Mexico. (LANL 1990, 007512)

LANL (Los Alamos National Laboratory) 1990. "*Solid Waste Management Units Report*," Vol. IV of IV (TA-51 through TA-74), Los Alamos National Laboratory document LA-UR-90-3400, prepared by International Technology Corporation under Contract 9-XS8-0062R-1, Los Alamos, New Mexico.

(LANL 1990, 007512) LANL (Los Alamos National Laboratory) 2006. "*Summary of Watersheds Potentially Impacted by the Los Alamos National Laboratory*", Los Alamos National Laboratory document LA-UR-06-05387, Los Alamos, New Mexico

LANL (Los Alamos National Laboratory) 2008. "*2008 Interim Facility-Wide Groundwater Monitoring Plan*", Los Alamos National Laboratory document LA-UR-08-3273, Los Alamos, New Mexico

NMED (New Mexico Environment Department) 2010. "*Re: Certificates of Completion, Upper Mortandad Canyon Aggregate Area*", "New Mexico Environment Department letter to D. Gregory (DOE LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Los Alamos, New Mexico. (NMED 2010, HWB-LANL-10-055)

US Army Corps of Engineers Albuquerque District 2005. "*Wetlands Delineation Report Los Alamos National Laboratory Los ALamos, New Mexico*", (COE 2005) [COE 2005]