LA-UR-11-10650
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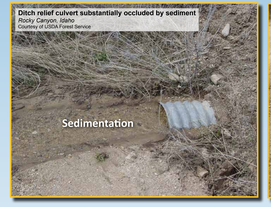
Title:	NPDES Storm Water Individual Permit Poster Package
Author(s):	Lopez, Lorraine B.
Intended for:	Individual Permit for Storm Water, 2011-05-18 (White Rock, New Mexico, United States) US EPA Storm water Reading Room IP

Storm Water
Best Management Practice/Control Measure Basics

What's the difference between sedimentation and erosion?

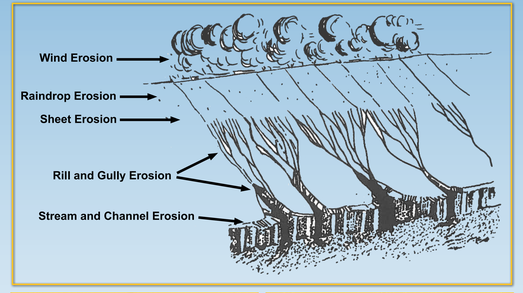


What is a BMP?

Best **M**anagement **P**ractice

- Procedures, practices, physical structures or controls
- Minimizes the potential for pollutant transport
- Can be temporary or permanent

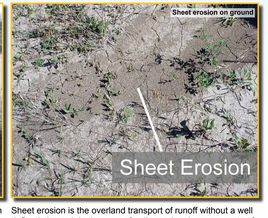
Types of Erosion



Stream bed erosion is the attrition of stream banks or bottoms by rapidly flowing rivers or creeks.

Rill Erosion refers to the development of small, ephemeral concentrated flow paths, which function as both sediment source and sediment delivery systems for erosion on hillslopes.

Gully erosion occurs when the power of runoff is strong enough that it cuts a well defined channel. These channels can be as small as one centimeter wide or as large as several meters.



Sheet erosion is the overland transport of runoff without a well defined channel. In the case of gully erosion, large amounts of material can be transported in a small time period.

Erosion Control

Practice of preventing or controlling soil disturbance and transport by wind or water.

Erosion Control Classes:

- Established Vegetation
- Seed and Mulch
- Channel/Swales
- Gabions/Riprap
- Caps
- Rolled Erosion Control Products

Hydroseeding is a planting process which utilizes a slurry of seed and mulch. An alternative to the traditional process of broadcasting or sowing dry seed, hydroseeding promotes quick germination and inhibits soil erosion.

Gabions are engineering controls used to reinforce steep streambanks and prevent erosion.

Concrete lined swales are used to divert run-on away from sites or to transport storm water across a site without picking up contaminated soil.

Mulch provides short-term soil protection and a more favorable environment for seed germination and establishment. The ultimate goal is to establish a self-sustaining vegetation cover to reduce rainfall impact and surface water velocities.

Sediment Control

Function to remove and retain sediment from storm water.

Sediment Control Classes:

- Berms
- Sediment Traps and Basins
- Check Dams
- Fiber Rolls
- Silt Fence

Rock check dams reduce the velocity of concentrated storm water flows and are an effective aid in trapping sediment particles by virtue of the ability to pond runoff.

Gabion sediment traps prevent offsite sediment migration.

Silt fence is a temporary sediment barrier consisting of filter fabric entrenched into the soil and attached to supporting posts.

Detention basins manage storm water runoff by temporarily storing water after a storm which limits downstream erosion and controls some pollutants such as suspended solids.

Failed BMPs

Improperly sized check dam

Silt fence installed in concentrated flow path

Silt fence failure due to improper maintenance

BMP should extend length of eroded channel

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Draft Community Relations Plan

WE NEED YOUR INPUT...

To accomplish our mission, Los Alamos National Laboratory generates some hazardous and mixed waste.

In November 2010, the New Mexico Environment Department (NMED) issued the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit.

The Permit establishes standards for how LANL manages, stores and treats hazardous wastes on-site and for the closure and post-closure care of permitted waste management units.

In compliance with the permit, we have drafted a Community Relations Plan, pending your input, which will provide for six elements of community relations.

1. Establish an open working relationship with communities and interested members of the public;
2. Establish a productive government to government relationship with local tribes and pueblos;
3. Keep communities and interested members of the public informed of permit actions of interest;
4. Minimize disputes and resolve differences with communities and interested members of the public;
5. Provide a mechanism for the timely dissemination of information in response to individual requests; and
6. Provide a mechanism for communities and interested members of the public to provide feedback and input to the Permittees.

To Comment On This Plan:

Use web form found at: www.lanl.gov/environment/waste/docs/CRPform.pdf

Call: Environmental Outreach Office: 505-667-0216

Email address: envoutreach@lanl.gov

Mailing address: Lorrie Bonds Lopez
Los Alamos National Laboratory
P.O. Box 1663, MS M996
Los Alamos, NM 87545

For Further Information:

LANL Environmental Web site: www.lanl.gov/environment

Sign up for email notification: What is LANL doing?

https://public.govdelivery.com/accounts/USLANL/subscriber/new?category_id=USLANL_C5

Visit the Electronic Public Reading Room: eprr.lanl.gov

Call: Environmental Outreach Office: 505-667-0216

Email address: envoutreach@lanl.gov

Visit the Print Public Reading Room: West Jemez Road at Casa Grande
Los Alamos, NM
(map: www.lanl.gov/environment/outreach/prr.shtml)

Individual Permit Baseline Control Measures
at Los Alamos National Laboratory

Erosion Controls

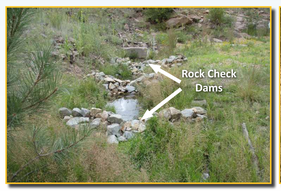
Selective juniper thinning promotes native grass growth, improves soil health, and minimizes erosion.

Wood mulch is an engineered erosion control material used to prevent wind erosion, rill formation, and promote revegetation.

Juniper thinning and gravel mulch are stabilization techniques used to increase cover, minimize erosion, and reduce runoff. Rock berms function to spread flow, prevent erosion, and trap sediment.

Willow planting is a bioengineering erosion control practice which provides mechanical streambank stabilization.

Sediment Controls



Rock check dams are used in small channels to dissipate flow velocity and reduce sediment migration.

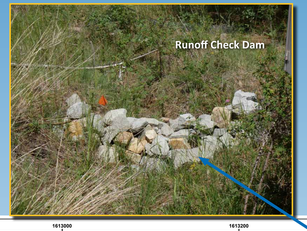
Rock berms installed on relatively flat ground help manage sheet flow, prevent erosion, and guard against sediment migration.

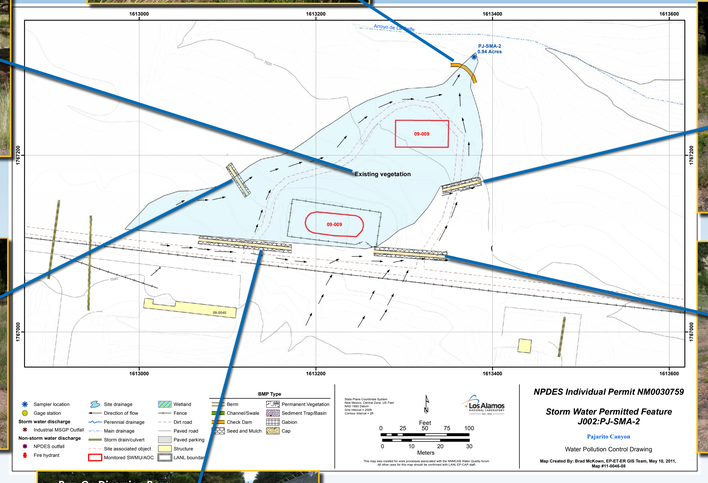
IP Requirement – Install and certify completion of baseline control measures (BCMs) at all 250 SMAs (405 Sites) by May 1, 2011.

Summary of Completed and Certified Baseline Control Measures

Watershed	Number of Site Monitoring Areas	Number of Sites	Number of BCMs Completed & Certified
Los Alamos / Pueblo	64	101	400
Sandia	19	23	113
Mortandad	45	96	332
Pajarito	51	60	332
Water / Cañon de Valle	50	89	438
Ancho	9	15	69
Chaquehui	12	24	130
Total:	**250**	**405***	**1814**

(*) Three Sites discharge to two different watersheds: SA-017, SA-018, and SA-020 are mesa-top Sites that discharge to the Mortandad watershed on the north side of the mesa; and to the Pajarito watershed on the south side of the mesa.





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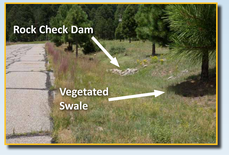
Control Measures Selection Process

- Identify Potential Pollutant Sources
  - Historical Industrial Activities
  - Urban Influences
  - Public Influences
- Assess Site Characteristics (Slope, Cover, etc.)
- Evaluate Run-On and Runoff
- Select Site Specific Controls

Run-On Controls

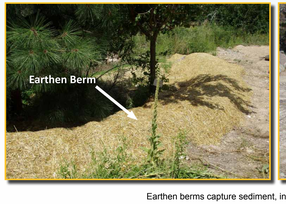
Lined channels can convey run-on across a site while minimizing the potential for erosion.

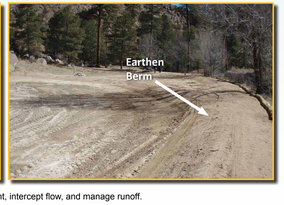
Earthen diversion berms can reduce or control run-on generated from decommissioned roads.



Vegetated swales in combination with rock check dams help to reduce erosion and sediment migration associated with road run-on.

Runoff Controls





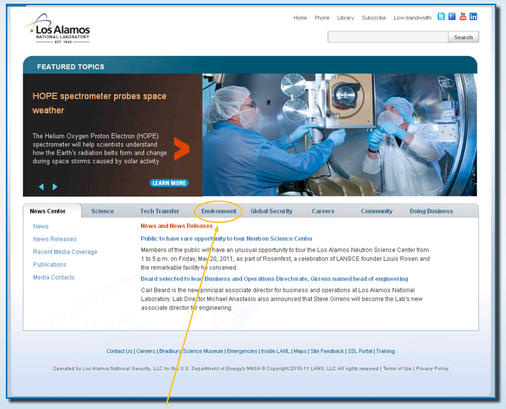
Earthen berms capture sediment, intercept flow, and manage runoff.

Individual Permit (IP) Website

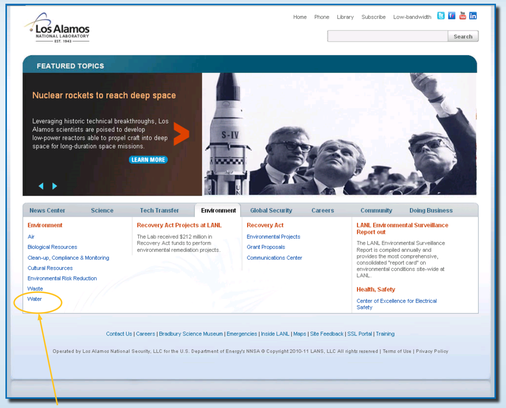
http://www.lanl.gov/

The public website provides information on the Permit, including the Site Discharge Pollution Prevention Plan (SDPPP), Annual Reports, Inspection Reports, DMRs, transmittal correspondence between Permittees and Environmental Protection Agency (EPA), and other relevant data and documents.

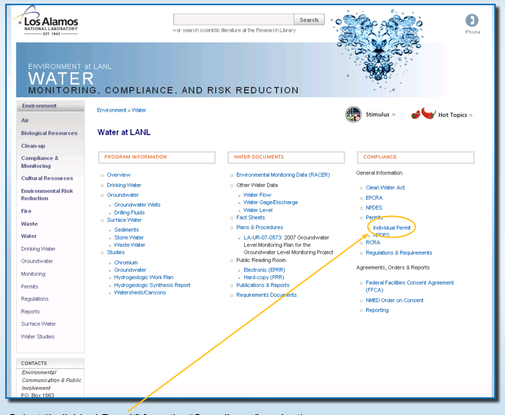
How to Navigate to the IP Website:



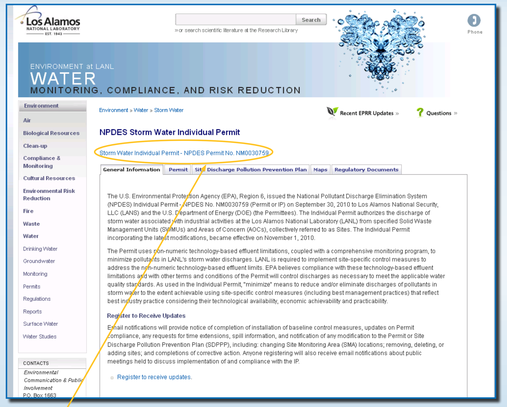
Select “Environment” from LANL’s home page.



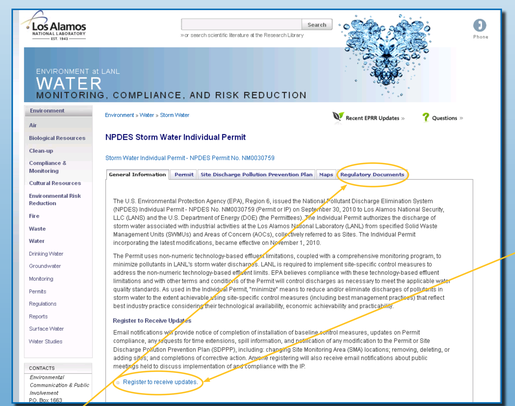
Select “Water” from the left navigation menu.



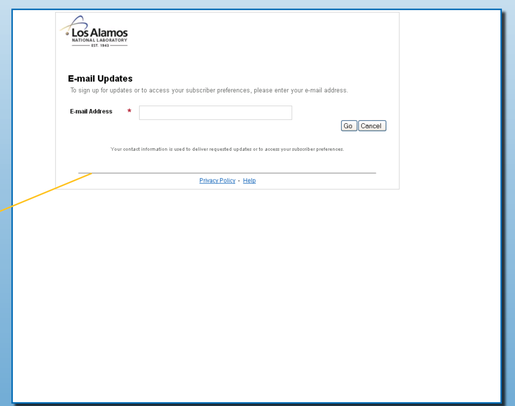
Select “Individual Permit” from the “Compliance” navigation menu.



Click here to view the Individual Permit – NPDES No. NM0030759.

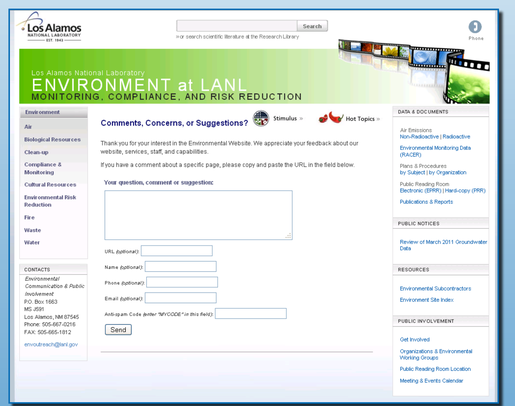


Click here to view/download documents.



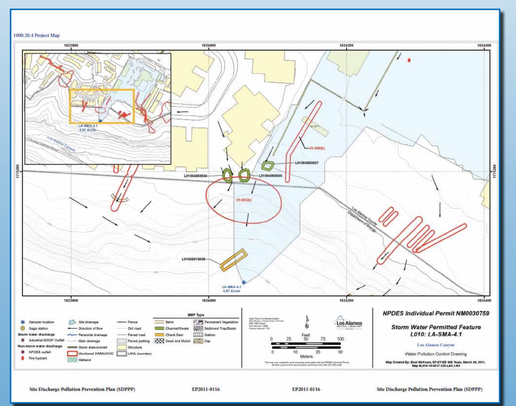
Register to Receive Updates

Register to receive email notifications when new documents are added to the IP website and when the next public meeting is scheduled.



Frequently Asked Questions

Got a question? Submit your questions to the Storm Water/ Individual Permit Team at http://www.lanl.gov/environment/comments.shtml or by submitting your comment/ question at the public meeting.



Maps

The Maps in the SDPPP show surface hydrological features, structures, SMA sampler locations, and control measures installed to minimize contaminant movement from historic waste disposal areas known as Solid Waste Management Units (SWMU).

Environmental Regulatory Framework for Los Alamos National Laboratory

Permits and Enforceable Documents

Regulators:

United States

Department of Energy

Environmental Protection Agency

Department of Interior
Department of Agriculture

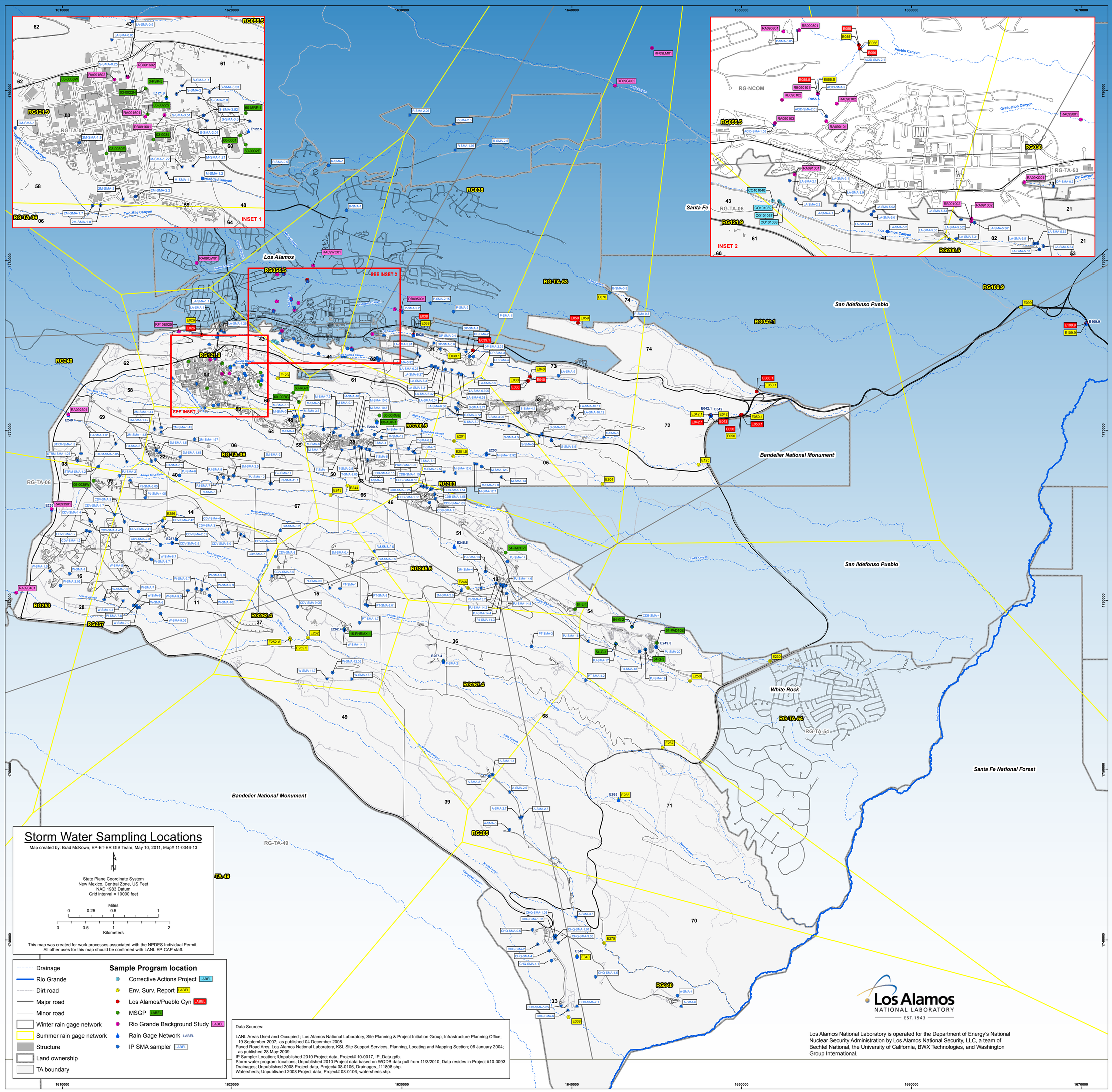
State of New Mexico

New Mexico Environment Department

Administrative Code

- Comprehensive Environmental Response, Compensation and Liability Act
  - Natural Resources Damage Assessments
  - Emergency Planning and Community Right-to-Know
- Clean Water Act
  - Surface Water
    - Dredge & Fill Permits
    - Septic Tank Permits
    - Spill Prevention Controls and Counter-measures
    - NM Water Quality Control Commission Regulations
    - NPDES Industrial Discharge Permit
  - Storm Water
    - National Pollutant Discharge Elimination System
      - Construction General Permit
      - Multi Sector General Permit
      - Individual Permit for Solid Waste Management Units
  - Groundwater
    - Groundwater Discharge Permit (draft implementation)
    - Compliance Order on Consent for Corrective Action
- Clean Water Act
  - Title V Operating Permit
    - Open Burn Modification
    - Open Detonation Modification
    - Rad-National Emission Standards for Hazardous Air Pollutants
    - Construction Permits
    - National Emissions Standards for Hazardous Air Pollutants
    - Title VI Ozone Depleting Substances
- Resource Conservation and Recovery Act (NM Hazardous Waste Act)
  - Hazardous Waste Facility Permit
    - Open Burning
    - Open Detonation
    - TRU Waste Facility Modifications
  - Compliance Order on Consent for Corrective Action
  - Solid Waste Permit
  - Toxic Substances Control Act
  - PCB Disposal Authorization
  - Site Treatment Plan
- DOE Orders
  - DOE O 231.1 Environmental Surveillance Report
  - DOE O 450.1 Environmental Management System
  - DOE O 458.1 Radiation Protection Public and Environment
  - DOE O 435.1 Radioactive Waste Management
  - DOE O 430.2b Renewable Energy & Transportation Management
- Federal Insecticide, Fungicide & Rodenticide Act Licensing

Los Alamos National Laboratory
Stormwater Sampling Locations



Storm Water Sampling Locations

Map created by: Brad McKown, EP-ET-ER GIS Team, May 10, 2011, Map# 11-0046-13

State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Grid interval = 10000 feet

Miles: 0 0.25 0.5 1
Kilometers: 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.

- Drainage
- Rio Grande
- Dirt road
- Major road
- Minor road
- Winter rain gage network
- Summer rain gage network
- Structure
- Land ownership
- TA boundary

Sample Program location

- Corrective Actions Project LABEL
- Env. Surv. Report LABEL
- Los Alamos/Pueblo Cyn LABEL
- MSGP LABEL
- Rio Grande Background Study LABEL
- Rain Gage Network LABEL
- IP SMA sampler LABEL

Data Sources:

LANL Areas Used and Occupied ; Los Alamos National Laboratory, Site Planning & Project Initiation Group, Infrastructure Planning Office; 19 September 2007; as published 04 December 2008.
Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 28 May 2009.
IP Sampler Location; Unpublished 2010 Project data, Project# 10-0017, IP_Data.gdb.
Storm water program locations; Unpublished 2010 Project data based on WQDB data pull from 11/3/2010; Data resides in Project #10-0093.
Drainages; Unpublished 2008 Project data, Project# 08-0106, Drainages_111808.shp.
Watersheds; Unpublished 2008 Project data, Project# 08-0106, watersheds.shp.

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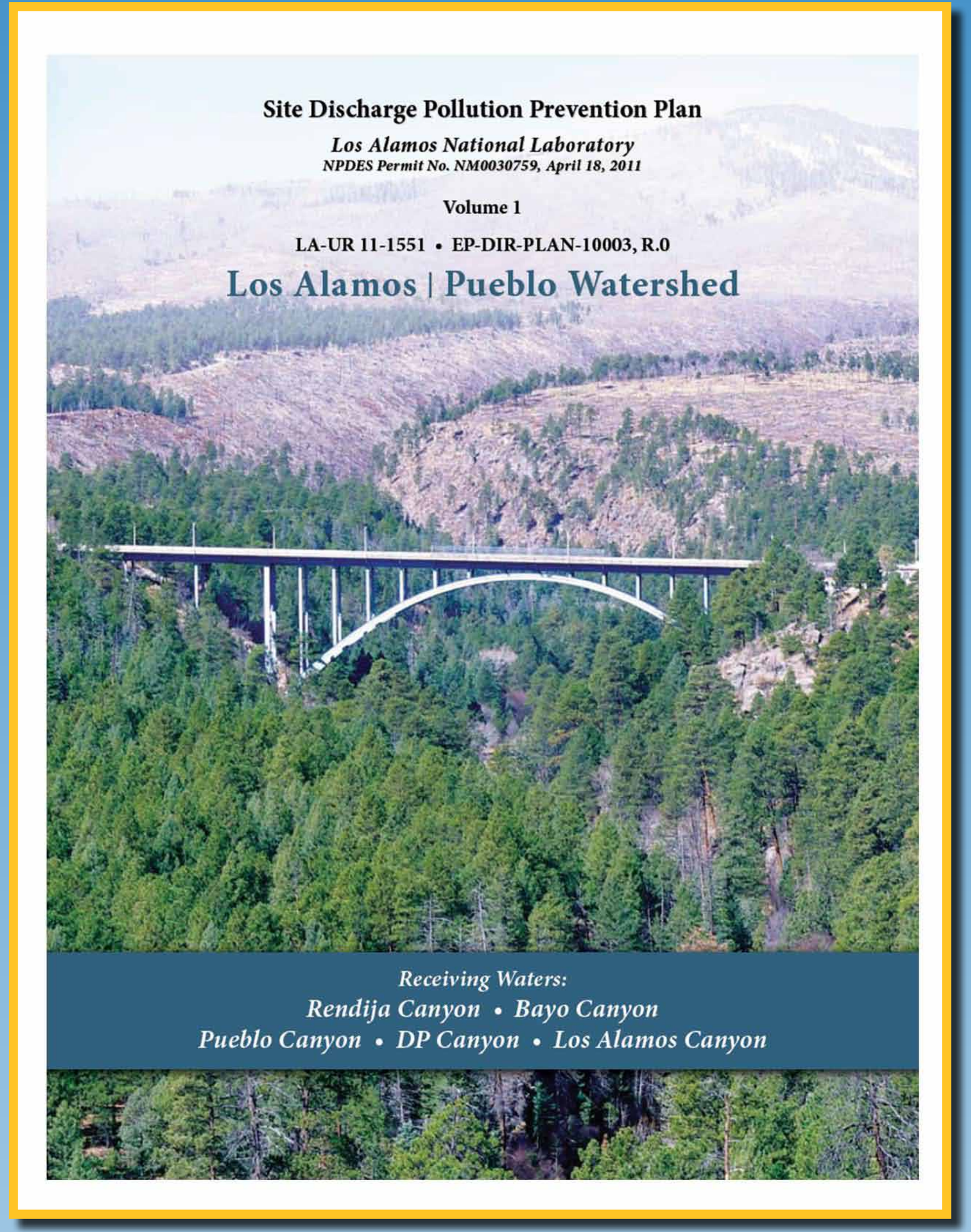
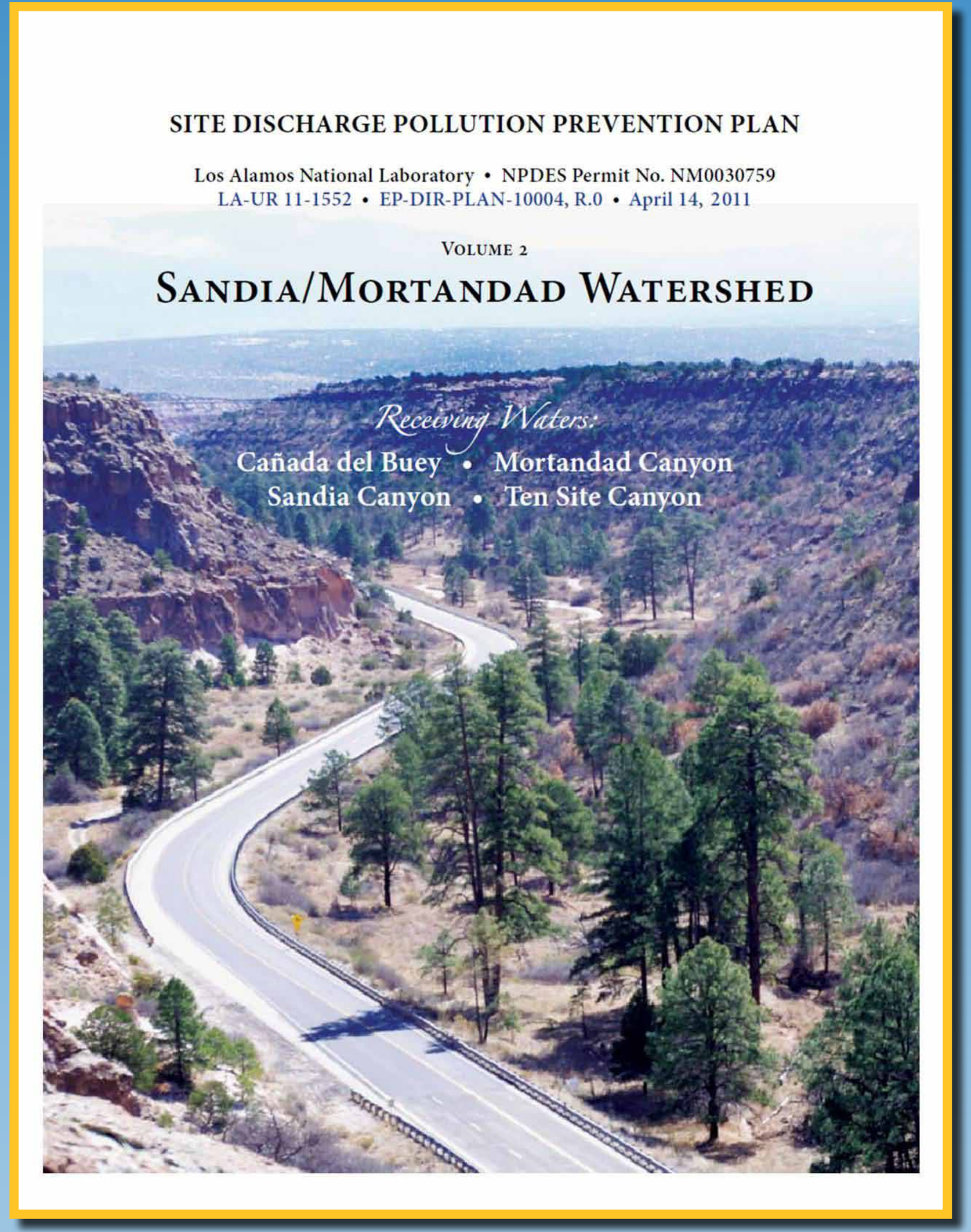
Site Discharge Pollution Prevention Plan

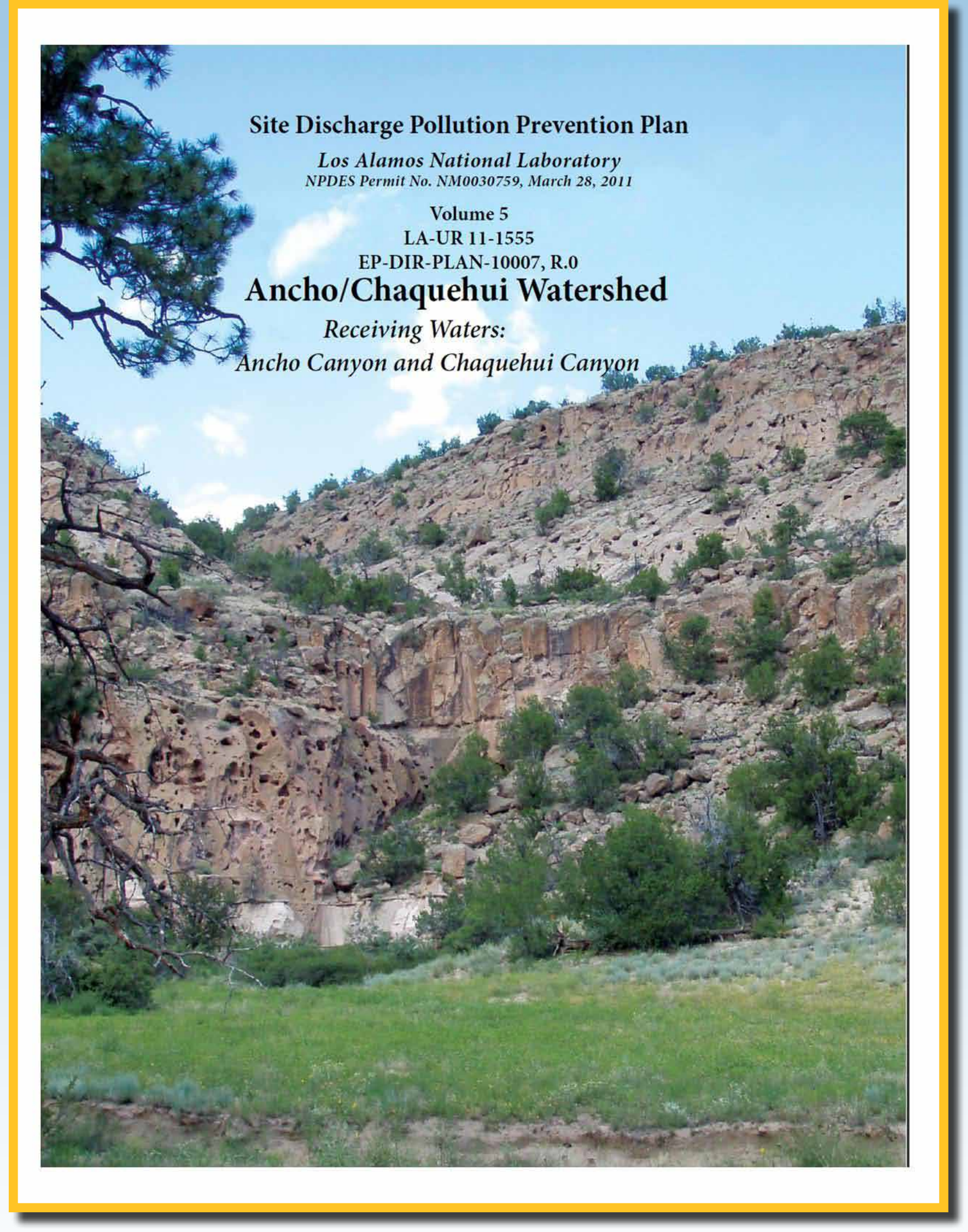
The Site Discharge Pollution Prevention Plan (SDPPP) is comprised of five volumes, each volume covers one or more of the seven major Pajarito Plateau watersheds and are organized geographically from north to south.

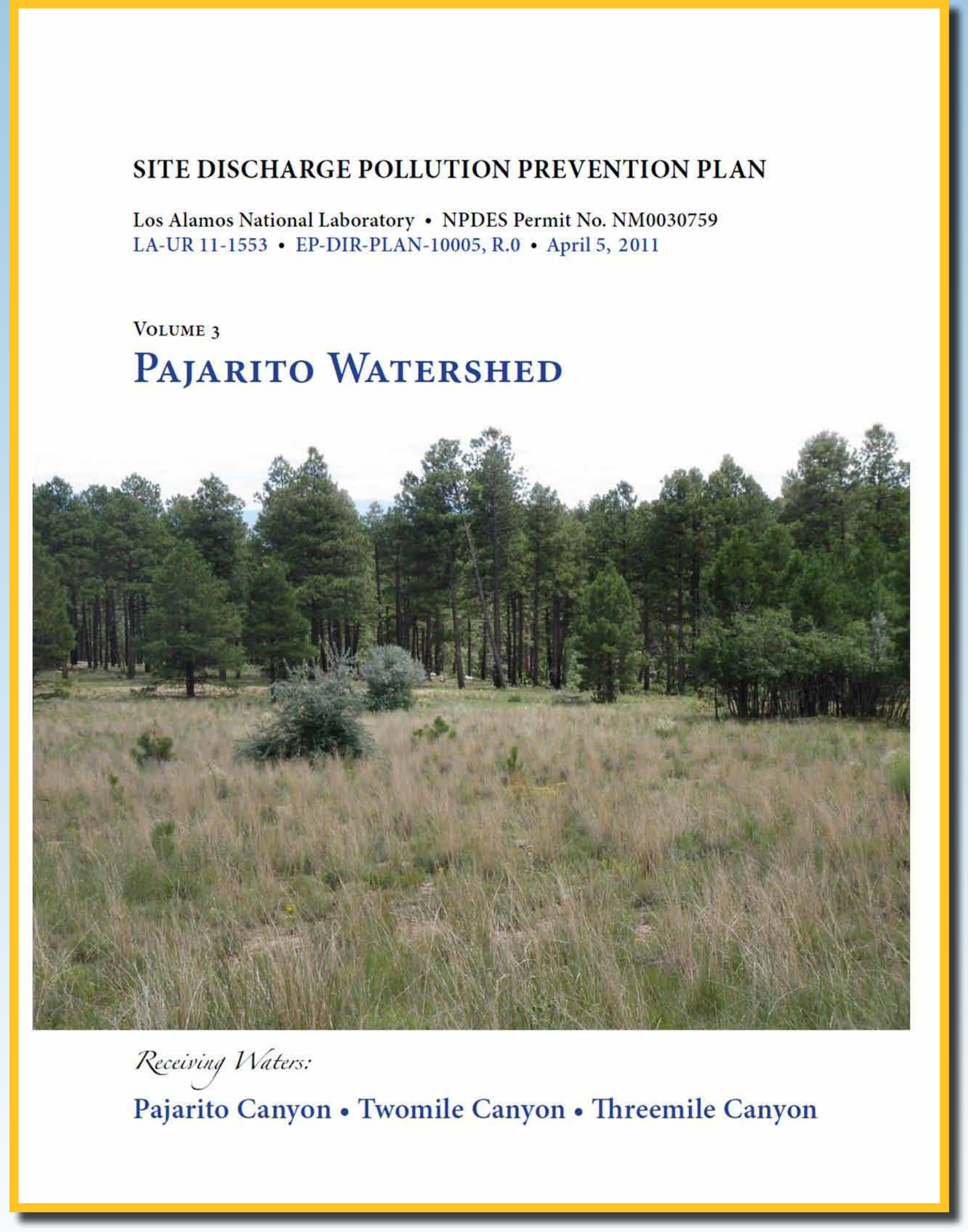


Site Discharge Pollution Prevention Plan
Los Alamos National Laboratory
NPDES Permit No. NM0030759, April 18, 2011
Volume 1
LA-UR 11-1551 • EP-DIR-PLAN-10003, R.0
Los Alamos | Pueblo Watershed
Receiving Waters:
Rendija Canyon • Bayo Canyon
Pueblo Canyon • DP Canyon • Los Alamos Canyon

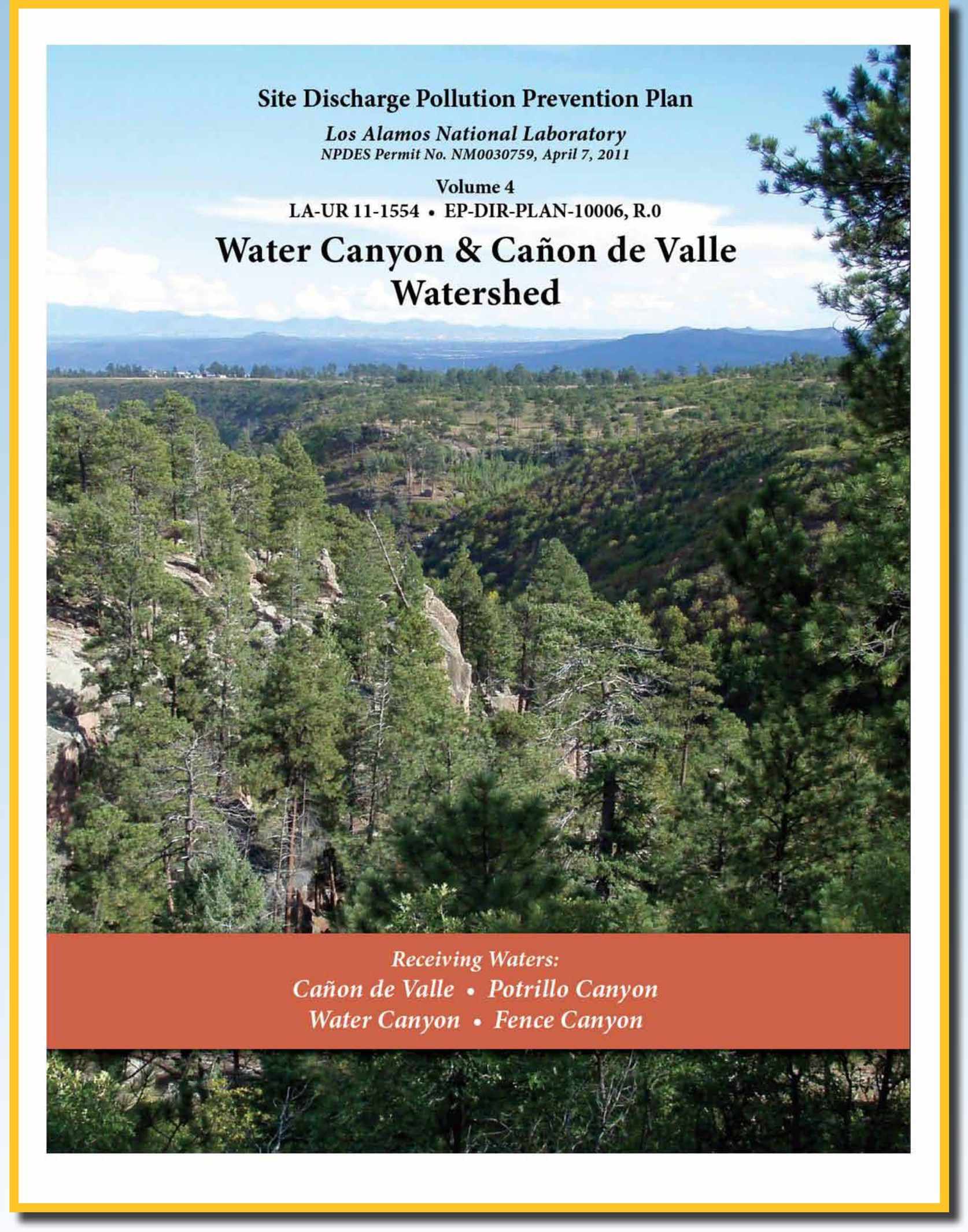


SITE DISCHARGE POLLUTION PREVENTION PLAN
Los Alamos National Laboratory • NPDES Permit No. NM0030759
LA-UR 11-1552 • EP-DIR-PLAN-10004, R.0 • April 14, 2011
VOLUME 2
SANDIA/MORTANDAD WATERSHED
Receiving Waters:
Cañada del Buey • Mortandad Canyon
Sandia Canyon • Ten Site Canyon





SITE DISCHARGE POLLUTION PREVENTION PLAN
Los Alamos National Laboratory • NPDES Permit No. NM0030759
LA-UR 11-1553 • EP-DIR-PLAN-10005, R.0 • April 5, 2011
VOLUME 3
PAJARITO WATERSHED
Receiving Waters:
Pajarito Canyon • Twomile Canyon • Threemile Canyon

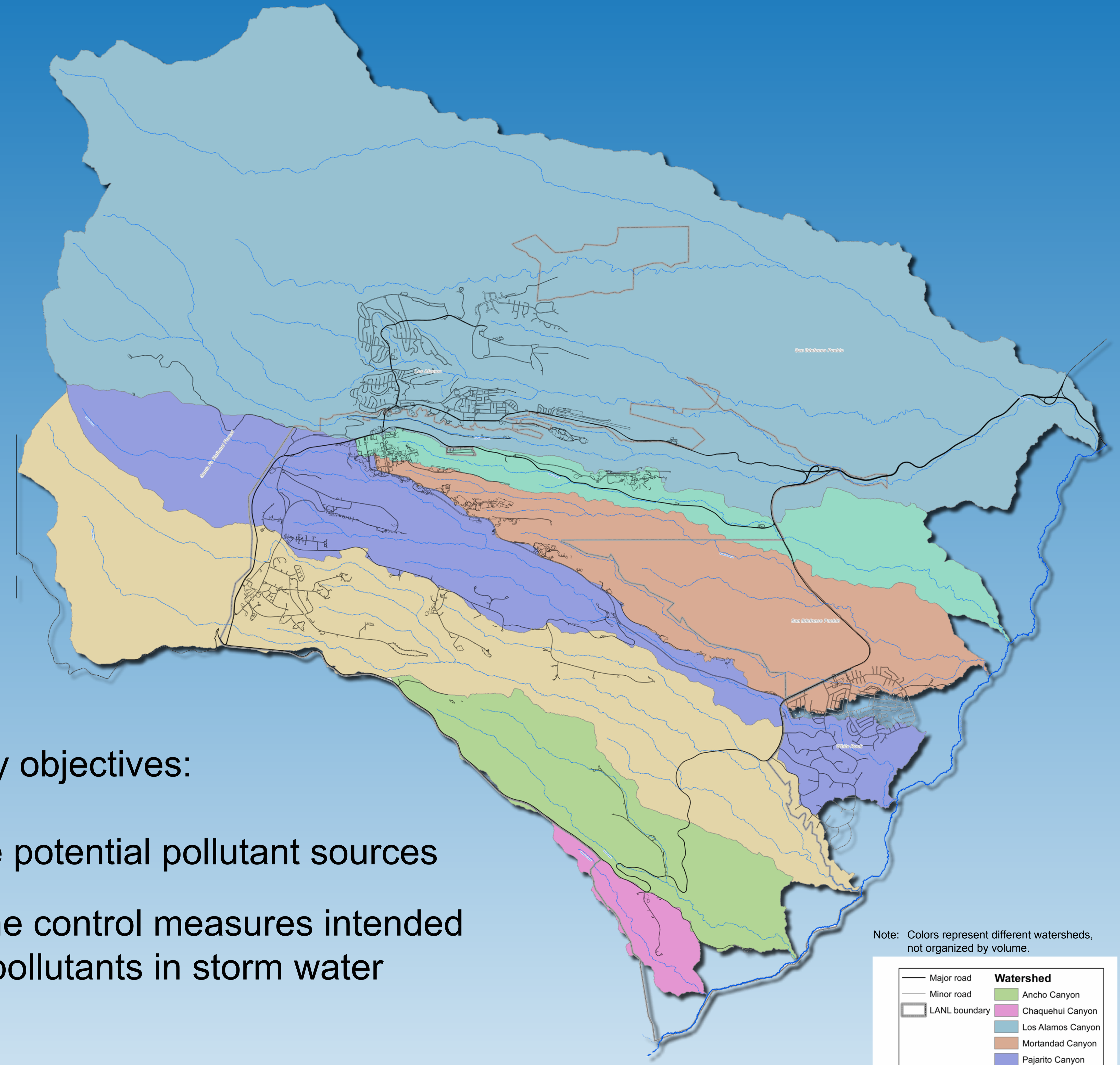


Site Discharge Pollution Prevention Plan
Los Alamos National Laboratory
NPDES Permit No. NM0030759, April 7, 2011
Volume 4
LA-UR 11-1554 • EP-DIR-PLAN-10006, R.0
Water Canyon & Cañon de Valle
Watershed
Receiving Waters:
Cañon de Valle • Potrillo Canyon
Water Canyon • Fence Canyon

Site Monitoring Areas and Sites Summarized by Watershed

Watershed	Number Number of Site Monitoring Areas	Number of Sites		
		High Priority	Moderate Priority	Total
Los Alamos/Pueblo	64	30	71	101
Sandia	19	15	8	23
Mortandad	45	17	79	96
Pajarito	51	4	56	60
Water/Cañon de Valle	50	--	89	89
Ancho	9	--	15	15
Chaquehui	12	--	24	4
Total:	250	63*	342	405*

* There 63 High Priority Sites listed in Section E of the Permit. Three (3) High Priority Sites discharge to two different watersheds: 54-017, 54-018, and 54-020 are mesa-top Sites that discharge to the Mortandad watershed on the north side of the mesa; and to the Pajarito watershed on the south side of the mesa.



Data Sources:

LANL Areas Used and Occupied ; Los Alamos National Laboratory, Site Planning & Project Initiati Group, Infrastructure Planning Office; 19 September 2007; as published 04 December 2008.
Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 28 May 2009.
Drainages; Unpublished 2008 Project data, Project# 08-0106, Drainages_111808.shp.
Watersheds; Unpublished 2008 Project data, Project# 08-0106, watersheds.shp.
Rain gage networks and locations; Unpublished 2010 project data, Project #10-0027, 2010_Raingage_network.shp

Not to Scale

The SDPPP has 3 primary objectives:

1. Identify and summarize potential pollutant sources
2. Identify and describe the control measures intended to reduce or eliminate pollutants in storm water discharges
3. Report Monitoring results to track the effectiveness of control measures.

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Site Monitoring and Management

What is a Site?

In compliance with the provisions of the Clean Water Act, as amended, Los Alamos National Laboratory, managed and owned by co-Permittees Los Alamos National Security, LLC, and the U.S. Department of Energy, is authorized to discharge storm water associated with industrial activities from specified solid waste management units (SWMUs) and areas of concern (AOCs) (as identified in Appendix A and referred to herein as “Sites”) from the facility located at Los Alamos, New Mexico.

Examples of Sites at LANL:

- Former Outfalls
- Former Landfills
- Firing Sites
- Potential Soil Contamination

What is an SMA?

A Site Monitoring Area (SMA) is the area used to collect a representative stormwater sample from one or more Sites. The SMA is a watershed defined by the location of the sampler. SMA sizes range from a fraction of an acre to hundreds of acres (see Figures).

SMA Location Guidance from IP

SMA locations are based on reasonable site accessibility for sampling purposes and the Permittees’ best judgment to ensure that samples taken at a particular point will be representative of discharges from Sites in the drainage area.

LANL Representative Sampling Strategy:

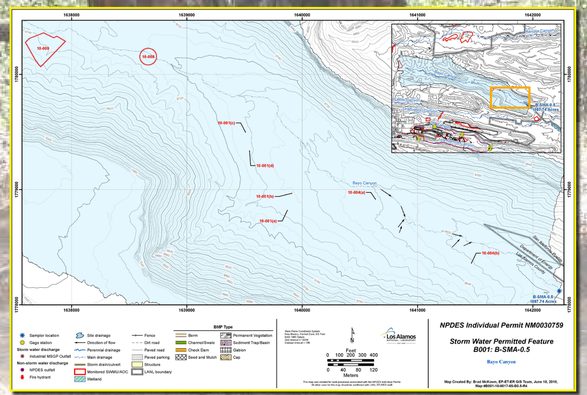
Sampler locations were determined based on a series of considerations:

- Optimize sampling of stormwater coming from a Site or Sites (Site Capture) while minimizing contributions from off-Site stormwater.
- Position sampler as close to Site or Sites as possible.
- Optimize sampling efficiency (include multiple Sites where appropriate).
- Safety and accessibility issues

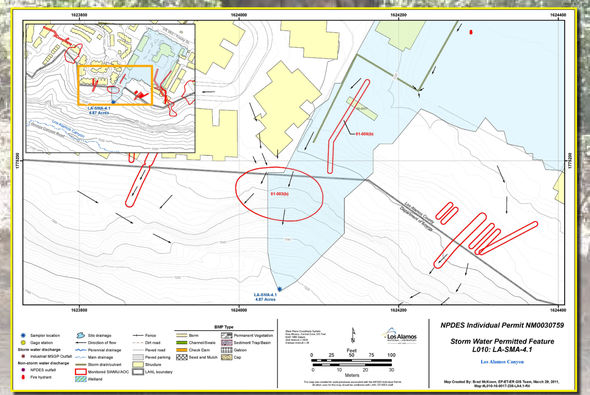
Program Status:

We are currently using 250 SMAs to monitor stormwater from 405 Sites

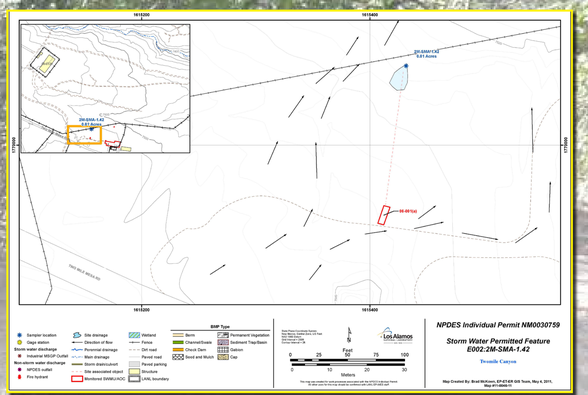
Battery-powered automated samplers are used to collect stormwater samples during runoff events.. Sensors turn the sampler on when flow is detected and pump water into bottles located inside the sampler housing. The samplers record the date and time the sample was collected.



B-SMA-0.5 is an example of a large SMA (>1,000 acres) with multiple (8) Sites. This SMA is located in Bayo Canyon, mostly on Los Alamos County property. Because the Sites are clustered in the canyon bottom, the only sampler location representative of all Sites is in the main drainage.



LA-SMA-4.1 is located on the north side of Los Alamos Canyon, on both LANL and Los Alamos County property. It is a moderately sized SMA (approx 5 acres) with two Sites and a substantial amount of stormwater coming from the developed area in the upper 2/3 of the watershed.



2M-SMA-1.42 is located in 2 Mile Canyon, on LANL property. This is a small SMA (<0.01 acres) with only one Site, an abandoned septic tank with an outfall pipe. The sampler is located below the outfall.

How to Interpret an SMA map

Buildings are yellow and roads are lined in black. SMA boundaries are shown in light blue. The sampler location is shown as a blue star and will be found at the lowest elevation of the SMA. Sites are drawn and labeled in red. Any Site that is not labeled is attributed to an adjacent SMA, not the map you are viewing. Black flow arrows indicate the primary direction of stormwater flow within the SMA.

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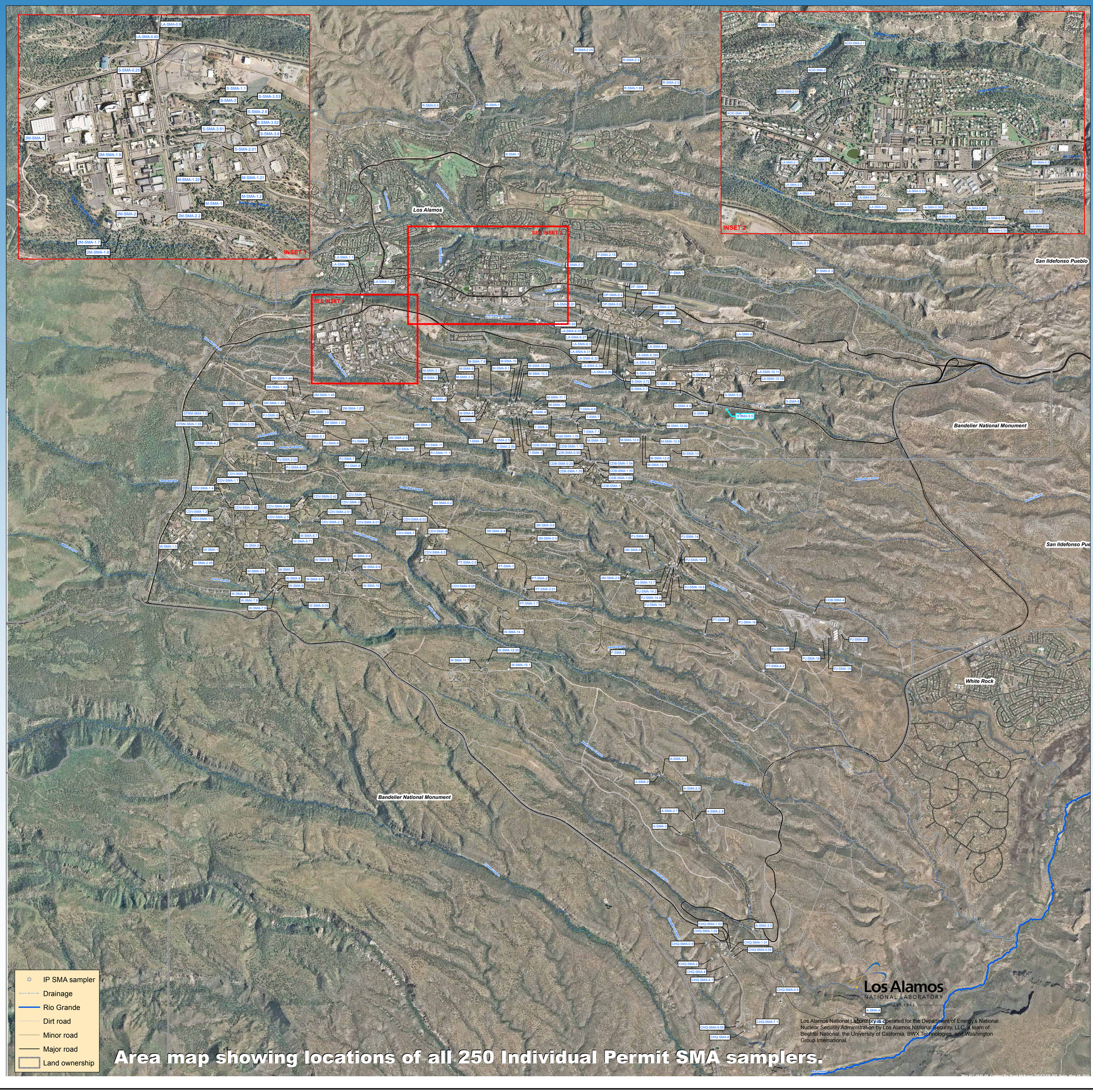
Los Alamos National Laboratory
Stormwater Individual Permit Areas



Area map showing locations of all 250 Individual Permit SMA samplers.

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What is a Storm Water Permit?

Storm water permits authorize permittees to discharge storm water from specific activities or facilities as part of the National Pollutant Discharge Elimination System (NPDES).

What is NPDES?

Permitting program to protect and improve water quality

Part of the federal Clean Water Act

Administered by the U.S. Environmental Protection Agency

Types of NPDES Storm Water Permits

General & Individual

General Permits: 3 common types

Construction General Permit (CGP)

A Permit is needed for:

- Soil disturbance of 1 acre or more
- Activity part of a “common plan of development” disturbing 1 acre or more

Activities subject to the CGP:

- Site clearing
- Grading
- Excavation
- Soil stockpiling

Examples of CGP Sites:

- Subdivisions (home building)
- Commercial buildings
- Highway projects

Cover multiple facilities or activities within a specific category

Multi-Sector General Permit (MSGP)

Permit features:

- “Sector specific” industrial activities.
- Based on Standard Industrial Classification (SIC) Codes
- Primarily manufacturing type activity

Examples of MSGP facilities:

- Landfills
- Concrete & asphalt plants
- Auto salvage yards
- Machine shops
- Power plants
- Recycling facilities
- Sand & gravel operations
- Sawmills

Applicable to facilities and activities nationwide

Municipal Separate Storm Sewer Program (MS4)

An MS4 is:

- A conveyance owned by a city, state, town, or other public body
- A system that collects and conveys storm water
- Not combined with a sewer system and not part of a publically owned treatment works

Applies to:

- Urban areas with populations > 100,000
- Populations < 100,000 within an urbanized area
- Case-by-case outside an urbanized area

Individual Permit — Need determined by EPA

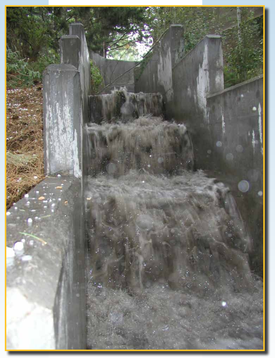
Individual Permit

Permit features:

- Requirements specific to a particular facility or activity
- Applicable only for the individual facility or activity
- Issued for a maximum of five years
- May be patterned after or contain elements of the “general permits”





Facilities and activities subject to NPDES storm water permits are all around you!

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What is the LANL Storm Water Individual Permit?

Issued by the U.S. EPA Region 6 Office (Dallas TX)

→ NPDES Permit that regulates storm water discharges from SWMUs

→ "Non-numeric technology- based effluent limitations"

→ Authorizes storm water discharge from 405 "Sites"

Issued for the Los Alamos National Laboratory facility effective Nov. 1, 2010

Los Alamos National Security, LLC & U.S. Department of Energy (DOE) are Co-Permittees

Solid Waste Management Units (SWMUs) are managed under the Resource Conservation and Recovery Act

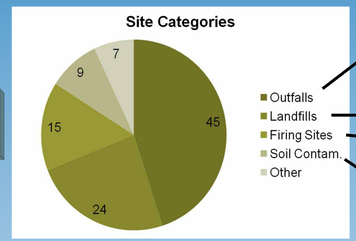
A SWMU meets the definition of an "industrial activity" that may be subject to NPDES storm water permitting

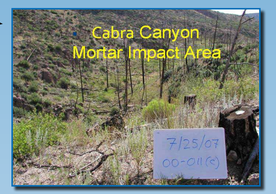
Implement Control Measures to reduce and/or eliminate discharges of pollutants in storm water runoff

Confirmation Monitoring against "Target Action Levels" based on State of New Mexico surface water quality standards

"Sites": SWMUs and Areas of Concern investigated and remediated under the New Mexico Consent Order

405 Sites are assigned to 250 Site Monitoring Areas (SMAs) based on common drainage area and similar Pollutants of Concern





Individual Permit Processes

Baseline Control Measures

- Completed at all Sites by May 1, 2011
- Photographed & Certified
- > 1,800 Control Measures at 250 SMAs

Pollutants of Concern

RADIOACTIVITY – Radium isotopes, Gross alpha
METALS – 16 metals (14 dissolved, 2 total)
CYANIDE
DIOXIN – 2,3,7,8-TCDD
SEMIVOLATILE COMPOUNDS – 3 organic pollutants
PESTICIDES – 11 pesticide pollutants
PCBS – Total PCB Congeners
HIGH EXPLOSIVES – RDX, TNT

Confirmation Monitoring

- Storm water runoff sampling at SMAs
- Confirm control measure effectiveness
- Sample results compared with TALs

Target Action Levels (TALs)

Numeric levels based on New Mexico surface water quality criteria for:

- Acute Aquatic Life
- Livestock Watering & Wildlife Habitat
- Human Health – Organism Only (Persistent Pollutants)

'Maximum' TAL: compared with single maximum result
'Average' TAL: compared with average of two results

Deadlines for Corrective Action

The Permittees must certify Completion of Corrective Action for:

63 HIGH Priority Sites within 3 years of effective date of the Permit*

342 MODERATE Priority Sites within 5 years of effective date of the Permit *

*effective date of the Permit is November 1, 2010

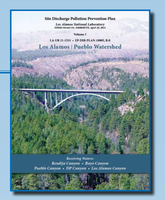
Corrective Action

- Enhanced control measures with confirmation monitoring
- No Exposure
- Total Retention
- Consent Order 'Certificate of Completion'

Baseline Control Measures → Initial Confirmation Monitoring → > TALs? → No: Maintain & Inspect; Yes: Corrective Action → Confirmation Monitoring (if required) → Certify Completion of Corrective Action

Site Discharge Pollution Prevention Plan (SDPPP)

- **SDPPP**
  - Summarize potential pollutant sources
  - Describe control measures
  - Monitoring and inspection procedures
  - Site maps



INSPECTIONS

- **Inspections**
  - Storm Event > ¼" in 30 minutes
  - Annual Erosion Reevaluation
  - Target Action Level (TAL) Exceedance
  - Significant Event, such as fire

MAINTENANCE

- **Maintenance**
  - Control Measures kept in 'effective operating condition'
  - Repair before next storm event if possible
  - Back-up control measures in place

REPORTING

- **Reporting**
  - IP Annual Report
  - Discharge Monitoring Reports (IP-DMRs)
  - Submitted to EPA & NMED on March 1
  - Available at IP Public Website

PUBLIC INVOLVEMENT

- **Public Outreach**
  - Individual Permit Public Website - SDPPP, Annual Reports, DMRs
  - E-mail Notifications
  - Public Meetings twice a year

http://www

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