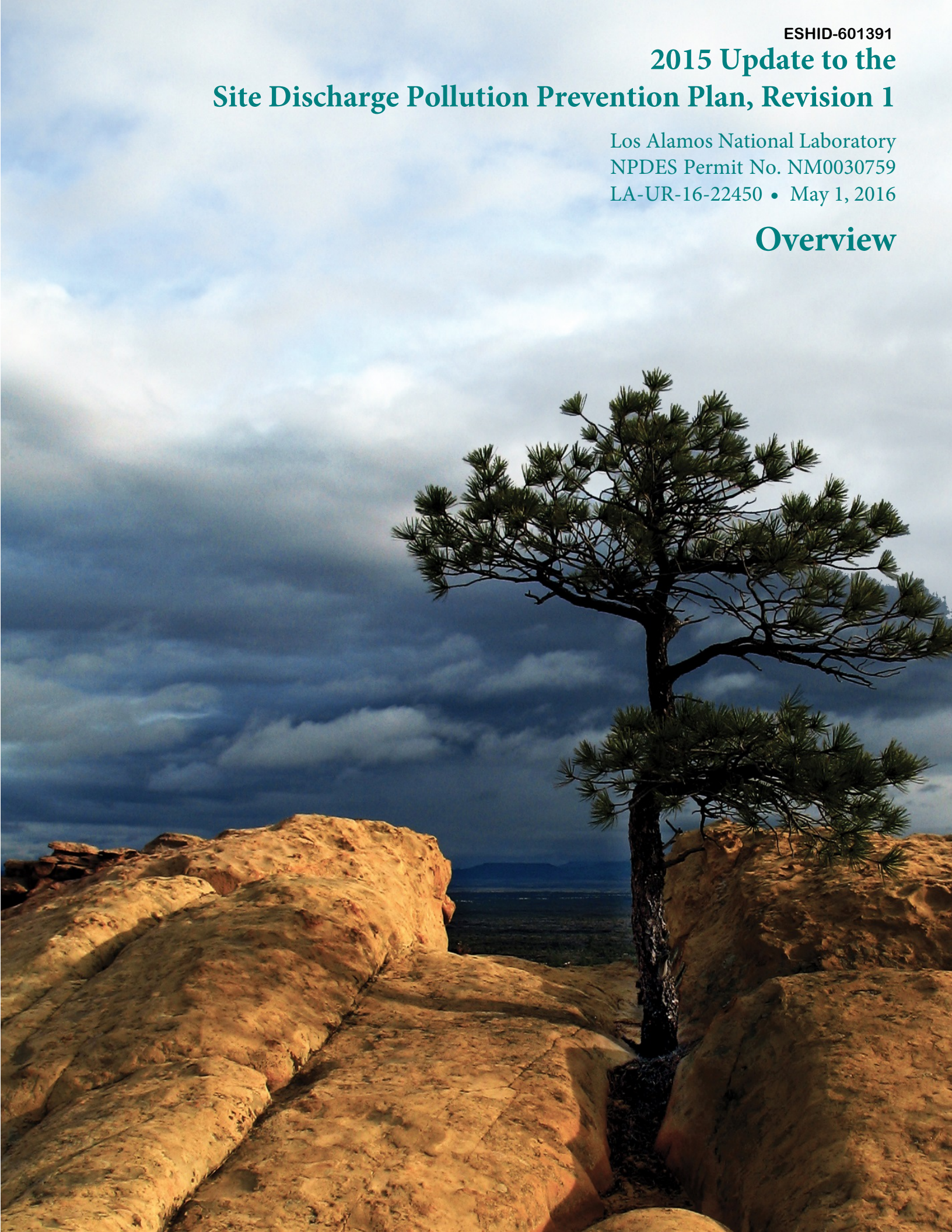
ESHID-601391

2015 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory
NPDES Permit No. NM0030759
LA-UR-16-22450 • May 1, 2016

Overview



CERTIFICATION

LOS ALAMOS NATIONAL LABORATORY
NPDES Permit No. NM0030759

2015 UPDATE TO THE SITE DISCHARGE POLLUTION PREVENTION PLAN, REVISION 1

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."

4/13/2016

Bruce Robinson, Program Director
Environmental Remediation Program
Associate Directorate for Environmental Management
Los Alamos National Security, LLC

Date

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David S. Rhodes, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

4-22-2016
Date

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Appendixes

1.0 Background

1.1 Individual Permit

DOE and LANS, collectively the Permittees, have prepared this Update to the Site Discharge Pollution Prevention Plan, Revision 1 (hereafter, the SDPPP Update) for the Individual Storm Water Permit pursuant to the requirements of NPDES Permit No. NM0030759 (hereafter, the Individual Permit or Permit or IP), as authorized by the EPA. The SDPPP Update includes this Overview as well as five volumes addressing the watersheds covered under the IP. All acronyms and abbreviations are included in Appendix A of this Overview and are not defined at first use.

The Individual Permit regulates storm water discharges associated with historical industrial activities from 405 permitted SWMUs and/or AOCs (collectively, "Sites"). The majority of the Sites covered by the Individual Permit are remotely located and are not associated with current industrial activities. Storm water discharges associated with current conventional industrial activities at the Laboratory are excluded from the Individual Permit. The Permit—NPDES No. NM0030759—incorporating the latest modifications became effective on November 1, 2010.


Storm water detention at LA-SMA-5.51

The Sites regulated under this Permit are a subset of the SWMUs and AOCs that are being addressed under the March 2005 Consent Order. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of RCRA for addressing releases of hazardous constituents from SWMUs and AOCs.

A SWMU is a discernible waste management unit from which hazardous waste or hazardous waste constituents may migrate, regardless of whether the unit was intended to manage solid or hazardous waste. SWMUs include any area at a facility at which solid wastes have been routinely and systematically released. An AOC is any area that is not a SWMU that may have had a release of a hazardous waste or hazardous constituent. A Site that met the definition of a SWMU or AOC was evaluated for inclusion in the Permit based on the following criteria: (1) the SWMU/AOC is exposed to storm water (e.g., not capped or subsurface); (2) the SWMU/AOC may contain "significant industrial material" (e.g., not cleaned up or has contamination in place); and (3) industrial materials from the SWMU/AOC could potentially impact waters of the United States.

The selection of monitoring suites and Site priority designations was based on historical information and any storm water, sediment, and soil data available at the time the Permit application was submitted. The investigation and remediation of SWMUs and AOCs began during the 1990s before the effective date of the Individual Permit and continue concurrently with implementation of the Individual Permit.

The Individual Permit categorizes a Site as having had an "industrial activity" that creates a "point source discharge" and directs the Permittees to monitor representative storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a single drainage area within a subwatershed and may include more than one Site. Storm water from a Site may drain to multiple subwatersheds and may be associated with multiple SMAs.

Each SMA is assigned a Permitted Feature code. The Permitted Feature is a code used to identify the SMA for tracking purposes. Appendix E shows each Permitted Feature code assigned to each SMA.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the Permittees' storm water discharges associated with historical industrial activities from specified SWMUs and AOCs. The Permittees are required to implement site-specific control measures (including BMPs) to

address the nonnumeric technology-based effluent limits, as necessary, to reduce or minimize pollutants in their storm water discharges to the extent achievable.

The Permit establishes TALs that are equivalent to New Mexico water-quality criteria. These TALs are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. That is, confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more confirmation monitoring result exceeds a TAL, the Permittees must take corrective action through the installation of measures reasonably expected to (1) meet applicable TALs at the Site, (2) achieve total retention of storm water discharges from the Site, (3) totally eliminate exposure of pollutants to storm water, or (4) demonstrate the Site has a COC under the Consent Order. The Individual Permit requires that the Permittees certify to EPA completion of corrective action at each Site by a specific deadline based upon the Site's status either as a High Priority or Moderate Priority Site.

Where the Permittees have installed measures to minimize pollutants in their storm water discharges as required by Part I.A of the Permit at a Site or Sites, but are unable to certify completion of corrective action under Sections E.2(a) through E.2(d) (individually or collectively), the Permittees may submit an alternative compliance request to EPA. If EPA grants the alternative compliance request in whole or in part, it will issue a new individually tailored work plan for the Site or Sites. EPA will also extend the compliance deadline for completion of corrective action, as necessary, to implement this work plan. Corrective action will be accomplished on a case-by-case basis pursuant to an individually tailored compliance schedule determined by EPA. Figure 1 is a "road map" illustrating key activities in the Individual Permit and shows the steps involved in the corrective action process.

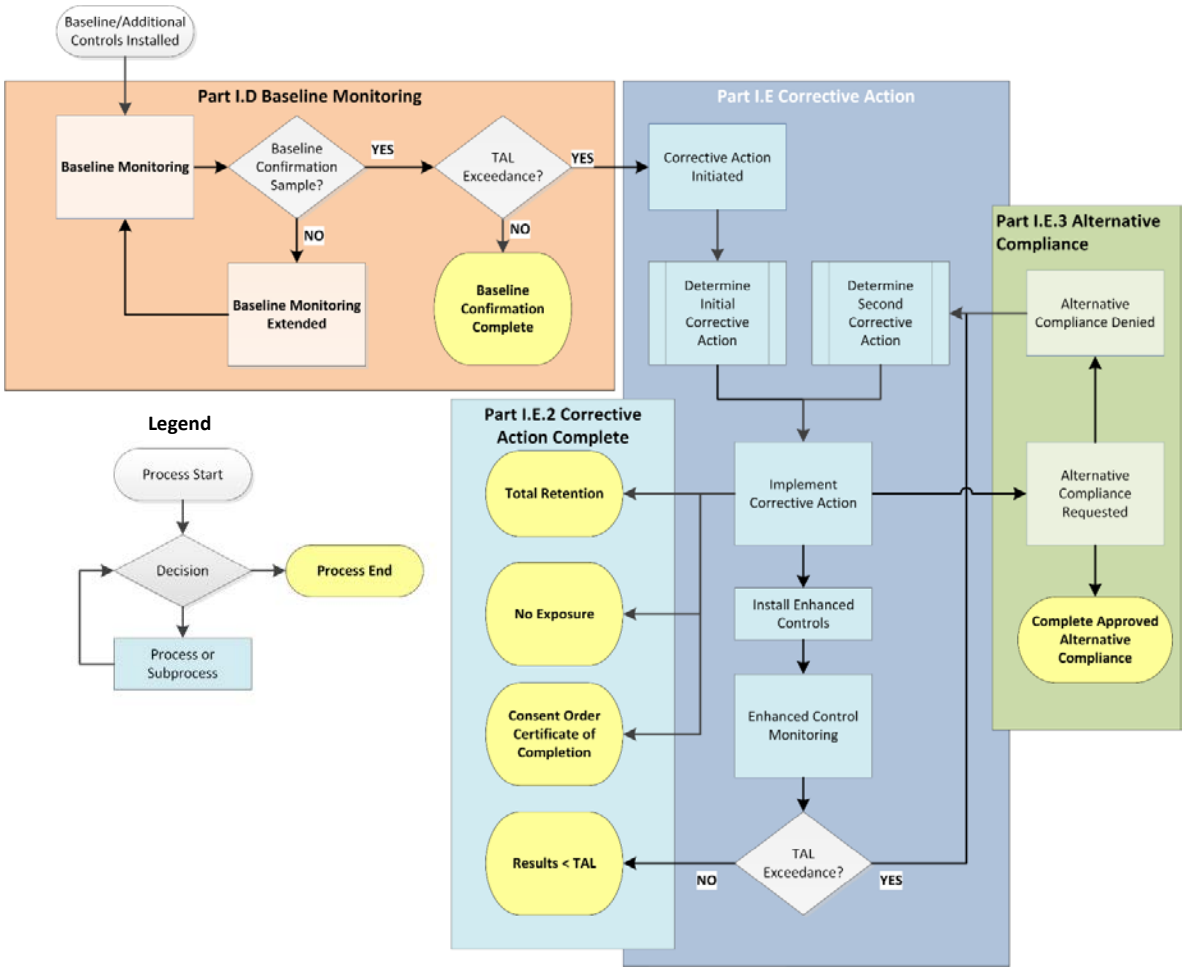


Figure 1 Permit compliance road map

1.2 2015 Update to the Site Discharge Pollution Prevention Plan, Revision 1

The SDPPP Update is written for use by the Permittees' personnel and for review by EPA and the public. For each Site, the SDPPP Update

> Part I.F.4 of the Permit states, "The SDPPP shall be updated annually to fully incorporate all changes made during the previous year and to reflect any changes projected for the following year."

- describes the historical industrial activities,
- summarizes the available data regarding the nature and extent of any surface contamination related to the historical activities for constituents that exceed TALs, and
- identifies the structural control practices implemented to prevent the pollutants of concern from impacting storm water runoff quality.

This information is carried forward from previous SDPPP updates. However, new information is provided if TALs were exceeded in 2015 and where additional controls were installed in 2015. Site descriptions are updated based on Consent Order investigation results from the prior year and from planned future work. The SDPPP Update also describes other relevant information, such as monitoring results, inspections and maintenance, and procedures. The report is intended to be a living document that is kept current throughout the year by maintaining records and relevant documents alongside the SDPPP. At the end of each field season, all changes made during the year and any projected for the coming year are incorporated into an update.

The original SDPPP was published, submitted to EPA, and placed on the Individual Permit website on April 30, 2011. The following year, on May 1, 2012, the SDPPP was revised and was made available on the Permit website. Revision 1 is available at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php. Since the publication of Revision 1, updates to the SDPPP have been prepared and are made available on the IP website by May 1 of each year. The 2015 SDPPP Update, summarizing relevant information from 2015, together with Revision 1, meets the requirements of Part I.F of the Individual Permit. The reporting format is designed to be web-friendly, making information about a specific Site or SMA easier to find, download, and print. Table 1 provides a crosswalk of SDPPP requirements with the location of the information.

Storm water control measures at LA-SMA-0.9 in Los Alamos Canyon

Table 1 SDPPP Requirements

Part I Requirement		SDPPP Section
Part	**Description**	
F.1 (a)	Site Discharge Pollution Prevention Team	2015 Update, Overview, Section 2.0, Site Discharge Pollution Prevention Team
F.1 (b)	Site Description: • historical activities at each Site • precipitation information • general location and Site maps	• 2015 Update, Volumes 1 to 5 (V1–5), Section xxx.1*, Site Descriptions • 2015 Update, V1–5, Attachment 3, Precipitation Network • 2015 Update, V1–5, Figure xxx.1; the latest Site map can be found on the IP website—http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.
F.1 (c)	Receiving Waters and Watershed	SDPPP V1–5, Rev. 1, Section 300.3
F.1 (d)	Summary of Pollutant Sources	2015 Update, Overview, Section 3.1.1, Evaluation of Potential Pollutant Sources, and Overview Appendix E
F.1 (e)	Description of Control Measures	2015 Update, Overview Appendix B, Control Measure Fact Sheets; 2014 Update, V1–5, Section xxx.2, Control Measures
F.1 (f)	Schedules for Control Measure Installation	2015 Update, V1–5, Attachment 6, Additional Compliance Status Details for SMAs/Sites in Corrective Action
F.1 (g)	Monitoring and Inspection Procedures: (i) Locations where samples are to be collected, including coordinates for sampling locations and any determination that two or more Sites are substantially identical (ii) Person(s) or positions of person(s) responsible for sample collection (iii) Parameters to be sampled and frequency of sampling for each parameter; (iv) Procedures for gathering storm event data	(i) The most recent maps showing SMA sampler location for planned sampling are posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php; 2015 Update, V1–5, Attachment 4, Physical Characteristics (ii) and (iv) 2015 Update, Overview, Section 1.3, Monitoring and Inspection Procedures, IP website—http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php. (iii) 2015 Update, V1–5, Attachment 5, Sampling Requirements and Plan
F.1 (h)	Signature Requirements	Signatures to 2015 Update can be found after cover page of Overview
F.2 (a)	Alongside Documentation: Dates of training sessions, names of employees trained, and subject matter of training	2015 Update, Overview, Section 2.0, Site Discharge Pollution Prevention Team
F.2 (b)	Alongside Documentation: Sampling Reports (sampling dates, analytical results, outfall locations, name and qualification of technician)	• Sampling dates and analytical results: 2015 Update, V1–5, Section xxx.3, Storm Water Monitoring • Outfall locations: 2015 Update, V1–5, Figure xxx.1; Attachment 4, Physical Characteristics • Name and qualification of technician: Laboratory's Electronic Document Management System

Part I Requirement		SDPPP Section
Part	Description	
F.2 (c)	Alongside Documentation: Inspection Reports	• Inspection summary: 2015 Update, V1–5, Section xxx.4, Inspections and Maintenance • Electronic copy of inspection results: Laboratory's Electronic Document Management System
F.2 (d)	Alongside Documentation: An accounting of and explanation of length of time taken to modify or implement measure following discovery of deficiency.	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance
F.2(e)	Documentation of Maintenance: Documentation of maintenance and repairs of control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, the date(s) that control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules.	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance
F.3 (a)	Required Modifications: Construction or 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.	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance
F.3 (b)	Required Modifications: Findings of deficiencies in control measures during inspections or based on analytical monitoring results.	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance
F.3 (c)	Required Modifications: • any change of monitoring requirement or • compliance status	• 2015 Update, V1–5, Attachment 5, Sampling Requirements and Plan • 2015 Update, V1–5, Section xxx.5, Compliance Status
F.3 (d)	Required Modifications: Any change of SMA location	2015 Update, V1–5, Section xxx.1, Site Descriptions, documented in the project map (Figure xxx.1) and in Attachment 4, Physical Characteristics
F.3 (e)	Required Modifications: Summary of changes from the last year's SDPPP	2015 Update, V1–5, Attachment 1, Amendments
F.4	SDPPP updated annually to incorporate previous year changes and following year projections	2015 Update, V1–5

Part I Requirement		SDPPP Section
Part	Description	
F.5	SDPPP Availability: Paper copy of current SDPPP to be immediately available at facility and copy of SDPPP to be made available on public website.	Paper copies of SDPPP V1–5, Rev. 1, and the 2015 Update, V1–5, are available in the Project Manager's Office (Pueblo Complex) and the Public Reading Room (Pojoaque, NM). The SDPPP is also available in the Laboratory's Electronic Document Management System and on the public website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php.
G.1	Erosion Inspection and Reevaluation	Electronic records system: Laboratory's Electronic Document Management System
G.2	Post-Storm Inspections: Adverse weather events shall be documented and maintained with the SDPPP.	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance; Electronic records system: Laboratory's Electronic Document Management System
G.3	Inspection Report	• Inspection summary: 2015 Update, V1–5, Section xxx.4, Inspections and Maintenance • Electronic copy of inspection results: Laboratory's Electronic Document Management System
I.1	Construction Activity Permit associated with Site Remediation: Steps taken to minimize discharges of contaminated runoff during remediation activity shall be included in the SDPPP Update	2015 Update, V1–5, Section xxx.4, Inspections and Maintenance; Table xxx-2, Control Measure Inspections during 2015 (Inspection Type is "Remediation Construction Activity")
I.2	Deletion of Site: Documents to support a request of site deletion must be kept with facility's SDPPP.	All records associated with Individual Permit activities are maintained electronically in the Laboratory's Electronic Document Management System.
I.3	Watershed Protection Approach: EPA encourages the Permittees to voluntarily install watershed-based control measures, such as sediment barriers, to mitigate sediment or storm water runoff reaching the main channels of the canyons and/or the Rio Grande. The Permittees should include information and monitoring data regarding the installation of any such watershed-based control measures in the Annual Report or the SDPPP.	2015 Update, Overview, Section 5.0, Watershed Protection Approach
I.4	Record Keeping	All records associated with Individual Permit activities are maintained electronically in the Laboratory's Electronic Document Management System
I.5	Reopener: This Permit may be reopened and modified in accordance with 40 CFR. § 122.62. Any changes to monitoring and/or control measure requirements made to the Permit in accordance with such a permit modification shall be addressed in the Annual Report and in the annual SDPPP update.	Not yet applicable

*The xxx refers to the number assigned to each SMA in the Update.

This Overview includes information pertaining to all five watershed-based SDPPP Update volumes and describes the updated information that is new this year. Appendixes to the Overview include acronyms and a glossary of terms used in this report (Appendix A), control measure fact sheets (Appendix B), a guide to understanding the information presented in the data graphs (Appendix C), references used throughout the report (Appendix D), and a list of potential pollutants of concern (Appendix E).

1.3 Monitoring and Inspection Procedures

Individual Permit procedures are reviewed and updated as needed throughout the year. Monitoring and inspection procedures that were valid at the end of 2015 and will be used in 2016 (unless a newer version becomes available) are listed below, and copies are posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php.

- EP-DIV-SOP-10004, Managing Electronic Precipitation Data for Storm Water Projects
- EP-DIV-SOP-10008, Installing, Setting Up, and Operating ISCO Samplers
- EP-DIV-SOP-10013, Inspecting Storm Water Runoff Samplers and Retrieving Samples
- EP-DIV-SOP-20012, Post-Storm Inspection of NPDES Individual Permit Storm Water Control Measures and Installation and Maintenance of Non-Engineered Storm Water Control Measures
- EP-DIV-SOP-20060, Certifying Individual Permit Storm Water Control Measures
- EP-DIV-SOP-20125, Performing NPDES Storm Water Individual Permit Visual Inspections
- EP-DIV-SOP-20217, Processing Surface Water Samples
- EP-DIV-GUIDE-20211, Inspection Guidance for Environmental Programs Watershed, Retention, and No Exposure Controls

2.0 Site Discharge Pollution Prevention Team

To facilitate the implementation, maintenance, and revision of the SDPPP, a 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 and fulfilling the regulatory requirements of the Individual Permit. The Program Manager is responsible for managing implementation of the IP requirements. The EM-LA Regulatory Compliance Director certifies the required reports and conducts oversight activities.

The PPT consists of qualified personnel who possess the knowledge and skills to perform requirements specific to the Individual Permit. PPT members who perform field activities are able to assess field conditions and activities that impact storm water quality and control measure function. The selection of the PPT field members requires familiarity with Site locations and surrounding operations. Field team members generally have, at a minimum, a Bachelor's degree and specialty qualifications, such as CISEC, CPESC, or other qualifications necessary to perform the field work required. The specific responsibilities of the PPT are provided in Table 2. Each member of the PPT has access to electronic and paper copies of the Individual Permit and this SDPPP Update.

Table 2 PPT Roles and Responsibilities

PPT Title	Functional Responsibility
Program Manager	Responsible for managing implementation of Individual Permit requirements. Responsible for signing the completed inspection work orders that satisfy the requirement for certification of findings by the IP.
EM-LA Regulatory Compliance Director	Certifies IP-required reports and conducts oversight activities.
Compliance Team Lead	Responsible for ensuring compliance is met for the Individual Permit Storm Water Program. Responsible for ensuring that Permit-specific training is up to date for all PPT members.
Corrective Actions Field Project Lead	Responsible for coordinating design and implementing corrective action field measures associated with TAL exceedances.
Planning and Reporting Project Lead	Responsible for coordinating and delivering reporting requirements defined by the Individual Permit.
Monitoring Project Team Lead	Responsible for implementing storm water monitoring, coordinating Site inspections, and maintaining control measures to address deficiencies as required by the Permit. Resolves issues related to successful conduct of operations.
Field Operations Lead	Authorizes all field operations associated with LANL ER Program environmental work, including, but not limited to, field work pertaining to the Individual Permit. Coordinates with the field team members to resolve issues related to successful conduct of operations.
Subcontractor Manager	Primary contact for the field team members conducting field work performed by the subcontractor's field team members.
Field Team Member	Responsible for the completion of field work, including site inspections, setting up and maintaining samplers, collection of storm water samples, control measure assessments, control measure maintenance, control measure construction, and construction verifications and/or documenting work completed.
Tracking and Reporting Team (aka Data Management Team)	Responsible for the generation of field work orders associated with the IP. Maintains work order information in the Maintenance Connection database. Maintains sampling associated data and Site related data in the EIM database and SWTS. Provides reports generated from databases as needed.
Precipitation Data Management Team	Responsible for maintaining, verifying, and validating precipitation data in the Hydstra database. Responsible for transmitting validated data to Tracking and Reporting Team.
Sample Management Office Lead	Responsible for receiving samples from the sample processor and shipping for analysis. Responsible for verifying that sample results are uploaded correctly to EIM and maintaining long-term stewardship of the data.
Sample Data Steward	Responsible for maintaining the sampling and analysis plan, quality control once samples are received by the storm water laboratory, and assigning analytical processing requirements for samples retrieved.
Sample Processor	Responsible for accepting samples from the Route Lead, processing the samples as required by the sample data steward, and providing custody of the samples until samples are delivered to the Sample Management Office.

PPT Title	Functional Responsibility
Subcontractor Technical Representative	Primary LANL contact for subcontractor work performed in the field.
Publications Team	Responsible for editing, compositing, obtaining signatures, and transmitting publications required by the IP.
Records Management Team Member	Responsible for long-term stewardship of IP records in LANL record database.

Employee training and qualification are essential for effective implementation of the SDPPP and the success of the storm water program. Project personnel receive both formal and informal training in the execution of storm water management at the IP Sites. Formal training is conducted annually before the field season starts, through online training applications and scheduled classroom sessions. Training records are maintained alongside the 2015 SDPPP Update in the Permittees' electronic records management system. Training records include the dates training occurred, the subject matter of the training conducted, and names of employees trained. During the field season, daily tailgate meetings are conducted to inform personnel of work assignments, impending changes, and work-related issues.

LANS and DOE are co-Permittees on the IP. Since 2010, through the M&O contract, LANS was delegated responsibility for implementing a program to sustain compliance with the IP. In 2015, the DOE NNSA Los Alamos Field Office separated out the Environmental Management scope of work to create a new DOE EM Los Alamos Field Office. EM-LA contracted its scope of work, including the IP, in a separate Bridge Contract to LANS. EM-LA provided notice to EPA and NMED of its updated points of contact for the IP and delegations of authority pursuant to 40 CFR Part 122.22 in November 2015 and revised the delegations of authority in March 2016. LANS continues to facilitate implementation of the IP at LANL. EM-LA participates in decisions affecting compliance of the IP and performs contractor oversight of IP field activities to support certification of controls and deliverables to EPA.

3.0 Guide to the Updated Information in the 2015 SDPPP Update, Volumes 1–5

This SDPPP Update maintains the previous five-volume watershed organizational structure for administrative convenience (Table 3). For clarity, SMAs are uniquely and consecutively numbered from 1–250 across the five volumes, as presented in the last column of Table 3.

The 2010 SDPPP provides overviews of each of the five watersheds in section 300.3. These overviews give physical characteristics of the entire watershed. Since the publication of the 2010 SPPPP, no reportable changes have occurred for the watershed scale information. The 2010 SDPPP can be found on the IP website at http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php.

Table 3 SDPPP Update Organizational Structure: Volume, Watershed, and Associated SMAs

SDPPP Volume	Primary Watershed	Receiving Waters	SMA Numbers in the Contents Table
Volume 1	Los Alamos/Pueblo	Rendija Canyon Bayo Canyon Pueblo Canyon DP Canyon Los Alamos Canyon	1–64
Volume 2	Mortandad/Sandia	Mortandad Canyon Ten Site Canyon Cañada del Buey Sandia Canyon	65–128
Volume 3	Pajarito	Pajarito Canyon Starmers Canyon Twomile Canyon Threemile Canyon	129–179
Volume 4	Water/Cañon de Valle	Cañon de Valle Potrillo Canyon Water Canyon Fence Canyon	180–229
Volume 5	Ancho/Chaquehui	Ancho Canyon Chaquehui Canyon	230–250

The Site information, organized by SMA, has been updated as follows.

3.1 Section X.1, Site Descriptions

Site descriptions have not been updated since the submittal of the 2014 SDPPP Update, except to correct grammatical and editorial errors or to update Consent Order activities related to the Site. Changes are captured in redline and provided as part of Attachment 1 in each volume. References used for the Site descriptions are listed in Appendix D of this Overview.

A current project map is located at the end of each SMA chapter. Maps updated throughout the year will be posted on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

3.1.1 Evaluation of Potential Pollutant Sources

Part I.F.1.(d) of the Individual Permit requires the Permittees to identify potential pollutants of concern associated with "industrial materials or activities" exposed to storm water. Appendix B of the Individual Permit lists the permitted Site Monitoring Requirements for each SMA/Site. As indicated in Part I.D. of the Permit, "pollutants of concern to be monitored are specified in Appendix B." The identification of pollutants of concern listed in Appendix B does not indicate whether the pollutant is associated with historical industrial materials managed at the Site or with potential releases at the Site. Therefore, the Permittees contend that the monitoring list in Appendix B of the Individual Permit should not currently be used to identify potential pollutants of concern.

The 2011 SDPPP, Revision 1, identified the initial pollutants of concern based solely on the Appendix B monitoring requirement and not on industrial activities because no storm water samples had been

collected at that time. The Permittees have not made changes to the list of potential pollutant sources in subsequent SDPPP updates.

For the 2014 and 2015 SDPPP Updates, the Permittees revised the list of potential pollutants of concern, which can be found in Appendix E of this Overview. The list was developed by evaluating the Appendix B monitoring list based on the following criteria:

- Constituents were struck from the potential pollutants of concern list where
  - ❖ constituents did not exceed TALs in baseline monitoring;
  - ❖ TAL exceedance constituent(s) are not related to historical industrial activities at the Site;
  - ❖ the Site is not exposed to storm water and has been certified under Part I.E.2.(c) for no exposure; and
  - ❖ adjusted gross alpha is identified as a potential pollutant of concern (no Site on the Permit is a source of adjusted gross alpha, and any Site associated with historical management of gross-alpha radionuclides is exempt from regulation under the CWA).
- Constituents were added as a potential pollutant of concern where
  - ❖ Site descriptions indicate that historical management of that constituent occurred, but the constituent is not identified as a monitoring requirement in Appendix B of the Permit.

In 2016, all available SWMU/AOC Site knowledge will be reviewed to determine appropriate Site monitoring constituents and monitoring locations, per the draft language established in the SIP process provided by the Permittees and NMED-SWQB, for inclusion in EPA's March 2014 draft IP (unless otherwise modified by the EPA). This process will determine the list of potential pollutants of concern. Site knowledge under the SIP, includes, but is not limited to, Site-related historical information that may include past environmental investigation information, memos, engineering drawings, as well as validated soil and storm water sampling data. These reviews will occur in coordination with LANS, DOE EM-LA, NMED-SWQB, and NMED's DOE Oversight Bureau staff.

At SMAs where storm water baseline monitoring samples did not exceed TALs for any constituent, no further monitoring is required for that constituent per Part I.D.4 of the Permit. The Permittees no longer consider these constituents as potential pollutants of concern.

In Volumes 1 through 5 of the SDPPP Update, each TAL exceedance is evaluated to determine whether the TAL exceedance constituent was historically managed at the Site. In many cases, the Permittees have determined that TAL exceedance constituent(s) are not related to historical industrial activities. The Permittees contend these constituents should no longer be listed as Appendix B monitoring requirements, nor should they be considered as potential pollutants of concern. If the constituent that exceeded the TAL was historically managed at the Site, it is retained as a potential pollutant of concern.

The Site descriptions provide a brief description of Site-associated historical industrial activities from which new pollutants of concern can be identified. For example, a Site description that identifies the Site as an outfall from an HE sump would result in the identification of HE as a potential pollutant of concern. If HE is not currently an Appendix B monitoring requirement, it would be added to the list of potential pollutants of concern. Appendix E shows a list of additional constituents the Permittees have identified as potential pollutants of concern based on Site descriptions in the column with the heading titled "Add."

If baseline confirmation storm water monitoring samples have not been collected at an SMA, the Sites within that SMA were not evaluated for removal of potential pollutants of concern based on historical industrial activities. For these SMA/Site combinations, the list of potential pollutants of concern remains the same as the Appendix B monitoring requirements (with the exception of removing adjusted gross alpha as a potential pollutant of concern and unless constituents were added based on the Site description).

The Permittees believe that the Appendix B monitoring list and potential pollutants of concern should match. However, only when baseline monitoring samples did not exceed TALs is no further monitoring of a constituent allowed by the Permit. All other additions or subtractions of constituents from the list of potential pollutants of concern discussed above do not change the Appendix B monitoring requirements of the Permit. A Permit modification is required to remove or add specific monitoring requirements from Appendix B. Instead of submitting a large Permit modification request to EPA, EPA has requested that the Permit renewal process be used to develop a more Site-specific monitoring list.

3.2 Section X.2, Control Measures

This section in the SDPPP Update describes control measures that have been installed and are currently "active" as of the end of the 2015 calendar year. An active control measures table is provided for each SMA and has been updated to include the enhanced controls constructed in 2015 and to remove any controls that were retired. Control measures may be retired for several reasons. For example, the lifespan of the control type may have expired, or the control measure may have been damaged by wildlife or flooding. In some cases, the retired control measure is replaced with an equal or more effective measure. Storm water run-on, runoff, and erosion potential are assessed before controls are selected and installed at an SMA. The goal is to select and install controls to minimize the potential for erosion when storm water runoff flows across an area; minimize sediment transport; retain transported sediment on-site; and to divert, infiltrate, reuse, contain, or otherwise reduce storm water run-on and runoff. A detailed assessment or alternatives analysis is performed for all SMAs that require the installation of enhanced controls. The alternatives analysis process evaluates the possible corrective action controls, including installation of enhanced controls, total retention, no exposure, and Site remediation. From this alternatives evaluation process the most appropriate control(s) is selected, designed, and implemented. Alternatives analysis documentation is maintained as a record alongside this SDPPP Update. The fact sheets in Appendix B provide sufficient detail to identify and describe the baseline and enhanced control measures constructed at the Sites. Representative photographs of control measures are interspersed throughout the text in the SDPPP Update. Photographs of all baseline controls and enhanced controls that have been certified are available by following the Construction Certification link on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Rock check dam controlling storm water in Acid Canyon

Thirty-seven enhanced controls were certified in 2015. As of January 1, 2016, no additional enhanced controls are planned. However, changes in compliance status may result in the need for additional enhanced controls.

3.3 Section X.3, Storm Water Monitoring

The monitoring section in the SDPPP Update describes the storm water data, date of sample collection (if applicable), and comparison with the applicable TALs. For any constituents exceeding the TAL, a summary of the results from soil and sediment samples collected at the Site during Consent Order or previous investigations is provided and a determination is made of whether or not the TAL exceedance constituent is known to have been associated with industrial materials historically managed at the Site. The discussion is organized by Site and analyte. This information will assist the screening process discussed in section 3.5.1 below as the appropriate compliance path selected for the SMA/Site is evaluated.

Also included for all constituents exceeding the TAL at an SMA is a discussion of storm water natural and anthropogenic background concentrations that could be present in run-on and could be a contributing source of the TAL exceedances at the monitoring station.

The storm water monitoring results are plotted on graphs located at the end of each SMA chapter. Organic and inorganic analytes are presented in different plots. A graphic explaining how to read the plots is presented in Appendix C, Understanding the Analytical Results Plots, and is also available on the IP website: http://www.lanl.gov/environment/protection/compliance/individual-permit-stormwater/site-discharge-pollution-prevention-plan.php.

Sampler moves in 2015 are discussed in Volumes 1–5, Section X.3, and are summarized in Table 4.

Table 4 Sampler Location Adjustments

SMA	Sampler ID	New Location Active Date	Reason for Sampler Location Move	Monitoring Suite Following Sampler Move	Sample Collected Since Move?
CDV-SMA-2.42	SS150427	10/1/2015	Enhanced controls	Appendix B monitoring suite	No
CDV-SMA-6.01	SS150428	10/16/2015	Enhanced controls	Appendix B monitoring suite	No
CHQ-SMA-3.05	SS150620	8/12/2015	Enhanced controls	Appendix B monitoring suite	No
P-SMA-1	SS150805	4/24/2015	Changed Site conditions	Appendix B monitoring suite	No
PJ-SMA-11	SS152341	8/12/2015	Enhanced controls	Appendix B monitoring suite	No
PJ-SMA-1.05	SS152342	9/16/2015	Enhanced controls	Appendix B monitoring suite	No
F-SMA-2	SS152402	10/1/2015	Enhanced controls	Appendix B monitoring suite	No
2M-SMA-1.44	SS153222	9/14/2015	Enhanced controls	Appendix B monitoring suite	No
T-SMA-4	SS153718	10/19/2015	Enhanced controls	Appendix B monitoring suite	No
T-SMA-1	SS153719	9/22/2015	Site-specific monitoring	Appendix B monitoring suite	No
W-SMA-1.5	SS153942	9/4/2015	Enhanced controls	Appendix B monitoring suite	No
W-SMA-7	SS153943	10/1/2015	Enhanced controls	Appendix B monitoring suite	No
PT-SMA-1	SS154818	10/16/2015	Enhanced controls	Appendix B monitoring suite	No

The sampling plans for 2016 have been updated and are presented in Attachment 5 of each SDPPP Update volume.

3.4 Section X.4, Inspections and Maintenance


Storm water ISCO sampler installed on retention basin spillway

Active control measures are inspected as follows: Storm Rain Event (after a rain event at or near the Site that registers 0.25 in. or more of rain within 30 min [the precipitation network for each watershed and rain event data in 2015 are presented in Attachment 3 in each SDPPP Update volume]); TAL Exceedance (to reevaluate the existing control measures when water sample results are above TALs); Annual Erosion Evaluation (annually for changes of conditions affecting erosion, or otherwise affecting the potential for discharge of pollutants); Remediation Construction Activity (weekly during remediation construction activities to ensure sediments and runoff controls are working); Significant Event (such as a fire or flood that could significantly impact the control measures and environmental conditions in the affected area[s]; and Verification Inspections for Enhanced Controls (verification of the installation of enhanced controls). The control measures inspection table is provided for each SMA.

Maintenance is completed following inspections and is performed during the calendar year to address deficiencies, or potential deficiencies, in control measures as listed in the maintenance table. Actions described in the table include maintenance and/or installation activities that result from findings on inspections or from recommendations not derived from inspections. These recommendations are often made during planning stages to improve existing conditions at an SMA. This table is provided for each SMA where maintenance was performed. If no maintenance table is included for an SMA, then no maintenance was required to be performed during the calendar year.

The IP regulates approximately 2100 active control measures. Because of the immense number of active controls, maintenance must be prioritized and scheduled. Following the date of discovery of a potential maintenance item by the field inspection team, the discovery is reviewed by the Permittees' field team lead to determine the scope of maintenance required. Following the finalization of the maintenance/installation scope, a work order is issued to perform the maintenance with a target date for completion. Typically, the target date is set for 2 to 4 wk from the date of discovery or the date a work order is issued for recommendation not derived from inspections. If the maintenance is performed within 30 d from that date, the table indicates that the maintenance was performed as soon as practicable.

Often maintenance is delayed because of events outside the Permittees' control, such as site access control restrictions by Laboratory active facilities; severe weather conditions (i.e., lightning stand-downs, red-flag fire weather work restrictions, winter weather); seasonal biological habitat restrictions (i.e., Mexican spotted-owl); staffing limitations resulting from Site-wide rain events; and force majeure events (i.e., government shutdowns). If maintenance is delayed, but occurs within 31 to 60 d, the maintenance table states the maintenance was delayed. The delays in these cases are considered normal and further explanation is not provided in the maintenance table.

If the maintenance exceeds 60 d, the reason for the maintenance delay is noted in the SMA maintenance table. Any maintenance activities that are associated with enhanced controls typically take more than 60 d to complete. This is because of the planning activities that are required as part of corrective action measure selection through the screening and alternative analysis process (see section 3.5.1 for further information).

3.5 Section X.5, Compliance Status

The compliance status table has been updated for 2015. The terms used to track compliance status are defined in Appendix A of this Overview. Five major categories are used to define compliance status. If necessary, additional details are provided in Attachment 6 regarding compliance status.

Baseline Confirmation Complete—All confirmation monitoring results for all pollutants of concern at the SMA are at or below TALs, and corrective action is not required at the Sites. No further sampling is required.

Baseline Monitoring Extended—Baseline confirmation monitoring is in progress, and no storm water from a measurable storm event has been collected. There has been no TAL exceedance.

Corrective Action Initiated—A sample was collected during confirmation monitoring and the analytical results show at least one pollutant concentration is above TALs, resulting in initiation of corrective action. Corrective action may include installing enhanced control measures, installing control measures that totally retain storm water, installing control measures that totally eliminate the exposure of pollutants, or receiving a COC (with or without controls) from NMED.

Enhanced Control Corrective Action Monitoring—Confirmation monitoring at an SMA is initiated to determine how well enhanced controls are performing. This monitoring occurs after certification that the enhanced control measures have been installed and are complete.

Corrective Action Complete—Completion of corrective action is demonstrated by one of the following:

- Analytical results from enhanced control monitoring show pollutant concentrations for all pollutants of concern at the Site to be at or below applicable TALs; or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site; or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site; or
- The Site has achieved RCRA “no further action” status or a COC with or without controls from NMED.

3.5.1 Selecting a Compliance Path Following Corrective Action Initiation

If confirmation monitoring sample results demonstrate that one or more TALs are exceeded at a Site, Part I.E requires the Permittees to initiate corrective action. Corrective action consists of one of the following: (i) enhanced control measures to meet the TAL; (ii) total retention of storm water discharges from the Site; (iii) total elimination of exposure of pollutants to storm water at the Site; or (iv) receipt of an NMED-issued COC under the Consent Order.

Part I.E.4 of the Permit categorizes the Sites into "High Priority Sites" and "Moderate Priority Sites" and establishes deadlines for corrective action based on this prioritization.

- If a baseline confirmation monitoring sample was not collected by September 30, 2012, the Permittees are required to certify completion of corrective action at "High Priority Sites" within one (1) year following the first successful confirmation sampling event.
- Permittees are required to certify completion of corrective action at "Moderate Priority Sites" within five (5) years of the effective date of the Permit (which is November 2015).

The Permittees have been granted administrative continuance because the EPA did not renew the IP before its expiration date. The continuance means Sites listed on the IP are required to continue to comply with the current IP, even after its expiration, until a final IP is issued.

A screening procedure has been developed to provide the IP team with a process for evaluating existing information pertaining to the Site(s) and the associated SMA(s) and for recommending appropriate corrective action measure(s). This screening requires evaluating available storm water, soil, tuff, and sediment data (site-specific and regional); physical knowledge of the Site(s), operating history of the Site(s), and the status of the Site(s) under the Consent Order; and any proposed Laboratory infrastructure or other facility improvements. Based on this evaluation, a determination is made as to whether the Site is a likely or unlikely source of the TAL exceedance to determine if additional storm water controls would be effective in reducing Site-related constituents that contribute to the TAL exceedance.

If the Site is determined to be an unlikely source of the TAL exceedance and the Permittees are unable to certify completion of corrective action under Parts I.E.2(a) through (d), individually or collectively, the screening process may result in a recommendation that an alternative compliance request be submitted to the EPA. The alternative compliance request presents the evidence for why the Site or Sites are not a source of the TAL exceedance. If the Site or Sites are determined to be a likely or potential source of the TAL exceedance, the Site or Sites are recommended to undergo alternatives analysis. The alternatives analysis process evaluates the possible corrective action controls, including installation of enhanced controls, total retention, no exposure, and Site remediation. From this alternatives evaluation process, the most appropriate control(s) is selected, designed, and implemented.

In Attachment 6 of each SDPPP Update volume, the Permittees provide information regarding the planned compliance path for each SMA/Site in corrective action where corrective action has not yet been completed. In addition, information is provided to explain any delays that have occurred in completing corrective action planned.

4.0 Public Involvement

4.1 Website Updates

The website structure is designed to make IP documents easier to locate. The major links from the home page are as follows:

- **Public Meetings**—provides a link to the agenda and presentations for all meetings held to date.
- **Site Discharge Pollution Prevention Plan**—provides links to the most current SDPPP Updates, archived SDPPPs and updates (years 2010 through 2014), and monitoring and inspection procedures currently used by the PPT.
- **SMA Maps**—provides a direct link to each project map; maps are organized by SDPPP volume and updated when any change is made.
- **Reports**—provides links to the Annual Reports, Compliance Status Reports, and the Target Action Level Exceedance Reports.
- **Construction Certifications**—provides links to the certification letters submitted to EPA following construction of enhanced controls and baseline controls and analytical results following construction certification.
- **Certification of Corrective Action Complete**—provides links to letters submitted to EPA that certify analytical results below TALs, total retention construction, construction to eliminate exposure, and COCs received from NMED under the Consent Order.
- **Alternative Compliance**—provides links to the EPA submittal letter and alternative compliance package, provides links to underlying technical studies, and provides a placeholder for public comments and the Permittees' response to be submitted to EPA.
- **Miscellaneous EPA Submittals**—provides links to letters submitted to EPA regarding force majeure, boundary changes, a request to extend the permit renewal application deadline, and requests to delete Sites from the permit.

4.2 Email Notification

A "Subscribe" link is available on the IP website, in the right column, and allows anyone with an email address to sign up to receive email updates about compliance with the Individual Permit. The public can also ask questions of the IP team from the "Get Expertise" link in the right column.

4.3 Public Meetings

Public meetings are announced through the email notification process and in local newspapers. The next meeting has not yet been scheduled.

5.0 Watershed Protection Approach

Storm water controls have been installed within each watershed where SMAs exist. These controls have been installed under a variety of programs, including, but not limited to, the NMED Consent Order, Multi-Sector General Permit, Construction General Permit, NPDES outfall permit, EISA storm water guidance, post-fire runoff protection measures, flood mitigation, and general "good-housekeeping" practices. As a whole, these storm water controls prevent erosion and reduce sediment discharge in the

watershed. Each year, additional storm water mitigation measures are being evaluated and installed throughout the Laboratory.

Under the Consent Order, some of the Permittees' largest sediment transport mitigations have been installed in several watersheds, including in Sandia, Mortandad, Los Alamos, and Pueblo Canyons. The goal is to reduce the transport of contaminated sediment through a variety of means, including reducing the potentially erosive nature of storm water runoff, enhancing deposition of sediment, and reducing or eliminating access of contaminated sediments to flood erosion. The specific mitigations include the DP Canyon grade-control structure and associated wetlands; the Pueblo Canyon grade-control structure, willow planting, wetlands, and erosion-control measures; the Los Alamos Canyon low-head weir and associated sediment-retention basins; the Mortandad Canyon sediment-retention basins (which are also IP baseline controls); and the Sandia Canyon grade-control structure and associated wetlands. These installations are inspected quarterly and after higher-flow precipitation. Some items are noted for continued monitoring. Maintenance is conducted to ensure these installations are working correctly. Maintenance includes debris removal and minor/major repairs to structure to maintain function. Sediment, storm water, and geomorphic monitoring is conducted in these watersheds to evaluate the effectiveness of the mitigations.

Pueblo Canyon

Appendix A
Acronyms and Glossary

All acronyms and abbreviations in the Overview and Volumes 1 through 5 of this report are included in this list and are not defined at first use in the Overview and in each volume.

Acronyms

ACA	accelerated corrective action
AEA	Atomic Energy Act
AOC	area of concern
ATAL	average target action level
B	additional baseline control measure
BFM	bonded-fiber matrix
bgs	below ground surface
BMP	best management practice
BV	background value
CB	certified baseline control measure
CCN	change control notice
CFR	Code of Federal Regulations
CISEC	Certified Inspector of Sediment and Erosion Control
CME	corrective measures evaluation
CMP	corrugated metal pipe
CMR	Chemistry and Metallurgy Research
COC	certificate of completion
Consent Order	Compliance Order on Consent
COPC	chemical of potential concern
County	Los Alamos County
CPESC	Certified Professional in Erosion and Sediment Control
cpm	counts per minute
CWA	Clean Water Act
CWWTP	Central Wastewater Treatment Plant
D&D	decontamination and decommissioning
DL	detectable level
DOE	U.S. Department of Energy
DU	depleted uranium
EC	enhanced control
ECB	erosion-control blanket
EIM	Environmental Information Management (LANL database)

Appendix A, Acronyms and Glossary (continued)

Acronyms (continued)

EISA	Energy Independence and Security Act
EM	electromagnetic
EM	Environmental Management
EM-LA	DOE EM Los Alamos Field Office
EPA	Environmental Protection Agency (U.S.)
EQL	estimated quantitation limit
ER Project	Environmental Restoration Project
ESH	Environment, Safety, and Health (Directorate)
FFCA	Federal Facility Compliance Agreement
FGM	flexible-growth medium
FV	fallout value
FY	fiscal year
GPR	ground-penetrating radar
GSA	General Services Administration
HE	high explosives
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HRL	Health Research Laboratory
HYPO	high power
IA	interim action
ID	identification
IM	interim measure
IP	National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LASCP	Los Alamos Site Characterization Program
LASL	Los Alamos Scientific Laboratory
LLW	low-level waste
LOPO	low power
M&O	management and operating
MD	munitions debris
MDA	material disposal area
MDL	method detection limit
MEC	munitions and explosives of concern

Appendix A, Acronyms and Glossary (continued)

Acronyms (continued)

MLLW	mixed LLW
MQL	minimum quantification level
MSGP	Multi-Sector General Permit
MTAL	maximum target action level
NES	nuclear environmental site
NFA	no further action
NMED	New Mexico Environment Department
NMED-SWQB	NMED Surface Water Quality Bureau
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
NSSB	National Security Science Building
OD	open detonation
OEW	ordnance and explosives waste
OU	operable unit
OWR	Omega West Reactor
PBX	plastic-bonded explosive (potassium butyl xanthate)
PCB	polychlorinated biphenyl
Permittees	DOE and LANS
PF	permitted feature
PHERMEX	Pulsed High-Energy Radiographic Machine Emitting X-Rays
PLS	pure live seed
PPT	Pollution Prevention Team
PQL	practical quantitation limit
PRS	Potential Release Sites (LANL database)
RADS	radionuclides
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RLW	radioactive liquid waste
RLWTF	Radioactive Liquid Waste Treatment Facility
SAA	satellite accumulation area
SAFR	small arms firing range
SAL	screening action level
SDPPP	Site Discharge Pollution Prevention Plan
SIP	sampling implementation plan

Appendix A, Acronyms and Glossary (continued)

Acronyms (continued)

SIR	supplemental investigation report
SMA	site monitoring area
SSA	satellite storage area
SSL	soil screening level
SUPO	super power
SVC/SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	Sanitary Wastewater Systems Consolidation (plant)
SWTS	Storm Water Tracking System
TA	technical area
TAL	target action level
TCLP	toxicity characteristic leaching procedure
TNT	trinitrotoluene(2,4,6-)
TRM	turf-reinforcement mat
TRU	transuranic
TSCA	Toxic Substance Control Act
TSD	treatment, storage, and disposal (unit)
TSTA	Tritium Systems Test Assembly
ULR	unassigned land release
USFS	U.S. Forest Service
UTL	upper tolerance limit
UXO	unexploded ordnance
VCA	voluntary corrective action
VCM	voluntary corrective measure
VCP	vitrified clay pipe
VOC	volatile organic compound
WBR	Water Boiler Reactor
WQDB	Water Quality Database
WWTP	waste water treatment plant

Appendix A, Acronyms and Glossary (continued)

Glossary

Alternative Compliance—Where the Permittees believe they have installed measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action because of force majeure events, background concentrations of pollutants of concern, site conditions that make it impracticable to install further control measures, or pollutants of concern contributed by sources beyond the Permittees' control, a Site may be placed into alternative compliance. EPA will determine an individually tailored compliance schedule on a case-by-case basis.

Baseline Confirmation Complete—All confirmation monitoring results for all pollutants of concern at the SMA are at or below TALs, and corrective action is not required at the Sites. No further sampling is required.

Baseline Monitoring Extended—Baseline confirmation monitoring is in progress, and no storm water from a measurable storm event has been collected. There has been no TAL exceedance.

Corrective Action Initiated—A sample was collected during confirmation monitoring and analytical results show at least one pollutant concentration is above TAL, resulting in initiation of corrective action. Corrective action may include installing enhanced control measures, installing control measures that totally retain storm water, installing control measures that totally eliminate the exposure of pollutants, or receiving a COC (with or without controls) from NMED.

Enhanced Control Corrective Action Monitoring—Confirmation monitoring at an SMA is initiated to determine how well enhanced controls are performing. This monitoring occurs after certification that the enhanced control measures have been installed and are complete.

Corrective Action Complete—Completion of corrective action is demonstrated by one of the following:

- Analytical results from enhanced control monitoring show pollutant concentrations for all pollutants of concern at the Site to be at or below applicable TALs; or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site; or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site; or
- The Site has achieved RCRA "no further action" status or a COC with or without controls from NMED.

Appendix B
Control Measure Fact Sheets

The fact sheets below discuss the types of control measures that have been installed under the IP to prevent run-on to the Site or runoff of storm water from the Site. The control measures listed are installed primarily to prevent erosion and/or to control/capture sediment. The table below lists the primary purpose of each control measure type. Diagrams in this appendix are provided for informational purposes only.

Control Type	Control Sub Type	Control Name	Life Cycle (months)	Control Purpose Erosion Control (EC)/Sediment Control (SC)
01	**00**	**Seed and Mulch**		
	01	Seed and Wood Mulch	24	EC
	02	Seed and Gravel Mulch	120	EC
	03	Hydromulch	12	EC
	04	Seeding	24	EC
	05	Gravel mulch	120	EC
	06	Erosion Control Blanket	24	EC
	07	Seed and Compost	24	EC
02	**00**	**Permanent Vegetation**		
	~~01~~	~~Grasses and Shrubs~~	~~120~~	~~EC~~*
	~~02~~	~~Forested/Needle Cast~~	~~120~~	~~EC~~*
	03	Vegetation Buffer Strip	120	EC
	04	Established Vegetation	120	EC
03	**00**	**Berms**		
	01	Earthen Berm	120	SC
	02	Base Course Berm	120	SC
	03	Log Berm	120	SC
	04	Asphalt Berm	120	SC
	05	Silt Dike	24	SC
	06	Straw Wattle	24	SC
	07	Terra Tube	120	SC
	08	Retaining Wall	120	SC
	09	Curbing	120	SC
	10	Gravel Bags	120	SC
	11	Eco-Block	120	SC
	12	Rock Berm	120	SC
	13	Silt Fence	120	SC
	14	Coir log	120	SC
	15	Redi-Rock Berm	120	SC
	16	Wood Chip Wattle	36	SC

Appendix B, Control Measure Fact Sheets (continued)

Control Type	Control Sub Type	Control Name	Life Cycle (months)	Control Purpose Erosion Control (EC)/Sediment Control (SC)
04	**00**	**Channel/Swale**		
	01	Earthen Channel/Swale	120	EC
	02	Concrete/Asphalt Channel/Swale	120	EC
	03	Rock Channel/Swale	120	EC
	04	Culvert	120	EC
	05	Water Bar	120	EC
	06	Riprap	120	EC
	07	Vegetated Swale	120	EC
	08	TRM-Lined Swale	120	EC
05	**00**	**Sediment Traps and Basins**		
	01	Sediment Trap	120	SC
	02	Sediment Basin	120	SC
	03	Sand Filter	120	SC
	04	Gravel Infiltration Strip	120	SC
	05	Bioretention Basin	120	SC
	06	Infiltration Basin	120	SC
06	**00**	**Check Dam**		
	01	Rock Check Dam	36	SC
	02	Log Check Dam	36	SC
	03	Juniper Bale	120	SC
	04	Energy Dissipater	240	SC
07	**00**	**Gabions**		
	01	Gabion	120	SC
	02	Gabion Blanket	120	EC
08	**00**	**Cap**		
	01	Earth Cap	120	EC
	02	Rock Cap	120	EC
	03	Asphalt Cap	120	EC
	04	Metal Cap	120	EC

* These two types of controls were retired in 2013, and active instances of the control types at SMAs were recoded. These two still appear in the master list because the retired asset codes are still in use and may appear in information published prior to 2013.

Appendix B, Control Measure Fact Sheets (continued)

Seed and Mulch

General Description

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% of total suspended solids from storm water runoff, with an average removal of 90%.

Control Function

Seed and mulch controls are used primarily for erosion control. However, these control measures can also be used for run-on, runoff, and sediment control if the storm water discharge is only sheet flow.

Construction Specifications/Installation Instructions

Materials

Protect materials from deterioration during delivery and while stored at the Site.

Wood Mulch

- Wood straw mulch, wood chips, green-waste mulch, and bark chips are all accepted forms of wood mulch. Wood mulch application should completely cover the ground surface to provide adequate protection from raindrop impact and promote seed germination and seedling survival.

Gravel Mulch

- Gravel should be ¾ in. to 2 in. in diameter, round or crushed. Base course or any gravel with excessive fine material. Gravel mulch should be applied 3–6-in. thick over the soil surface.

Hydromulch

- Slopes flatter than 2:1—Provide mulch material consisting of 100% virgin wood fibers, combined with an organic plantago based tackifier. Bagged mulch/tackifier mix that is homogenous within the unit package may also be used.
- Slopes steeper than 2:1—Provide BFM and FGM mulches.

Seed

Wet seed shall be rejected. Seed can be spread mechanically or by hand. Because of the potential to introduce trace elements into storm water, it is not recommend using fertilizers with storm water controls.

The following sources have a “LANL Storm Water Mix” of seed available that has been formulated to LANL specifications:

- Ranier Seed
- Granite Seed
- Curtis & Curtis, Inc.

Appendix B, Control Measure Fact Sheets (continued)

Blankets and Matting

- Slopes less than 1:1—Straw/coir blend blankets.
- For high flow channels or slopes steeper than 1:1, use permanent composite TRM.
- Staples: U-shaped, 11-gauge or heavier steel wire, minimum leg length of 6 in. after bending, with a throat approximately 2 in. wide. Metal geotextile stake pins: a minimum of 6–8 in. long, a minimum 3/16 in. in diameter steel with a 1.5-in. steel washer at the head of the pin.

Installation

Seed

- Avoid seeding during windy weather or when topsoil is saturated or frozen.
- If necessary or feasible, loosen soil by disking, raking, or harrowing. Remove large clods and stones or other foreign material that would interfere with seeding equipment and erosion control blankets.
- Seed shall be applied uniformly using calibrated spreaders, cyclone seeders, mechanical drills, broadcast spreading, or hydroseeders When drill seeding, plant seed mix at a rate of 30–35 PLS lb/acre. When broadcast seeding, plant seed mix at a rate of 32–37 PLS lb/acre. To provide adequate seed-soil contact, incorporate broadcast seed into the soil by raking or chain dragging.
- Mulch shall be applied following the completion of seeding per requirements below.
- Where temporary watering is required for seeded areas, provide temporary water system that may be a sprinkler system or a water truck with a spray boom. Do not drive trucks with spray systems on seeded areas, and ensure the water force does not cause movement of mulch or seed on the ground.
- Reseed void areas greater than 6 ft^2 or repetitive voids greater than 2 ft^2 amounting to more than 10% of any area that appears the growing season following installation.
- Prohibit people and vehicles from traveling over the seeded areas.

Hydromulch

- If hydraulically applying mulch as part of the broadcast seeding process, use a two-step process:
  - ❖ Apply seed with a tracer. Once seed is applied, apply full complement of mulch. This shall allow seed to be in good contact with soil surface and not suspended in mulch matrix.
  - ❖ Mix slurry in a tank with an agitation system and spray, under pressure, uniformly over soil surface. Apply mulch evenly across landscape at a minimum rate of 3000 lb/acre. When using plantago-based tackifier as mulch, apply tackifier at a rate of 150 lb/acre.

    Use both horizontal and vertical movements in the applicator to achieve an even application of slurry material. Keep all materials in uniform suspension throughout mixing and suspension cycle when using hydraulic mulching equipment. Avoid overspray onto vegetated or other areas such as channels.

Appendix B, Control Measure Fact Sheets (continued)

BFM and FGM, Slopes 2:1 and Steeper

- Mix and apply seed and soil amendments with a small amount of mulch for visual metering.
- Hydraulically apply at a rate of approximately 3500 lb/acre over seeded area in accordance with manufacturer's specified procedures to form a continuous uniform coverage. Apply from opposing directions to soil surface, reducing the "shadow effect" and ensuring a minimum of 95% of soil surface coverage. Avoid overspray onto vegetated or other areas such as channels.

ECB and Mats

- At the top of the slope, anchor the mat in a trench that is a minimum of 6 in. deep by 6 in. wide. Backfill the trench and compact the soil into the anchor trench.
- Ensure the blanket is unrolled in the direction of the water flow.
- Maintain direct soil contact during placement. Lay blankets loosely and maintain direct contact with soil. Do not place over protruding objects; rocks, grass, etc.
- Overlap the edges of adjacent parallel rolls a minimum of 4 in. and anchor mats approximately every 3 ft.
- If blanket splicing is required, provide a minimum 6 in. overlap between mats and place anchors, approximately 12 in. apart in the overlapped area.
- Anchor the matting to the ground using U-shaped wire staples or metal geotextile stake pins, driven flush with the ground surface.
- Do not use blankets on tuff slopes. Use hydraulic mulching on tuff slopes. Perennial species can provide permanent control. Annual species longevity is about two seasons.

Correct Purpose

Erosion Control Blankets	Slopes Steeper than 1:1	Slopes Flatter than 1:1	Slopes Flatter than 1:2	Slopes Flatter than 1:3	Channels
Permanent blankets	X	X	X	X	X
BFM, FGM hydromulch		X	X	X	
Wood fiber hydromulch			X	X	
Straw/Coir blankets		X	X	X	

Inspection and Maintenance

Installation Inspection

- Inspect control area for uniform application of seed and mulch.
- Ensure blankets are properly trenched, overlapped, and stapled in. Rocks are not equal to staples to anchor blankets to the soil. Check that rocks, sticks, or bushes are not interfering with the blankets' contact with the ground.

Appendix B, Control Measure Fact Sheets (continued)

- Check that seed is under mulch, not on top or missing.
- Inspect seeded area for evidence of erosion (rills, gullies).Check for erosion and undermining. Backfill and compact any rills, storm water diversion and conveyance controls may be installed to divert concentrated flows away from seeded areas.
- Allow ECBs to biodegrade in place; straw blankets last 2–3 yr at LANL.
- Repair torn or windblown blankets.
- Inspect reseeded areas for uniform growth of vegetation. Check for areas of vehicle or other impacts. Reseed void areas greater than 6 ft^2.
- Inspect existing vegetated areas for uniform growth of vegetation. Trees count towards total vegetative cover. Check for erosion. Storm water diversion and conveyance controls may need to be installed or use blankets to increase the erosion resistance of vegetated areas.

Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet compliance with the Individual Permit.

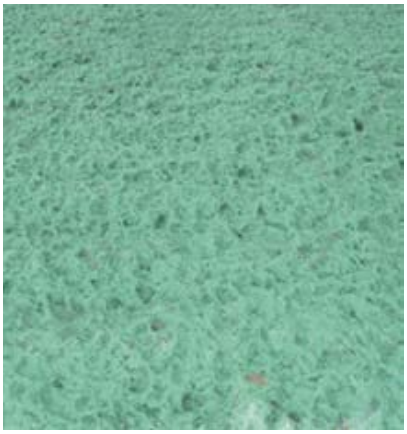
- Seed and mulch/hydromulch/ECB have not been properly installed and will obviously not function as required.
- Seed has not germinated after an appropriate amount of time and will obviously not function as required.
- Control has been damaged or degraded and will obviously not function as required.

Appendix B, Control Measure Fact Sheets (continued)

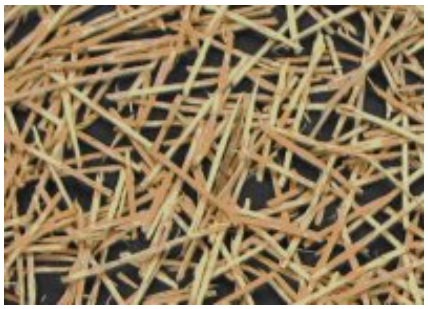
Visual Key for Proper Hydromulch Application (Flexterra-FGM shown below)

Improper Application

Improper Application

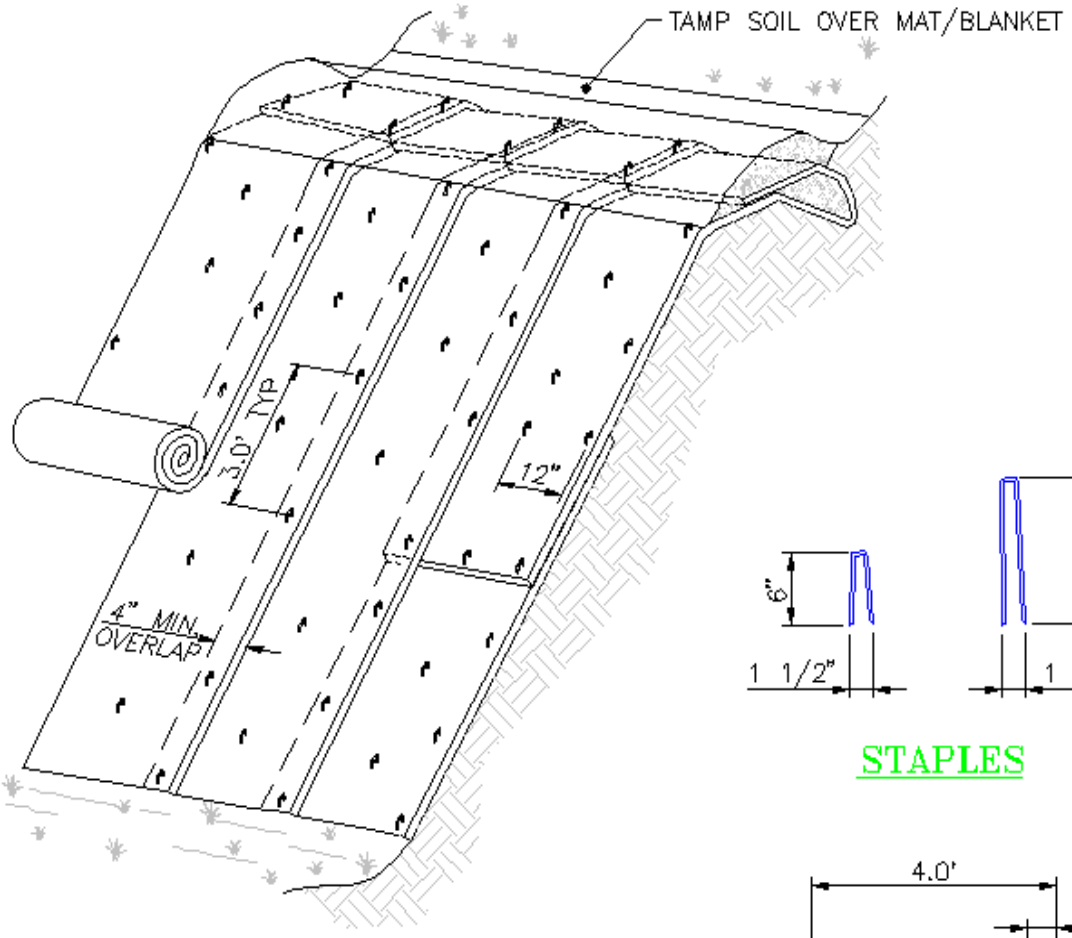


Proper Application
3000 lb/acre, 4.1-mm thick



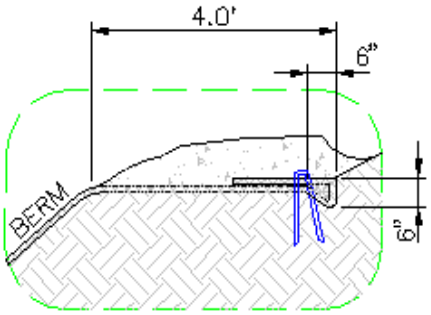
Improper Application
Wood Straw at 70% Cover
Must Be at 100% Cover

MATTING
SLOPE INSTALLATION



STAPLES

TYPICAL SLOPE SOIL STABLIZATION



NOTES:

1. SLOPES SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS. SEEDBED SHALL BE APPROXIMATELY 3–5 INCHES DEEP.
3. UNROLL MATTING IN THE DIRECTION OF WATER FLOW.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

Appendix B, Control Measure Fact Sheets (continued)

Permanent Vegetation

General Description

Established vegetation describes areas of existing mature vegetation that provides erosion control and storm water infiltration. There are two broad categories of established vegetation at LANL: (1) low-growing vegetation is classified as grasses and shrubs and (2) piñon-juniper, ponderosa, pine, and mixed conifer vegetation is classified as forested.

Control Function

Established vegetation is primarily used for erosion control, including sediment control, run-on control, and runoff control in situations with no concentrated flow.

Control Specifications

Any area of existing perennial vegetation that increases storm water infiltration and protects the soil from wind erosion, raindrop impact, or storm water overland flow.

Inspection and Maintenance

- Inspect for significant disturbances to vegetation (e.g., construction, fire, thinning, road building, and new storm water channels).
- Repair significant disturbances and reestablish vegetation with other appropriate control measures.

Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

- Existing vegetation has been damaged or degraded to the point that it no longer functions as a significant storm water control.

Appendix B, Control Measure Fact Sheets (continued)

Berms

General Description

This category of storm water control includes earthen berms, base course berms, log berms, asphalt berms, silt dike, straw wattles, retaining walls, curbing, gravel bags, Eco-Block, Redi-Rock, rock berms, S-fence, and coir log.

Control Function

Berms are used primarily for run-on diversion of sheet flow and channelized flow and are also used for retention of run-on, runoff, and sediment control in low-flow applications. Diversion berms will be constructed primarily from earth, base course, or asphalt (berms and curbing). Retention berms will be constructed primarily from earth, base course, logs, or asphalt. Straw wattles, S-fence, rock berms, and gravel bags can be used along the toe, top, and face and at-grade breaks of slopes to shorten slope length and along the perimeter of exposed soil areas to reduce flow velocities and retain sediment. Filter fabric can be used where additional reductions in turbidity are required. Retaining walls are used primarily for slope stabilization and sediment control.

Construction Specifications/Installation Instructions

Materials

- Earthen and base course berms, log berms, and wattles can be used for low-flow applications. Asphalt berms must be used for concentrated flows.
- Straw wattles must be at least 8 in. in diameter. To be effective, fiber rolls at the toe of slopes must be at least 20 in. in diameter. An equivalent installation, such as stacked smaller-diameter wattles, can be used to achieve a similar level of protection.

Berm Installation

- Earthen berms require vegetative controls upon completion of construction to prevent erosion of the berm itself. Riprap should be used if additional armoring is necessary.
- Asphalt berms and curbs should be installed per design drawings. In general, the base of a berm is twice as wide as the height of the berm.
- For areas with significant traffic, gravel or asphalt berms should be constructed.
- Berm fill material should be placed in 6- to 12-in. lifts and each lift compacted with a compactor or the appropriate earth-moving equipment.
- Berms should be stabilized with seed and ECBs, seed and hydromulch, or other appropriate stabilization. See vegetation and riprap fact sheets for information on those types of berm stabilization.
- When used as a perimeter or downslope control, berms shall divert runoff to a sediment trapping control such as a sediment trap or basin.

Appendix B, Control Measure Fact Sheets (continued)

Wattle and Coir Log Installation

- Straw wattles should be installed along the contour with the ends of each wattle turned upslope to prevent runoff from flowing around the end. Overlap ends for extended length.
- Wattles should be installed in shallow trenches dug 3 to 5 in. deep for soft, loamy soils and 2 to 3 in. deep for hard, rocky soils.
- The vertical spacing for slope installations should be determined on the basis of the slope gradient and soil type. A good rule of thumb is as follows:
    - ❖ 1:1 slopes = 10 ft apart
    - ❖ 2:1 slopes = 20 ft apart
    - ❖ 3:1 slopes = 30 ft apart
    - ❖ 4:1 slopes = 40 ft apart
- Wood stakes or rebar should be driven through the middle of the wattle and deep enough into the ground to anchor the roll in place. About 3 in. of the stake should stick out above the roll, and the stakes should be spaced 3 to 4 ft apart. If rebar is used, ensure the end is capped. Alternately, wood stakes may be placed on each side of the wattle tying across with a natural fiber twine or staking in a crossing manner ensuring direct soil contact at all times.
- The upslope length of the wattle should be backfilled with the excavated soil and compact.

Installation of Other Berm Types

- Log berms installation is similar to wattles. Logs must be delimbed, trenched in, and backfilled. If necessary, secure with wooden stakes on either side of the log.
- Rock berms must be constructed of large angular rock. Height and depth of the berm depend on the expected storm water flow. The ends of the berms should be brought forward to help contain the flow.
- Gravel-bag berms must be constructed of bags of woven polypropylene, polyethylene, or polyamide fabric and filled with 0.5–1-in.-diameter gravel. Gravel bags must be packed closely with no gaps. Ends of berm should be brought forward to help contain the flow.
- Eco-Blok rubber sediment control block installation is similar to gravel bag berms. Eco-Blok can be staked down to soils or glued to asphalt or concrete. Specific installation details can be found online at www.eco-blok.com.
- Ertec S-fence is installed perpendicular to sheet flow. The fencing is trenched in 3-in. and backfilled. The fencing is attached to wooden stakes placed at all overlaps or no more than 80-in. apart. Fencing is fixed to wooden stakes with drywall screws. Detailed installation instructions and drawings can be found online at www.ertecsystems.com.
- Curbing will be adopted as a storm water control where it exists and where it serves a useful function. The LANL storm water program will not install curbing.
- Retaining walls and redi-rock berms will be constructed to appropriate engineering standards.

Appendix B, Control Measure Fact Sheets (continued)

Inspection and Maintenance

Berms

- Ensure berms are tall enough to handle expected flows.
- Ensure earth and base-course berms are compacted adequately.
- Inspect for effectiveness in performing designed function.
- Inspect for damage such as scour, vegetation loss, bank stability, debris build-up, erosion, and rock displacement.
- Inspect the outlet point for erosion or other damage.
- Repair any decrease in berm height from settling or erosion immediately.

Wattles

- Ensure the rolls remain firmly anchored in place and are not crushed or damaged by equipment traffic.
- Check that they are trenched in and no gaps exist under the wattles.
- Check that wattles are adequately aligned with the next wattle. Either overlapped uphill of the next or doglegged.
- Repair or replace split, torn, unraveled, or slumping wattles.
- Repair rills or gullies upslope of the wattle and any undercutting.
- Additional wattles can be placed on top of existing ones to increase sediment capacity.

Retaining Walls

- Inspect walls for cracks, slumping, or slope changes that negatively impact design function.
- Repair damage that compromises design function.

Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to comply with the Individual Permit.

Berms

- Berm is significantly eroded, damaged, or breached such that its function is compromised.
- Berm has visible evidence of significant scouring to the base or outlet.

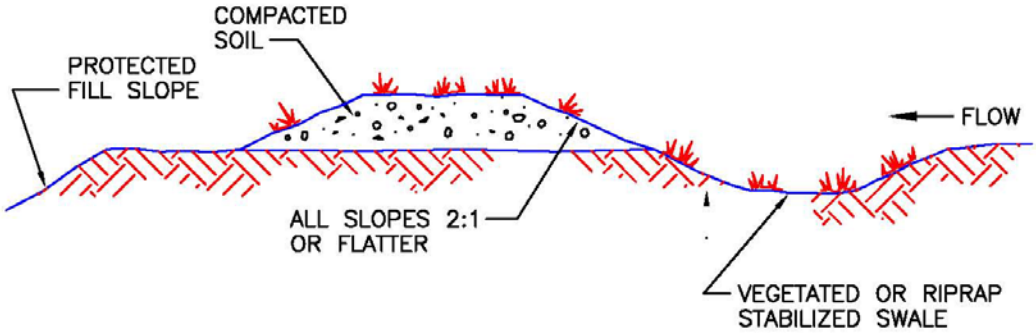
Wattles

- The wattle is not firmly anchored to the ground.
- There are gaps under the wattle.
- The wattle has been damaged such that its function is compromised.

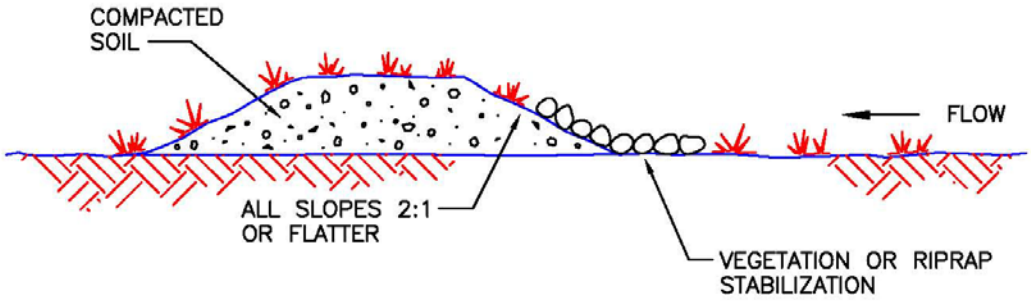
Retaining Walls

- The wall or portion of wall has collapsed or is damaged and is releasing material.

EARTH BERM



TYPICAL FILL DIVERSION

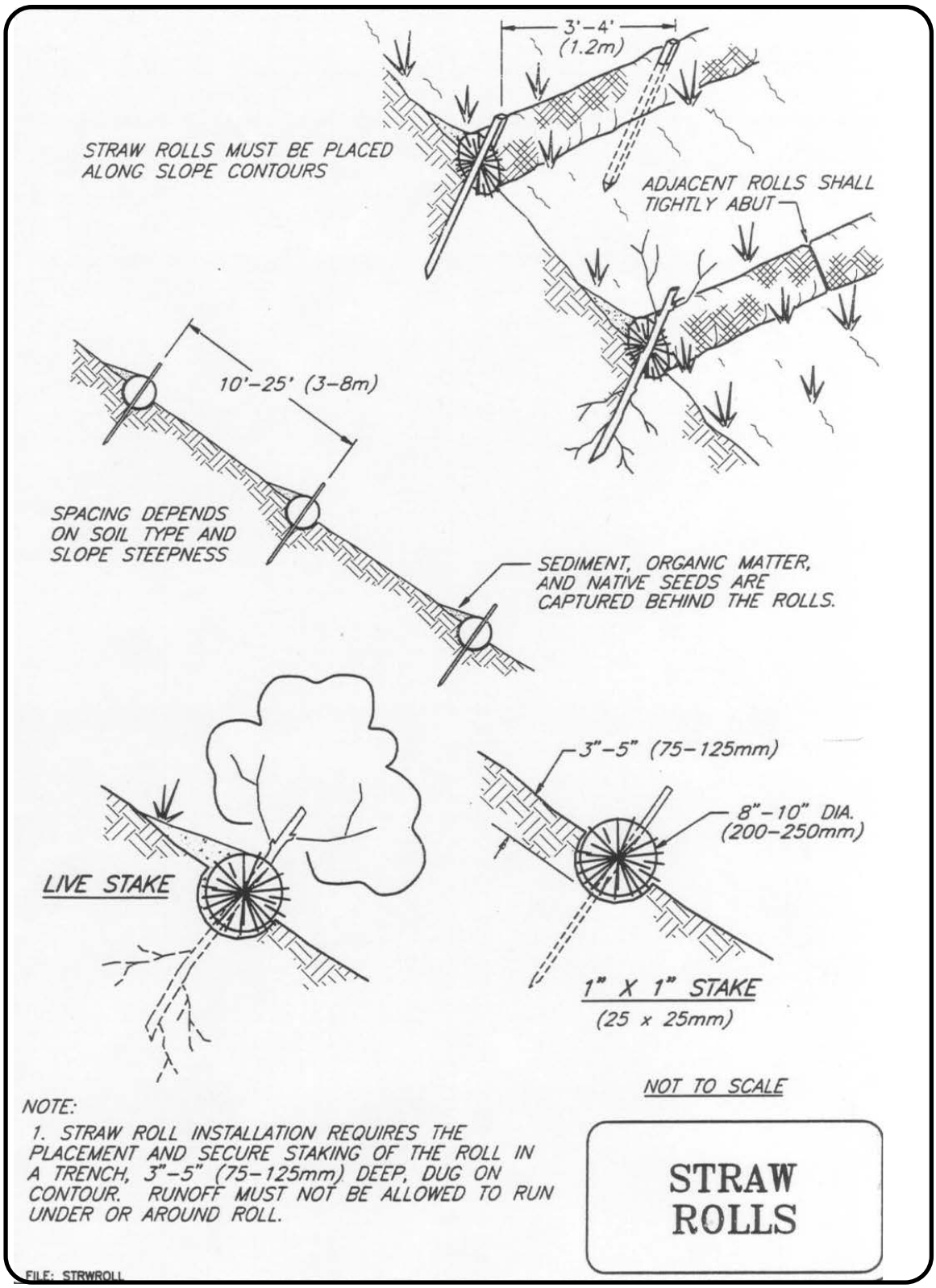


TYPICAL TEMPORARY DIVERSION DIKE

NOTES:

1. THE CHANNEL BEHIND THE BERM SHALL HAVE A POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE BERM SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT SEEDING, MATTING, OR OTHER APPLICABLE MEASURES.

Appendix B, Control Measure Fact Sheets (continued)



Appendix B, Control Measure Fact Sheets (continued)

Channels and Swales

General Description

This category of storm water control includes earthen swales, concrete or asphalt swales, rock-lined (riprap) swales, vegetated swales, culverts, riprap outlet protection and water bars.

Control Function

Channels and swales are natural or constructed diversions that collect and convey concentrated flows of storm water runoff around an area. Lined channels or swales and culverts can also be used as erosion control if they transport storm water across a SWMU or AOC without contacting it. Water bars are used to divert water off a roadway without blocking access. Riprap outlet protection is used to stabilize soil and sediment below a storm water source.

Construction Specifications/Installation Instructions

Materials

- TRM, asphalt, concrete, and riprap must be used for lined channels or swales. Earthen channels can be used for low-flow run-on applications. Lined channels or swales should be used for high-flow applications or any application transporting storm water across a SWMU or AOC.

Installation

- Install channels and swales per the design drawings. Outlets shall be stabilized with riprap protection if appropriate.
- See vegetation and riprap field sheets for information on the types of channel and berm stabilization.
- Install culverts sized to the anticipated flow volumes. Outlets shall be stabilized with riprap protection, if appropriate.
- Install water bars per the design drawings. Water bars should be sized and spaced according to anticipated storm water volume. Water bar outlets may require riprap protection.
- In riprap, use angular stones to promote interlocking. If appropriate to the expected flow, use filter fabric underneath riprap applications.
- In high-flow situations, install riprap at a minimum of 12 in. deep and place in a trench excavated to 24 in. below the toe of the slope of the embankment or side of channel.

Inspection and Maintenance

- Ensure that channels and swales, culverts, and water bars are sized to handle expected flows.
- Inspect control for effectiveness in controlling storm water runoff.
- Inspect control for damage such as scour, vegetation loss, bank stability, debris buildup, erosion, and rock displacement.
- Inspect the outlet point for erosion or other damage.

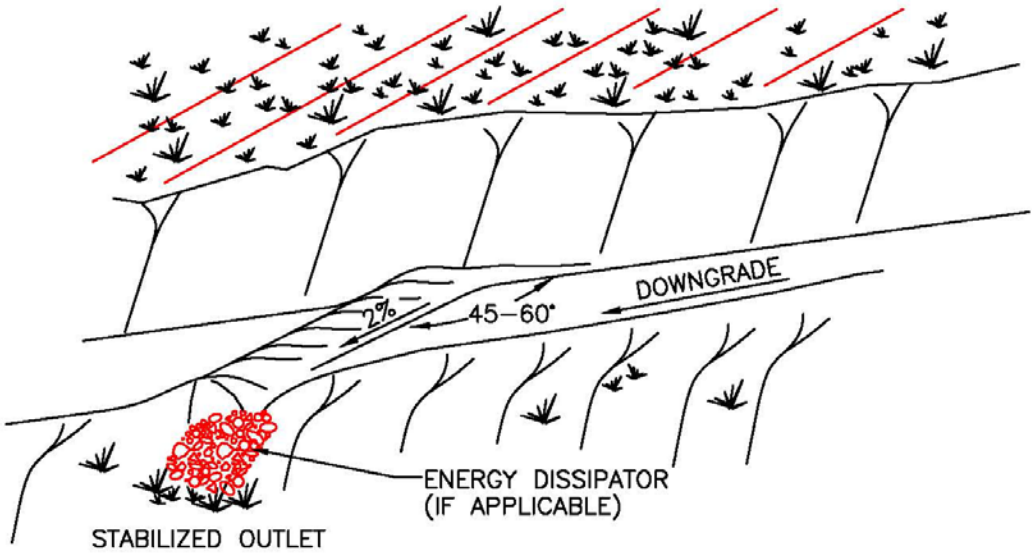
Appendix B, Control Measure Fact Sheets (continued)

Failure Criteria

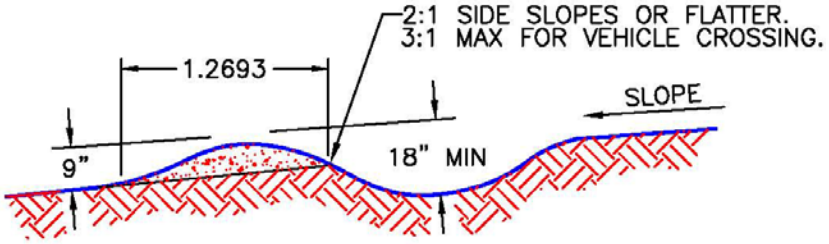
If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

- Storm water has breached the control.
- The control has been damaged or degraded to the point where it is likely to be breached.
- The channel or swale lining been damaged or degraded resulting in scouring of underlying soils.
- There is significant scour at outlet of control.

WATERBAR



WATERBAR



SECTION

NOTES:

1. FOR AREAS OF SIGNIFICANT VEHICULAR TRAFFIC, WATERBARS SHALL BE STABILIZED WITH GRAVEL.
2. DIVERSION BERMS SHOULD HAVE A MINIMUM POSITIVE GRADE OF 2%.
3. WATERBARS SHALL BE CONSTRUCTED AT AN ANGLE OF 46 TO 60 DEGREES FROM THE CENTERLINE.
4. WATERBARS SHALL OUTLET ONTO AREAS STABILIZED BY EITHER NATURAL OR CONSTRUCTED MEANS.

Appendix B, Control Measure Fact Sheets (continued)

Sediment Traps and Detention Basins

General Description

Sediment traps are used to detain sediment and runoff and release the runoff at a reduced rate through a controlled outlet structure. Sediment traps perform the same function as basins but are typically smaller in size and do not have pipe outlets.

Control Function

Sediment traps and detention basins are used primarily for sediment control. Under appropriate conditions, they may also be used for runoff control in the IP program.

Construction Specifications/Installation Instructions

Materials

- Fill material for embankments should be free of roots, woody vegetation, and large stones.
- See vegetation and riprap sections for descriptions of appropriate materials.
- For basins, use the specified materials.

Installation

- Detention basins should be designed by an engineer.
- Sediment trap cut and fill slopes should have a maximum slope of 3:1.
- Sediment trap outflow must discharge through a stabilized low point. Spillways should be designed to provide the trap with a 1.5 ft settling zone and a 1-ft sediment storage zone.
- The trap outlet area should be lined with filter fabric before of stone or gravel is emplaced. Stones used to construct the spillway should be between 6 in. and 12 in. in diameter and angular.
- Embankment fill material should be placed in 6 in. lifts and each lift compacted with a compactor or the appropriate earth moving equipment.
- Stabilize the embankment with seed and erosion control blankets, seed and hydromulch, or other appropriate stabilization.

Inspection and Maintenance

- Ensure that the outlet and spillway are lower than pond edges and are adequately stabilized.
- Inspect for effectiveness in controlling storm water runoff.
- Inspect inlet, outlet, and pond/trap slopes for damage such as vegetation loss, bank stability, debris build-up, erosion, and rock displacement.
- Inspect the inlet and outlet point for erosion or other damage. Inspect pipe outlets closely for debris.
- For sediment traps, remove deposited sediment from the trap floor and accumulated debris (trash, leaves, branches, etc.) at the outlet structure, as appropriate.

Appendix B, Control Measure Fact Sheets (continued)

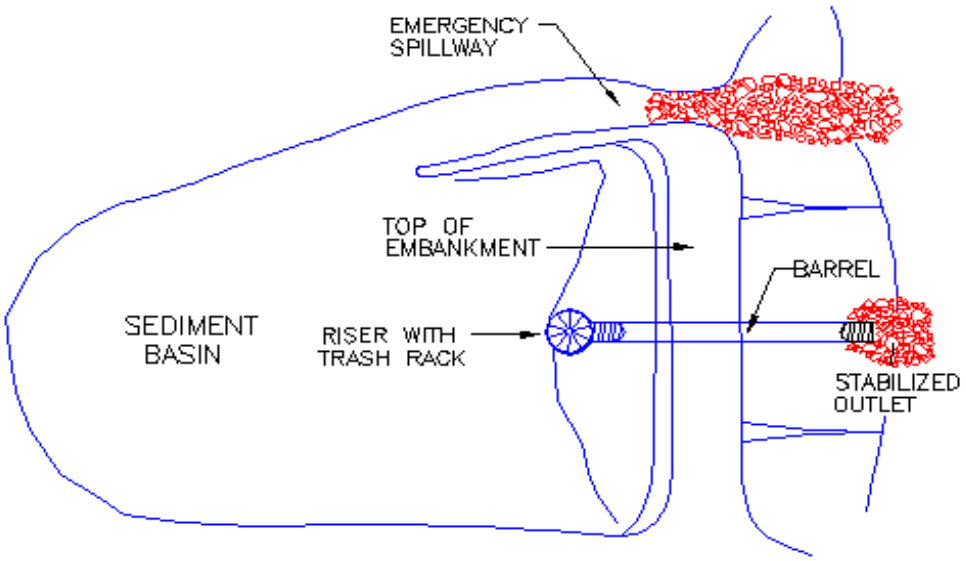
Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

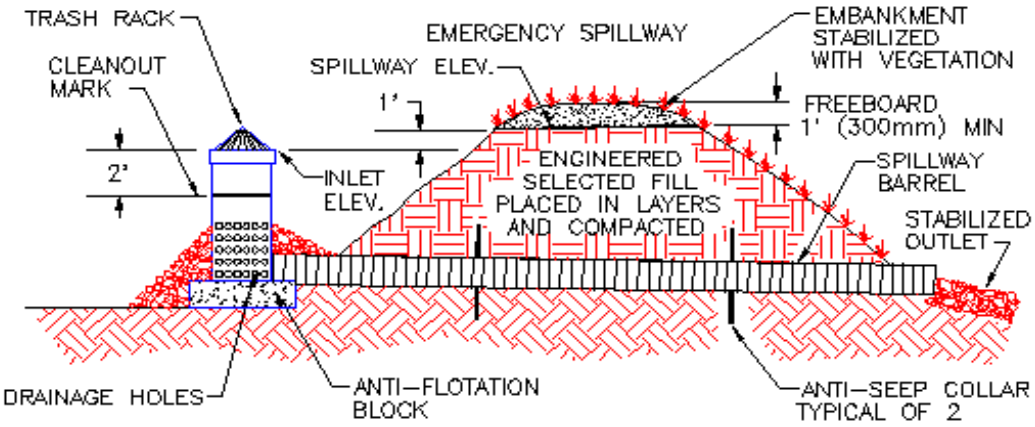
- The basin outlet is plugged.
- The spillway or overflow is clogged or damaged.
- The control structure has been damaged or degraded and its function is compromised.

Appendix B, Control Measure Fact Sheets (continued)

TYPICAL SEDIMENT BASIN



PLAN

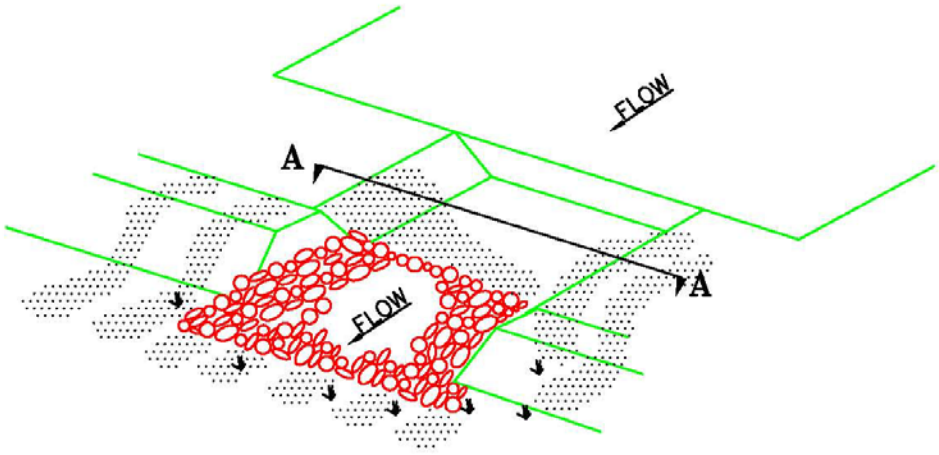


SECTION

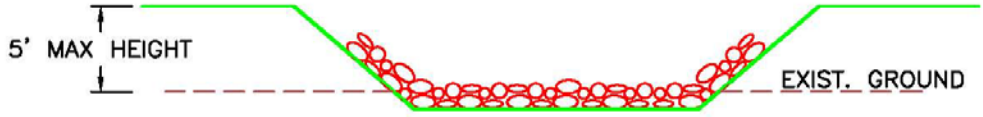
NOTES:

1. BASINS SHALL BE USED FOR AREAS GREATER THAN 5 ACRES IN SIZE.
2. ENSURE THAT FILL MATERIAL FOR EMBANKMENTS IS FREE OF ROOTS, WOODY VEGETATION, AND LARGE STONES.
3. LINE THE BASIN OUTLET AREA WITH FILTER FABRIC PRIOR TO PLACEMENT OF STONE OR GRAVEL.
4. ENSURE THAT THE EMERGENCY SPILLWAY IS NOT CONSTRUCTED FROM FILL MATERIAL.
5. STABILIZE EMBANKMENTS AND EMERGENCY SPILLWAY WITH SEED, MULCH, MATTING, OR OTHER APPLICABLE MEASURES.

SEDIMENT TRAP



PERSPECTIVE VIEW



SECTION A – A

NOTE:

1. CUT AND FILL SLOPES IN TRAPS SHALL BE 3:1 OR FLATTER.
2. ENSURE THAT FILL MATERIAL FOR EMBANKMENTS IS FREE OF ROOTS, WOODY VEGETATION, AND LARGE STONES.
3. STABILIZE EMBANKMENTS WITH SEED, MULCH, MATTING, OR OTHER APPLICABLE MEASURE.
4. LINE THE TRAP OUTLET AREA WITH FILTER FABRIC PRIOR TO PLACEMENT OF STONE OR GRAVEL.
5. SEDIMENT TRAPS SHALL NOT BE USED FOR DRAINAGE AREAS EXCEEDING 5 ACRES IN SIZE.

Appendix B, Control Measure Fact Sheets (continued)

Check Dams

General Description

This category of storm water control includes rock and log check dams and juniper bales. Note: Straw check dams and silt fence will not be used.

Control Function

Check dams are used primarily for sediment control but may also be used in small channels for run-on and runoff control.

Construction Specifications/Installation Instructions

Materials

- When using rock, the material diameter should be 6- to 15-in. angular rock.
- Logs should have a diameter of 6 in. to 8 in.

Installation

- Check dams should be placed at a distance and height to allow water ponding from downstream check dam to reach the toe of the upstream dam.
- Ensure high flows (typically a 2-yr storm or larger) flow safely over the check dam without an increase in upstream flooding or damage to the check dam.
- Ensure check dams are no more than 3 ft high and the center of the dam should be at least 6 in. lower than its edges.
- Stabilize dams by entrenching the material approximately 6 in. into the sides and bottom of the channel.
- Place rock individually by hand or by mechanical methods (no dumping of rock).
- Embed juniper bales in a trench that has been excavated to a minimum depth of 4 in. Backfill material shall be firmly compacted. Bales should tightly abut one another. The bales should be anchored in place with wooden stakes through each bale.
- If necessary, construct scour protection on the downstream side of the dam to reduce downstream erosion (rock apron, TRM, etc.)

Inspection and Maintenance

- Verify that the check dam is located in a defined channel to reduce flow velocity or retain sediment.
- Ensure the center of a check dam is lower than its edges and the top of the channel.
- If high flows are expected, ensure scour protection has been installed on the downstream of the check dam.
- Check for damage and erosion caused by flows around or under the dam structure.

Appendix B, Control Measure Fact Sheets (continued)

- Ensure the center of a check dam is lower than its edges. Additional stone may have to be added to maintain the correct height. Repair erosion around a check dam and lower the center if required.
- During inspection, remove large debris, trash, and leaves.

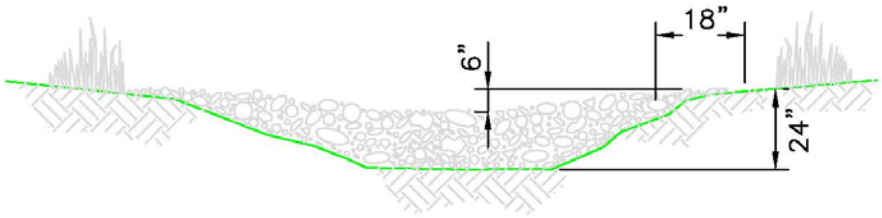
Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

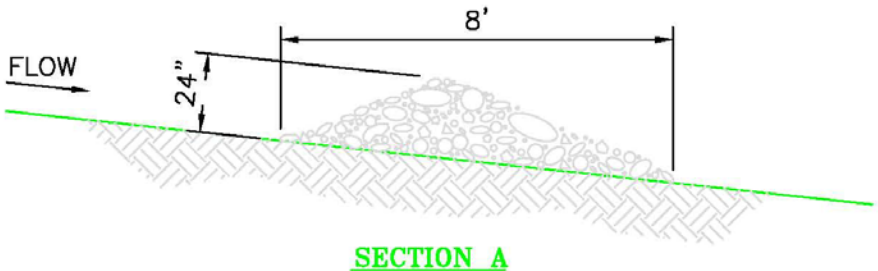
- Storm water has scoured channel around or under the check dam control.
- Storm water has scoured channel below the check dam control.
- Debris is blocking check dam control enough to compromise its function.
- Check dam control has been damaged or degraded enough to compromise its function.

Appendix B, Control Measure Fact Sheets (continued)

ROCK CHECK DAM

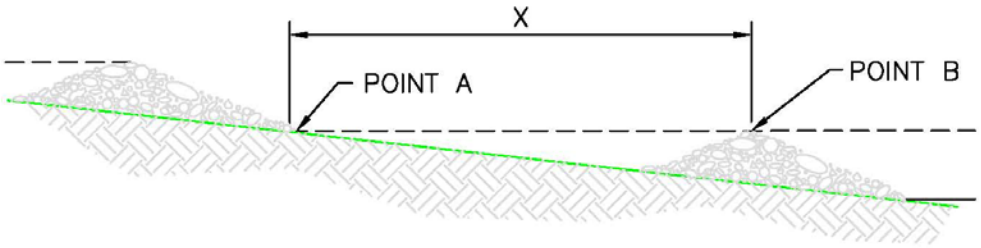


VIEW LOOKING UPSTREAM



SECTION A

X = THE DISTANCE SUCH THAT POINT A AND B ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS

NOTES:

1. ROCK CHECK DAMS SHALL BE CONSTRUCTED WITH 6–15 INCH MAXIMUM SIZE ANGULAR AGGREGATE ROCK.
2. WHERE APPLICABLE, KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW AROUND DAM.
3. PROVIDE AN ENERGY DISSIPATOR ON THE DOWNSTREAM SIDE OF THE DAM TO REDUCE DOWNSTREAM EROSION.

Appendix B, Control Measure Fact Sheets (continued)

Gabions

General Description

This category of storm water control includes gabions and gabion blankets.

Control Function

Gabions are used for sediment control when installed perpendicular to the storm water flow as with a check dam. Gabions and gabion blankets are used for erosion control when they line a channel or swale.

Construction Specifications/Installation Instructions

Materials:

- Stones are usually rounded river rock and are well graded to promote interlocking.
- Gabions should be filled with minimum of 3- to 5-in. stone.
- Gabion mattresses should be filled with 4- to 8-in. stone.
- Baskets shall be constructed of wire mesh specified for this purpose, and baskets are attached to each other with proper fasteners.
- Filter fabric must be used beneath the rocks.
- Use steel railroad rails, standard weight galvanized steel pipe, or steel angles minimum 4 in. × 4 in. × 3/8 in. for stakes to anchor to the ground

Installation

- Gabion installation should be done in accordance with the design requirements and manufacturer's standards and specifications. Additional general information on gabion installation follows:
    - ❖ For channel stabilization, place in a trench excavated to 24 in. below the toe of the slope of the embankment or side of channel. Brush, trees, stumps, and other objects that would interfere with placement should be removed. Excavate loose material as necessary to establish a stable foundation for each structure.
    - ❖ Use filter fabric under the gabions, connect joints with a minimum overlap of 1 ft, and space anchor pins approximately every 3 ft along the overlap. The ends of the fabric shall be buried to a minimum depth of 12 in.
    - ❖ Secure gabions and gabion mattresses are secured to the channel bed.
    - ❖ When gabions are assembled, first join corners together. Assemble untied edges by tying with lacing wire or approved fasteners. Join gabion baskets to each other along adjacent edges, both horizontally and vertically.

Appendix B, Control Measure Fact Sheets (continued)

Inspection and Maintenance

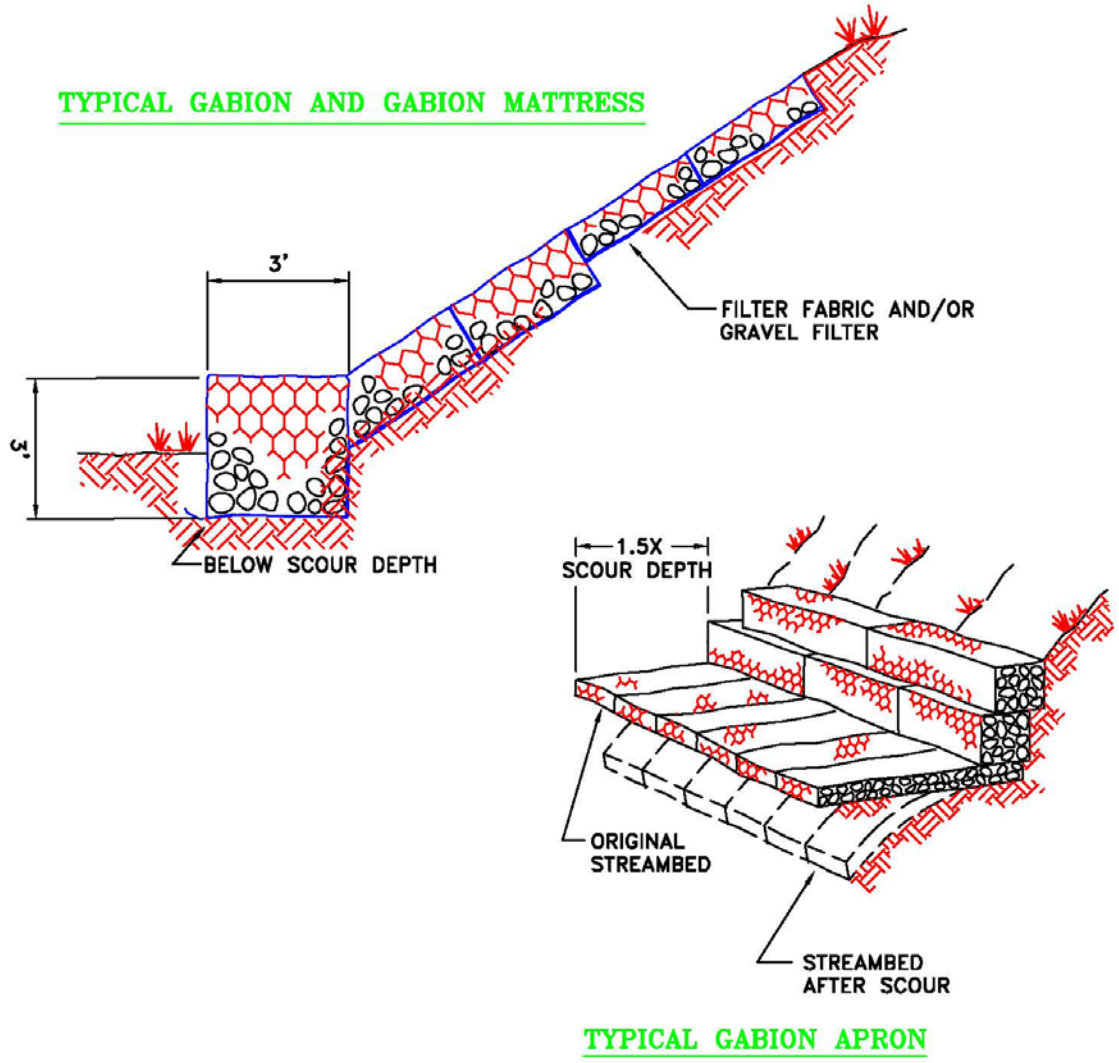
- Check that filter fabric was used under the gabion.
- Check that the gabion is anchored to the ground.
- Check that gabions are fastened to each other.
- Check that the baskets are adequately filled with no voids or bulges.
- Check that adjacent slopes have been filled adequately to prevent erosion and scour around the edges of the structure.
- Inspect for erosion and scour around and beneath the gabions.
- Check for excessive slumping, gabions are flexible and minor settling can be accommodated.
- Check for corroding wire mesh.
- Check for excessive growth of bushes, trees, and other vegetation that may damage gabions.

Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

- Storm water has scoured around or beneath the gabion structure.
- Gabion structure has been damaged or degraded enough to compromise its function.

GABIONS



NOTES:

1. WHEN ASSEMBLING GABIONS, FASTEN CORNERS TOGETHER FIRST.
2. SECURE GABIONS TO STREAMBANK OR STREAMBED TO MINIMIZE SCOUR BENEATH OR AROUND THE STRUCTURES.
3. EXCAVATE LOOSE MATERIAL TO ESTABLISH A STABLE FOUNDATION.
4. MINIMIZE VOIDS AND BULGES IN THE GABIONS.

Appendix B, Control Measure Fact Sheets (continued)

Permanent Caps

General Description

This category of storm water control includes earth, rock, and asphalt caps.

Control Function

Caps are used primarily to control erosion and to isolate areas of potential soil contamination from storm water.

Construction Specifications/Installation Instructions

Materials:

- Materials used for capping must be obtained from an uncontaminated source.

Installation:

- Ensure earthen caps are at least 24 in. thick and should be vegetated or covered with rock or gravel to protect the cap from erosion.
- Ensure asphalt caps are a minimum of 4-in. thick.

Inspection and Maintenance

- There are areas of potential damage on the cap—scour, cracks, trees, or large bushes.
- Run-on and runoff controls should be in good condition—caps should be constructed with diversions and runoff erosion controls. Look for cracks and missing sections that could allow water to cross the site or get under the cap.
- Areas of erosion/headcutting are within 50 ft of the capped area and could migrate towards the cap.
- There are new human-caused impacts to the area.
- There are animal impacts to the area, such as burrows, ant hills.

Failure Criteria

If control conditions meet the failure criteria, maintenance or replacement must be initiated to meet IP compliance.

- The cap is damaged or degraded exposing the soil beneath.
- Erosion is scouring under the cap.

Appendix C
Understanding the Analytical Results Plots

For each SMA where storm water samples were collected and analyzed in 2011 to 2015, the analytical results plots have been prepared. The purpose of the analytical plots is to present the analytical results in a manner that allows direct comparison with the TALs as defined in the Individual Permit (ATAL, MTAL, or MQL). Data are presented in one or more plots. The first plot contains the results for all metals, weak acid dissociable cyanide, and gross-alpha radioactivity and radium, and the second presents the results for organic compounds, if analyzed. The organic plot is presented only if one or more groups of organic compounds were analyzed in the storm water sample collected at the Site and associated SMA per the requirements set forth in Appendix B of the Permit.

Analytical results for each analyte presented in the plots are normalized by calculating an exceedance ratio. This ratio is defined as the analytical result divided by applicable TAL (ATAL, MTAL, or MQL). Thus, results exceeding the TAL will be greater than an exceedance ratio of 1.0. The exceedance ratios are plotted on a log scale to allow the display of a larger range of values. A solid symbol on the plot represents a result that is detected above the MDL, while a hollow symbol represents a value that is considered a nondetect, meaning the analytical laboratory was not able to detect a concentration greater than the MDL. From CFR 40 Appendix B Part 136, the MDL is defined as "...the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte."

For the storm water data, a nondetected result is either reported as the MDL value or the PQL value. The PQL, also referred to as the MQL, is an estimation of the concentration measurement and is normally 2.5 to 10 times the MDL. In 2011 to 2014, nondetected analytes were reported at the value of the PQL. However, during 2015, nondetected analytes were reported at the value of the MDL. By reporting nondetects at the MDL, the Permittees have "99% confidence" that the actual concentration of the analyte is below the MDL.

The reported value for a nondetected result may be greater than or equal to a TAL (ATAL, MTAL, or MQL). During 2011 to 2014, some nondetected values were reported above the TALs but had MDLs less than the TALs. In 2015, all nondetected results for these analytes were reported at the MDL less than the TAL.

Between 2011 and 2014, several nondetected results reported at the PQL for benzo(a)pyrene and hexachlorobenzene were greater than their TALs (MQLs), and the MDLs for these constituents were also greater than their ATALs. In 2015, the Permittees changed the analytical method for benzo(a)pyrene to EPA method 8310. This change will most likely allow for the reporting of nondetects of this constituent below the ATAL. In 2015, the Permittees also changed the analytical method for hexachlorobenzene to EPA method 8081B. This method is the most sensitive commercially available EPA-approved method but consistently has an MDL greater than the TAL. These methods were in use by the Permittees in 2015; however, no samples were collected for benzo(a)pyrene and hexachlorobenzene.

Background storm water values for some metals, gross-alpha radioactivity, and PCBs where available, are also plotted to provide additional points of reference when evaluating the significance of the analytical result. The process for the determination of the background storm water values is presented in a report prepared by the Permittees' on PCBs in storm water (LANL 2012, 219767) and another report on metals and selected radionuclides in storm water (LANL 2013, 239557).

The following schematic provides more specific details related to individual components of the analytical results plots.

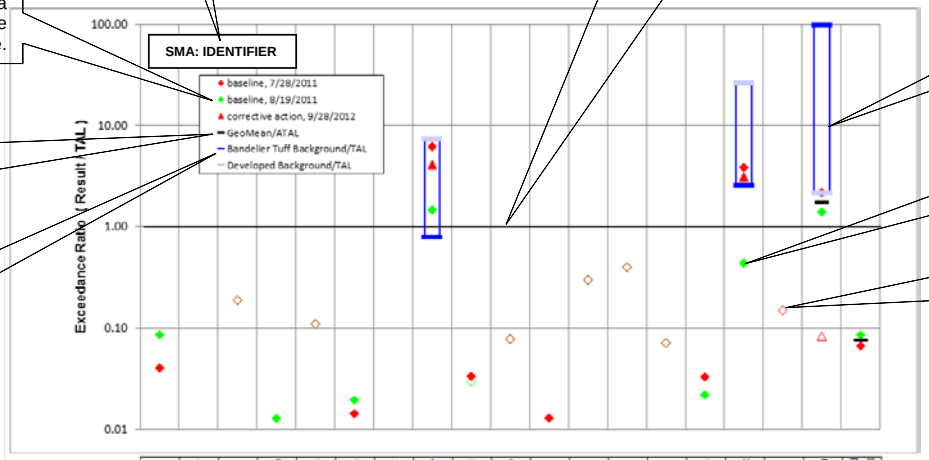
Appendix C, Understanding the Analytical Results Plots (continued)

SMA Title

Analytical results are normalized by dividing by the TAL creating the exceedance ratio. An exceedance ratio of 1.0 is equal to the TAL for each analyte.

Available background values are plotted for each analyte when a resulting value exceeds the TAL. Plotted background values are normalized by dividing by the TAL. When both the Bandelier Tuff and developed background values are available, the range between them is connected by a set of parallel lines.

List of all samples collected at the SMA with sample dates is provided. A diamond-shaped symbol identifies a baseline sample and a triangle-shaped symbol identifies a corrective action sample.



The geometric mean of all results is calculated as described in Part II D. of the Permit and plotted for analytes that are compared to an average target action level (ATAL).

A solid symbol indicates a detected value. The value plotted is the result divided by the TAL.

Background values for storm water are normalized to the TAL and plotted for comparison to storm water sample results.

An empty symbol indicates a result that is below quantitation levels. The value plotted is the quantitation level divided by the TAL.

This row presents an analyte list as defined in the Permit; one chart for inorganics and a second chart for organics.

This row identifies whether an MTAL, ATAL or MQL is used as regulatory level per the Permit.

This row presents the TAL value as listed in the Permit.

This row shows units of measurement reported for the TAL and result.

Results for individual samples are provided on separate rows.

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/28/2012 result	-	-	-	-	-	-	-	**17.7**	-	-	-	-	-	-	-	**131**	-	*1.25*	-
result / TAL	-	-	-	-	-	-	-	**4.1**	-	-	-	-	-	-	-	**3.1**	-	*0.083*	-
8/19/2011 result	64.5	*1*	*1.7*	64.1	*0.11*	4.1	1.8	6.3	*0.5*	*0.06*	1.6	*1.5*	*0.2*	*0.45*	2.2	18.4	-	**21**	2.56
result / TAL	0.086	*0.002*	*0.19*	0.013	*0.11*	0.02	0.0018	**1.5**	*0.029*	*0.078*	0.0094	*0.3*	*0.4*	*0.071*	0.022	0.44	-	**1.4**	0.085
7/28/2011 result	30.3	*1*	*1.7*	16	*0.11*	3	1.2	**26.6**	0.57	*0.06*	2.2	*1.5*	*0.2*	*0.45*	3.3	**162**	*0.002*	**32.6**	2
result / TAL	0.04	*0.002*	*0.19*	0.0032	*0.11*	0.014	0.0012	**6.2**	0.034	*0.078*	0.013	*0.3*	*0.4*	*0.071*	0.033	**3.9**	*0.15*	**2.2**	0.067

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

For each sample the top row presents the analytical result in the reporting units, and the bottom row presents the result normalized to the TAL (i.e., the result or quantitation level divided by the TAL).

No symbol is shown if the exceedance ratio is less than the minimum plot value.

Values in italics represent quantitation levels for undetected results.

Bold values represent results that exceed the applicable TAL.

Appendix D
References

The following list includes all documents cited in this plan. Parenthetical information following each reference provides the author(s), publication date, and ER ID or ESH ID. This information is also included in text citations. ER IDs were assigned by the Environmental Programs Directorate's Records Processing Facility (IDs through 599999), and ESH IDs are assigned by the Environment, Safety, and Health (ESH) Directorate (IDs 600000 and above). IDs are used to locate documents in the Laboratory's Electronic Document Management System.

Overview

LANL (Los Alamos National Laboratory), March 28, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, March 28, 2011, Volume 5, Ancho/Chaquehui Watershed," Environmental Programs document no. EP-DIR-PLAN-10007, R.0, Los Alamos National Laboratory document LA-UR-11-1555, Los Alamos, New Mexico. (LANL 2011, 206304)

LANL (Los Alamos National Laboratory), April 5, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, April 5, 2011, Volume 3, Pajarito Watershed," Environmental Programs document no. EP-DIR-PLAN-10005, R.0, Los Alamos National Laboratory document LA-UR-11-1553, Los Alamos, New Mexico. (LANL 2011, 206303)

LANL (Los Alamos National Laboratory), April 7, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, April 7, 2011, Volume 4, Water Canyon and Cañon de Valle Watershed," Environmental Programs document no. EP-DIR-PLAN-10006, R.0, Los Alamos National Laboratory document LA-UR-11-1554, Los Alamos, New Mexico. (LANL 2011, 204887)

LANL (Los Alamos National Laboratory), April 14, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, April 14, 2011, Volume 2, Sandia/Mortandad Watershed," Environmental Programs document no. EP-DIR-PLAN-10004, R.0, Los Alamos National Laboratory document LA-UR-11-1552, Los Alamos, New Mexico. (LANL 2011, 206302)

LANL (Los Alamos National Laboratory), April 18, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, April 18, 2011, Volume 1, Los Alamos/Pueblo Watershed," Environmental Programs document no. EP-DIR-PLAN-10003, R.0, Los Alamos National Laboratory document LA-UR-11-1551, Los Alamos, New Mexico. (LANL 2011, 206301)

LANL (Los Alamos National Laboratory), May 2012. "Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed," Los Alamos National Laboratory document LA-UR-12-1081, Los Alamos, New Mexico. (LANL 2012, 219767)

LANL (Los Alamos National Laboratory), May 1, 2012. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, LA-UR-12-20497, Revision 1, Los Alamos/Pueblo Watershed, Receiving Waters: Rendija Canyon, Bayo Canyon, Pueblo Canyon, DP Canyon, Los Alamos Canyon, Volume 1," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012, 215105)

Appendix D, References (continued)

Overview (continued)

LANL (Los Alamos National Laboratory), May 1, 2012. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, LA-UR-12-20798, Revision 1, Sandia/Mortandad Watershed, Receiving Waters: Cañada del Buey, Mortandad Canyon, Sandia Canyon, Ten Site Canyon, Volume 2," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012, 215106)

LANL (Los Alamos National Laboratory), May 1, 2012. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, LA-UR-12-20395, Revision 1, Pajarito Watershed, Receiving Waters: Pajarito Canyon, Twomile Canyon, Threemile Canyon, Volume 3," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012, 215107)

LANL (Los Alamos National Laboratory), May 1, 2012. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, LA-UR-12-20224, Revision 1, Water/Cañon de Valle Watershed, Receiving Waters: Cañon de Valle, Potrillo Canyon, Water Canyon, Fence Canyon, Volume 4," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012, 215108)

LANL (Los Alamos National Laboratory), May 1, 2012. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, LA-UR-12-00849, Revision 1, Ancho/Chaquehui Watershed, Receiving Waters: Ancho Canyon and Chaquehui Canyon, Volume 5," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2012, 215109)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

LANL (Los Alamos National Laboratory), April 2013. "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico," Los Alamos National Laboratory document LA-UR-13-22841, Los Alamos, New Mexico. (LANL 2013, 239557)

LANL (Los Alamos National Laboratory), March 2014. "Los Alamos National Laboratory Renewal Application for NPDES Permit Number NM0030759, Individual Permit for Storm Water Discharges from Solid Waste Management Units and Areas of Concern," Los Alamos National Laboratory document LA-UR-14-21861, Los Alamos, New Mexico. (LANL 2014, 254864)

LANL (Los Alamos National Laboratory), February 10, 2015. "NPDES Permit No. NM0030759, Supplemental Information for Permit Renewal Application," Los Alamos National Laboratory letter (ENV-DO-15-0036) to I. Chen (EPA Region 6) from A.R. Grieggs (LANL) and D.S. Rhodes (DOE-NA-LA), Los Alamos, New Mexico. (LANL 2015, 600289)

Appendix D, References (continued)

Volume 1

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1071," Los Alamos National Laboratory document LA-UR-92-810, Los Alamos, New Mexico. (LANL 1992, 007667)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1079," Los Alamos National Laboratory document LA-UR-92-850, Los Alamos, New Mexico. (LANL 1992, 007668)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1078," Los Alamos National Laboratory document LA-UR-92-838, Los Alamos, New Mexico. (LANL 1992, 043454)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1098," Los Alamos National Laboratory document LA-UR-92-3825, Los Alamos, New Mexico. (LANL 1993, 015314)

LANL (Los Alamos National Laboratory), March 1994. "RFI Phase Report, Operable Unit 1071, SWMU Aggregate 0-D, Ordnance Impact Areas," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1994, 059427)

LANL (Los Alamos National Laboratory), November 1995. "Task/Site Work Plan for Operable Unit 1049, Los Alamos Canyon and Pueblo Canyon," Los Alamos National Laboratory document LA-UR-95-2053, Los Alamos, New Mexico. (LANL 1995, 050290)

LANL (Los Alamos National Laboratory), May 5, 1995. "RFI Report for PRS 31-001," Los Alamos National Laboratory document LA-UR-95-1542, Los Alamos, New Mexico. (LANL 1995, 058085)

LANL (Los Alamos National Laboratory), June 12, 1995. "RFI Report for PRSs 1-002, 45-001, 45-002, 45-003, 45-004, C-45-001," Los Alamos National Laboratory document LA-UR-95-1542, Los Alamos, New Mexico. (LANL 1995, 048856)

LANL (Los Alamos National Laboratory), September 5, 1995. "RFI Report for Solid Waste Management Units 10-001(a–d)," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1995, 049974)

LANL (Los Alamos National Laboratory), April 1996. "Interim Action Report for TA-10, Bayo Canyon Shrapnel," Los Alamos National Laboratory document LA-UR-96-1088, Los Alamos, New Mexico. (LANL 1996, 054491)

LANL (Los Alamos National Laboratory), September 1996. "RFI Report for Potential Release Sites 2-004(a through f), 2-008(b), and 2-012," Los Alamos National Laboratory document LA-UR-96-3155, Los Alamos, New Mexico. (LANL 1996, 055226)

LANL (Los Alamos National Laboratory), September 1996. "Phase II and Voluntary Corrective Action Report for Potential Release Sites at TA-32: 32-001, Former Incinerator; 32-002(a,b), Former Septic Systems; 32-003, Former Transformer; 32-004, Former Radioactive Source Vault, Drain Line, and Outfall," Los Alamos National Laboratory document LA-UR-96-3128, Los Alamos, New Mexico. (LANL 1996, 059178)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for PRSs 0-018(a,b), Wastewater Treatment Plants," Los Alamos National Laboratory document LA-UR-97-3319, Los Alamos, New Mexico. (LANL 1997, 056614)

Appendix D, References (continued)

Volume 1 (continued)

LANL (Los Alamos National Laboratory), June 8, 1999. "Identification of New PRSs," Los Alamos National Laboratory letter (EM/ER:99-147) to J. Bearzi (NMED-HRMB) from J.A. Canepa (LANL) and T.J. Taylor (DOE-LAAO), Los Alamos, New Mexico. (LANL 1999, 063395)

LANL (Los Alamos National Laboratory), July 2000. "Decommissioning Completion Report for Buildings 4, 46, 49, 50, 53, 54, 55, 56, 57, 69, and 88 at TA-02, Omega Site, Flood Control Project," draft, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2000, 090087)

LANL (Los Alamos National Laboratory), March 2001. "TA-2 Sampling and Soil Removal, Final Closeout Report," Los Alamos National Laboratory document LA-UR-01-1243, Los Alamos, New Mexico. (LANL 2001, 070352)

LANL (Los Alamos National Laboratory), September 2001. "Phase II RFI Report for Potential Release Site 21-029, DP Tank Farm," Los Alamos National Laboratory document LA-UR-01-5254, Los Alamos, New Mexico. (LANL 2001, 071303)

LANL (Los Alamos National Laboratory), December 13, 2001. "Response to Request for Supplemental Information for the Phase II RFI Report for Potential Release Site 21-029, DP Tank Farm," Los Alamos National Laboratory document LA-UR-01-6737, Los Alamos, New Mexico. (LANL 2001, 073436)

LANL (Los Alamos National Laboratory), April 2004. "Los Alamos and Pueblo Canyons Investigation Report," Los Alamos National Laboratory document LA-UR-04-2714, Los Alamos, New Mexico. (LANL 2004, 087390)

LANL (Los Alamos National Laboratory), May 2005. "Pueblo Canyon Aggregate Area Investigation Work Plan," Los Alamos National Laboratory document LA-UR-05-2366, Los Alamos, New Mexico. (LANL 2005, 090579)

LANL (Los Alamos National Laboratory), July 2005. "Historical Investigation Report for Technical Area 10," Los Alamos National Laboratory document LA-UR-05-3955, Los Alamos, New Mexico. (LANL 2005, 089658)

LANL (Los Alamos National Laboratory), July 2005. "Investigation Work Plan for Bayo Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-05-4761, Los Alamos, New Mexico. (LANL 2005, 089659)

LANL (Los Alamos National Laboratory), September 30, 2005. "Submittal of Revisions to the 'Investigation Work Plan for Delta Prime Site Aggregate Area, at Technical Area 21'," Los Alamos National Laboratory letter (ER2005-0475) to J.P. Bearzi (NMED HWB) from D. McInroy (ERS Deputy Program Director) and D. Gregory (DOE-LASO), Los Alamos, New Mexico. (LANL 2005, 090225)

LANL (Los Alamos National Laboratory), December 2005. "Los Alamos and Pueblo Canyons Supplemental Investigation Report," Los Alamos National Laboratory document LA-UR-05-9230, Los Alamos, New Mexico. (LANL 2005, 091818)

LANL (Los Alamos National Laboratory), April 2006. "Investigation Work Plan for Upper Los Alamos Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-06-2464, Los Alamos, New Mexico. (LANL 2006, 091916)

Appendix D, References (continued)

Volume 1 (continued)

LANL (Los Alamos National Laboratory), April 2006. "Historical Investigation Report for Upper Los Alamos Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-06-2465, Los Alamos, New Mexico. (LANL 2006, 091915)

LANL (Los Alamos National Laboratory), May 2006. "Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-06-3015, Los Alamos, New Mexico. (LANL 2006, 092571.12)

LANL (Los Alamos National Laboratory), August 2007. "Investigation Report for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00," Los Alamos National Laboratory document LA-UR-07-5326, Los Alamos, New Mexico. (LANL 2007, 098670)

LANL (Los Alamos National Laboratory), November 2007. "Investigation Report for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00, Revision 1," Los Alamos National Laboratory document LA-UR-07-7820, Los Alamos, New Mexico. (LANL 2007, 099954)

LANL (Los Alamos National Laboratory), November 2007. "Delta Prime Site Aggregate Area Investigation Report," Los Alamos National Laboratory document LA-UR-07-5459, Los Alamos, New Mexico. (LANL 2007, 099175)

LANL (Los Alamos National Laboratory), March 2008. "Delta Prime Site Aggregate Area Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-08-1834, Los Alamos, New Mexico. (LANL 2008, 102760)

LANL (Los Alamos National Laboratory), March 2008. "Investigation Report for Bayo Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-08-1134, Los Alamos, New Mexico. (LANL 2008, 102793)

LANL (Los Alamos National Laboratory), May 2008. "Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-2725, Los Alamos, New Mexico. (LANL 2008, 101669.12)

LANL (Los Alamos National Laboratory), July 2008. "Investigation Report for Pueblo Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-4765, Los Alamos, New Mexico. (LANL 2008, 103243.34)

LANL (Los Alamos National Laboratory), August 18, 2008. "Response to Direction to Modify Bayo Canyon Aggregate Area Investigation Report, Revision 1," Los Alamos National Laboratory letter (EP2008-0404) to J.P. Bearzi (NMED-HWB) from S.G. Stiger (LANL) and D. Gregory (DOE-LASO), Los Alamos, New Mexico. (LANL 2008, 103202)

LANL (Los Alamos National Laboratory), October 2008. "Pueblo Canyon Aggregate Area Phase II Investigation Work Plan," Los Alamos National Laboratory document LA-UR-08-6722, Los Alamos, New Mexico. (LANL 2008, 104580)

LANL (Los Alamos National Laboratory), November 2008. "Los Alamos Site Monitoring Area 2 Interim Measure and Monitoring Plan," Los Alamos National Laboratory document LA-UR-08-6891, Los Alamos, New Mexico. (LANL 2008, 104020)

Appendix D, References (continued)

Volume 1 (continued)

LANL (Los Alamos National Laboratory), December 2008. "Delta Prime Site Aggregate Area Phase II Work Plan, Revision 1," Los Alamos National Laboratory document LA-UR-08-7794, Los Alamos, New Mexico. (LANL 2008, 104989)

LANL (Los Alamos National Laboratory), February 2009. "Work Plan for Installation of Stormwater Controls at Area of Concern 00-030(f)," Los Alamos National Laboratory document LA-UR-09-0794, Los Alamos, New Mexico. (LANL 2009, 105088)

LANL (Los Alamos National Laboratory), February 2009. "Phase II Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-09-1206, Los Alamos, New Mexico. (LANL 2009, 105073)

LANL (Los Alamos National Laboratory), December 2009. "2009 Biennial Ordnance Survey Report, Solid Waste Management Units 00-011(a, c, d, and e) and Area of Concern C-00-020, Guaje/Barrancas/Rendija Canyons Aggregate," Los Alamos National Laboratory document LA-UR-09-8186, Los Alamos, New Mexico. (LANL 2009, 108171)

LANL (Los Alamos National Laboratory), December 2009. "Accelerated Corrective Action Work Plan for Upper Los Alamos Canyon Aggregate Area, Former Technical Area 32," Los Alamos National Laboratory document LA-UR-09-8056, Los Alamos, New Mexico. (LANL 2009, 108332)

LANL (Los Alamos National Laboratory), February 2010. "Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-0422, Los Alamos, New Mexico. (LANL 2010, 108528)

LANL (Los Alamos National Laboratory), May 2010. "Interim Measure Report for Solid Waste Management Unit 01-001(f) and Los Alamos Site Monitoring Area 2," Los Alamos National Laboratory document LA-UR-10-2641, Los Alamos, New Mexico. (LANL 2010, 109422)

LANL (Los Alamos National Laboratory), July 2010. "Delta Prime East Building Footprints Letter Work Plan, Revision 1," Los Alamos National Laboratory document LA-UR-10-4812, Los Alamos, New Mexico. (LANL 2010, 110082.4)

LANL (Los Alamos National Laboratory), October 2010. "Phase II Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1," Los Alamos National Laboratory document LA-UR-10-6478, Los Alamos, New Mexico. (LANL 2010, 110772.33)

LANL (Los Alamos National Laboratory), October 2010. "Supplemental Interim Measures Report for Solid Waste Management Unit 01-001(f)," Los Alamos National Laboratory document LA-UR-10-6329, Los Alamos, New Mexico. (LANL 2010, 110763)

LANL (Los Alamos National Laboratory), March 2012. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2011, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-12-10341, Los Alamos, New Mexico. (LANL 2012, 211408)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

Appendix D, References (continued)

Volume 1 (continued)

LANL (Los Alamos National Laboratory), March 2014. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2013, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-14-20839, Los Alamos, New Mexico. (LANL 2014, 254067)

LANL (Los Alamos National Laboratory), December 2014. "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21," Los Alamos National Laboratory document LA-UR-14-29428, Los Alamos, New Mexico. (LANL 2014, 600091)

NMED (New Mexico Environment Department), June 3, 1997. "Approval of Los Alamos and Pueblo Canyon RFI Workplan (Operable Unit 1049)," New Mexico Environment Department letter to T. Taylor (DOE-LAAO) and J. Jansen (ER Project) from R.S. Dinwiddie (NMED-HRMB), Santa Fe, New Mexico. (NMED 1997, 056362)

NMED (New Mexico Environment Department), January 12, 2009. "Approval, Delta Prime Site Aggregate Area Phase II Work Plan, Revision 1," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2009, 104978)

NMED (New Mexico Environment Department), October 19, 2010. "Direction to Modify Phase II Investigation Report for Delta Prime Site Aggregate Area, Technical Area 21, Revision 1," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2010, 110959)

NMED (New Mexico Environment Department), January 14, 2011. "Certificate of Completion, Pueblo Canyon Aggregate Area, Area of Concern (AOC) 00-018(b)," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2011, 111673)

NMED (New Mexico Environment Department), May 16, 2012. "Certificates of Completion, One Solid Waste Management Unit and One Area of Concern in the Guaje/Barrancas/Rendija Canyons Aggregate Area," New Mexico Environment Department letter to P. Maggiore (DOE-LASO) and M.J. Graham (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2012, 520388)

Appendix D, References (continued)

Volume 2

Buckland, C., April 20, 1948. "Sandia Canyon–Clearing for Future Public Road, Picnic Area," Los Alamos Scientific Laboratory memorandum to R.J. Westcott from C. Buckland, Los Alamos, New Mexico. (Buckland 1948, 006001)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1129," Los Alamos National Laboratory document LA-UR-92-800, Los Alamos, New Mexico. (LANL 1992, 007666)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1147," Los Alamos National Laboratory document LA-UR-92-969, Los Alamos, New Mexico. (LANL 1992, 007672)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1114," Los Alamos National Laboratory document LA-UR-93-1000, Los Alamos, New Mexico. (LANL 1993, 020947)

LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1140," Los Alamos National Laboratory document LA-UR-93-1940, Los Alamos, New Mexico. (LANL 1993, 020952)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1100," Los Alamos National Laboratory document LA-UR-94-1097, Los Alamos, New Mexico. (LANL 1994, 034756)

LANL (Los Alamos National Laboratory), June 13, 1994. "Addendum to the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for Operable Unit (OU) 1129," Los Alamos National Laboratory letter (EM/ER:94-J242) to T.J. Taylor (DOE ER Program Manager) from J. Jansen (ER Program Manager), Los Alamos, New Mexico. (LANL 1994, 039932)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory document LA-UR-95-731, Los Alamos, New Mexico. (LANL 1995, 057590)

LANL (Los Alamos National Laboratory), August 1995. "RFI Report for Potential Release Sites 42-001(a), 42-001(b), 42-001(c), 42-002(a), 42-002(b), 42-003," Los Alamos National Laboratory document LA-UR-95-2881, Los Alamos, New Mexico. (LANL 1995, 050056)

LANL (Los Alamos National Laboratory), September 1995. "RFI Report for Potential Release Sites 50-006(c), 50-007, 50-008, 50-006(a) (located in former Operable Unit 1147)," Los Alamos National Laboratory document LA-UR-95-2738, Los Alamos, New Mexico. (LANL 1995, 049925)

LANL (Los Alamos National Laboratory), September 1995. "RFI Report for Potential Release Sites 48-001, 48-002(e), 48-003, 48-005, 48-007(a), 48-007(b), 48-007(c), 48-007(d), 48-007(f), 48-010," Los Alamos National Laboratory document LA-UR-95-3328, Los Alamos, New Mexico. (LANL 1995, 050289)

LANL (Los Alamos National Laboratory), January 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites 20-003(c) and 53-010, Revision 1," Los Alamos National Laboratory document LA-UR-96-1089, Los Alamos, New Mexico. (LANL 1996, 053775)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for 53 Potential Release Sites in TA-3, TA-59, TA-60, TA-61," Los Alamos National Laboratory document LA-UR-96-726, Los Alamos, New Mexico. (LANL 1996, 052930)

Appendix D, References (continued)

Volume 2 (continued)

LANL (Los Alamos National Laboratory), March 1996. "RFI Report for Potential Release Sites at TAs-20, -53, and -72 (located in former Operable Unit 1100)," Los Alamos National Laboratory document LA-UR-96-906, Los Alamos, New Mexico. (LANL 1996, 054466)

LANL (Los Alamos National Laboratory), June 1996. "RFI Report for Potential Release Sites 35-003(d, e, f, g, l, m, o, q, and r), 35-016(g and h)," Los Alamos National Laboratory document LA-UR-96-1605, Los Alamos National Laboratory. (LANL 1996, 054422)

LANL (Los Alamos National Laboratory), June 1996. "RFI Report for Potential Release Sites in TA-46, 46-003(h), 46-004(b), 46-004(g), 46-004(h), 46-004(m), 46-004(q), 46-004(s), 46-004(u), 46-004(v), 46-004(x), 46-004(y), 46-004(z), 46-004(a2), 46-004(b2), 46-004(c2), 46-004(d2), 46-004(e2), 46-004(f2), 46-006(a), 46-006(b), 46-006(c), 46-006(d), 46-006(f), 46-006(g), 46-007, 46-008(b), 46-010(d), C-46-002, C-46-003," Los Alamos National Laboratory document LA-UR-96-1957, Los Alamos, New Mexico. (LANL 1996, 054929)

LANL (Los Alamos National Laboratory), January 1997. "Sampling and Analysis Plan for TA-48," Los Alamos National Laboratory document LA-UR-97-4839, Los Alamos, New Mexico. (LANL 1997, 055326)

LANL (Los Alamos National Laboratory), May 22, 1997. "Interim Action Report for TA-50, PRS 50-006(a) Activities," Los Alamos National Laboratory letter (EM/ER:97-178) to T.J. Taylor (DOE ER Program Manager) from J. Jansen (ER Program Manager), Los Alamos, New Mexico. (LANL 1997, 055834)

LANL (Los Alamos National Laboratory), August 1997. "Voluntary Corrective Action Completion Plan for Potential Release Site 53-008, Boneyard," draft, Los Alamos National Laboratory document LA-UR-09-2465, Los Alamos, New Mexico. (LANL 1997, 056384)

LANL (Los Alamos National Laboratory), September 1997. "Addendum to the RFI Report for Potential Release Sites at Technical Area 48 (Located in Former Operable Unit 1129)," Los Alamos National Laboratory document LA-UR-97-3112, Los Alamos, New Mexico. (LANL 1997, 056565)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for AOC C-3-006 and PRS 3-054(e), Manhole and Outfall," Los Alamos National Laboratory document LA-UR-97-3392, Los Alamos, New Mexico. (LANL 1997, 072611)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for TA-3 for Potential Release Sites 3-004(c,d), 3-007, 3-014(k,l,o), 3-021, 3-049(a), 3-052(b), 3-056(k), C-3-014," Los Alamos National Laboratory document LA-UR-97-3571, Los Alamos, New Mexico. (LANL 1997, 056660.4)

LANL (Los Alamos National Laboratory), September 1997. "Voluntary Corrective Action Completion Report for Potential Release Site 53-014, Lead Shot Site," Los Alamos National Laboratory document LA-UR-97-3846, Los Alamos, New Mexico. (LANL 1997, 062913)

LANL (Los Alamos National Laboratory), September 1997. "Voluntary Corrective Action Completion Report for Potential Release Site 53-001(a), Storage Area," draft, Los Alamos National Laboratory document LA-UR-09-2464, Los Alamos, New Mexico. (LANL 1997, 056505)

Appendix D, References (continued)

Volume 2 (continued)

LANL (Los Alamos National Laboratory), June 1998. "RFI Work Plan and SAP for Potential Release Sites 53-002(a), 53-002(b), and Associated Piping and Drainages at TA-53," Los Alamos National Laboratory document LA-UR-98-2547, Los Alamos, New Mexico. (LANL 1998, 058841)

LANL (Los Alamos National Laboratory), September 1999. "Work Plan for Sandia Canyon and Cañada del Buey," Los Alamos National Laboratory document LA-UR-99-3610, Los Alamos, New Mexico. (LANL 1999, 064617)

LANL (Los Alamos National Laboratory), July 23, 2001–March 13, 2002. "Field Notebook for SWMUs 03-001(k), 03-003(c), 03-011, 03-049(e), 03-056(a), 27-003, 39-007(a), 60-002, 60-007(a), and C-09-001," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2001–2002, 100703)

LANL (Los Alamos National Laboratory), November 2004. "Accelerated Corrective Action Work Plan for the Investigation and Remediation of Area of Concern 03-001(i) and Solid Waste Management Units 03-029 and 61-002," Los Alamos National Laboratory document LA-UR-04-7879, Los Alamos, New Mexico. (LANL 2004, 087474)

LANL (Los Alamos National Laboratory), September 2005. "Investigation Report for the Middle Mortandad/Ten Site Aggregate," Los Alamos National Laboratory document LA-UR-05-6135, Los Alamos, New Mexico. (LANL 2005, 091699)

LANL (Los Alamos National Laboratory), September 2005. "Investigation and Remediation Report for Consolidated SWMU 53-002(a)-99, Inactive Wastewater Impoundments, and AOC 53-008, Storage Area, at Technical Area 53, Revision 1," Los Alamos National Laboratory document LA-UR-05-6373, Los Alamos, New Mexico. (LANL 2005, 091498)

LANL (Los Alamos National Laboratory), December 2005. "Remedy Completion Report for the Investigation and Remediation of Area of Concern 03-001(i) and Solid Waste Management Units 03-029 and 61-002," Los Alamos National Laboratory document LA-UR-05-8863, Los Alamos, New Mexico. (LANL 2005, 091150)

LANL (Los Alamos National Laboratory), October 2006. "Mortandad Canyon Investigation Report," Los Alamos National Laboratory document LA-UR-06-6752, Los Alamos, New Mexico. (LANL 2006, 094161)

LANL (Los Alamos National Laboratory), July 2007. "Investigation Report for the Middle Mortandad/ Ten Site Aggregate, Revision 1," Los Alamos National Laboratory document LA-UR-07-4716, Los Alamos, New Mexico. (LANL 2007, 100119)

LANL (Los Alamos National Laboratory), October 2007. "Historical Investigation Report for Middle Cañada del Buey Aggregate Area," Los Alamos National Laboratory document LA-UR-07-7039, Los Alamos, New Mexico. (LANL 2007, 098710)

LANL (Los Alamos National Laboratory), November 2007. "Investigation Work Plan for Upper Mortandad Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-07-7696, Los Alamos, New Mexico. (LANL 2007, 098954)

Appendix D, References (continued)

Volume 2 (continued)

LANL (Los Alamos National Laboratory), November 2007. "Historical Investigation Report for Upper Mortandad Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-07-7802, Los Alamos, New Mexico. (LANL 2007, 098955)

LANL (Los Alamos National Laboratory), February 2008. "Investigation Work Plan for Upper Mortandad Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-1272, Los Alamos, New Mexico. (LANL 2008, 100750)

LANL (Los Alamos National Laboratory), February 2008. "Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2," Los Alamos National Laboratory document LA-UR-08-0336, Los Alamos, New Mexico. (LANL 2008, 102187)

LANL (Los Alamos National Laboratory), March 2008. "Historical Investigation Report for Upper Sandia Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-08-1851, Los Alamos, New Mexico. (LANL 2008, 100693)

LANL (Los Alamos National Laboratory), July 2008. "Investigation Work Plan for Upper Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-4798, Los Alamos, New Mexico. (LANL 2008, 103404.43)

LANL (Los Alamos National Laboratory), September 2008. "Investigation Work Plan for Upper Cañada del Buey Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-6122, Los Alamos, New Mexico. (LANL 2008, 105038.17)

LANL (Los Alamos National Laboratory), April 2009. "Historical Investigation Report for Lower Sandia Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-09-2077, Los Alamos, New Mexico. (LANL 2009, 105078)

LANL (Los Alamos National Laboratory), April 2009. "Investigation Report for Middle Cañada del Buey Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-09-1985, Los Alamos, New Mexico. (LANL 2009, 105754)

LANL (Los Alamos National Laboratory), July 2009. "Investigation Work Plan for Lower Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-09-4329, Los Alamos, New Mexico. (LANL 2009, 106660.14)

LANL (Los Alamos National Laboratory), October 2009. "Investigation Report for Sandia Canyon," Los Alamos National Laboratory document LA-UR-09-6450, Los Alamos, New Mexico. (LANL 2009, 107453)

LANL (Los Alamos National Laboratory), November 2009. "Cañada del Buey Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-09-7317, Los Alamos, New Mexico. (LANL 2009, 107497)

LANL (Los Alamos National Laboratory), April 2010. "Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-2046, Los Alamos, New Mexico. (LANL 2010, 109180.28)

Appendix D, References (continued)

Volume 2 (continued)

LANL (Los Alamos National Laboratory), October 2010. "Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-6410, Los Alamos, New Mexico. (LANL 2010, 110862.24)

LANL (Los Alamos National Laboratory), December 2010. "Phase II Investigation Work Plan for Upper Mortandad Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-7423, Los Alamos, New Mexico. (LANL 2010, 111472)

LANL (Los Alamos National Laboratory), May 2011. "Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-2487, Los Alamos, New Mexico. (LANL 2011, 203410)

LANL (Los Alamos National Laboratory), September 2011. "Phase II Investigation Work Plan for Upper Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-4912, Los Alamos, New Mexico. (LANL 2011, 206234)

LANL (Los Alamos National Laboratory), March 2012. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2011, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-12-10341, Los Alamos, New Mexico. (LANL 2012, 211408)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

LANL (Los Alamos National Laboratory), March 2014. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2013, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-14-20839, Los Alamos, New Mexico. (LANL 2014, 254067)

LANL (Los Alamos National Laboratory), September 2015. "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-15-26598, Los Alamos, New Mexico. (LANL 2015, 600912)

LANL (Los Alamos National Laboratory), December 2015. "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-15-28015, Los Alamos, New Mexico. (LANL 2015, 601063)

NMED (New Mexico Environment Department), September 7, 2010. "Certificates of Completion, Upper Mortandad Canyon Aggregate Area," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2010, 110665)

NMED (New Mexico Environment Department), February 18, 2011. "Certificates of Completion, Upper Sandia Canyon Aggregate Area," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2011, 111821)

NMED (New Mexico Environment Department), May 4, 2011. "Certificates of Completion Request, Middle Mortandad/Ten Site Aggregate Area SWMUs and AOCs," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2011, 203066)

Appendix D, References (continued)

NMED (New Mexico Environment Department), July 13, 2012. "Approval of Request for Certificates of Completion for Six Solid Waste Management Units and One Area of Concern in the Upper Cañada del Buey Aggregate Area," New Mexico Environment Department letter to P. Maggiore (DOE-LASO) and M.J. Graham (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2012, 520940)

NMED (New Mexico Environment Department), May 18, 2015. "Certificates of Completion, Three Solid Waste Management Units, Middle Mortandad/Ten Site Aggregate Area," New Mexico Environment Department letter to C. Gelles (DOE-NA-LA) and M.T. Brandt (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2015, 600446)

NMED (New Mexico Environment Department), October 14, 2015. "Certificates of Completion, Seventeen Solid Waste Management Units and Eight Areas of Concern at Technical Area 35, Middle Mortandad/Ten Site Aggregate Area," New Mexico Environment Department letter to D. Hintze (DOE-EM-LA) and M. Brandt (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2015, 600985)

WGII (Washington Group International, Inc.), October 3, 2000. "Mortandad Canyon Sediment Trap Maintenance, Final Closeout Report," Los Alamos, New Mexico. (WGII 2000, 070735)

Appendix D, References (continued)

Volume 3

IT Corporation (International Technology Corporation), March 1995. "Closure Certification Report for the Technical Area 40 Scrap Detonation Site (Condensed)," report prepared for Los Alamos National Laboratory, Los Alamos, New Mexico. (IT Corporation 1995, 057521)

LANL (Los Alamos National Laboratory), July 1991. "Final Closure Plan, TA-40 Scrap Detonation Site, Revision 1," Los Alamos National Laboratory document LA-UR-91-2399, Los Alamos, New Mexico. (LANL 1991, 007653)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1130," Los Alamos National Laboratory document LA-UR-93-1152, Los Alamos, New Mexico. (LANL 1993, 015313)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1114," Los Alamos National Laboratory document LA-UR-93-1000, Los Alamos, New Mexico. (LANL 1993, 020947)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory document LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 020949)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory document LA-UR-92-3968, Los Alamos, New Mexico. (LANL 1993, 020946)

LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1111," Los Alamos National Laboratory document LA-UR-93-2166, Los Alamos, New Mexico. (LANL 1993, 026068)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1085," Los Alamos National Laboratory document LA-UR-94-1033, Los Alamos, New Mexico. (LANL 1994, 034755)

LANL (Los Alamos National Laboratory), September 1994. "Phase II RFI Work Plan for SWMU 3-010(a), Mercury Cleanup, OU 1114, Environmental Restoration Project," report prepared for Los Alamos National Laboratory by the ERM Program Management Company and Golder Federal Services, Inc., Los Alamos, New Mexico. (LANL 1994, 042624)

LANL (Los Alamos National Laboratory), October 30, 1995. "RFI Report for Field Unit 2 (OU 1086), Potential Release Sites 15-004(b,c), 15-004(a,d), 15-004(f), 15-007(b), 15-008(a,b), 15-012(b), 15-009(e,j), C-15-004," Environmental Restoration Project, Los Alamos National Laboratory document LA-UR-95-3738, Los Alamos, New Mexico. (LANL 1995, 050294)

LANL (Los Alamos National Laboratory), April 28, 1995. "RFI Report for Field Unit 1, SWMU 3-010(a)," Los Alamos National Laboratory document LA-UR-95-1485, Los Alamos, New Mexico. (LANL 1995, 046195)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory document LA-UR-95-731, Los Alamos, New Mexico. (LANL 1995, 057590)

LANL (Los Alamos National Laboratory), September 1995. "Expedited Cleanup Completion Report for Potential Release Site 22-015(c), Outfall from a Former Plating and Etching Facility, Revision 1," Los Alamos National Laboratory document LA-UR-96-467, Los Alamos, New Mexico. (LANL 1995, 091212)

Appendix D, References (continued)

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LANL (Los Alamos National Laboratory), November 2, 1995. "RFI Report for Potential Release Sites 18-002(a–c), 18-003(a–h), 18-004(a,b), 18-005(a), 18-008, 18-010(b–f), 18-011, 18-012(a–c), 18-013, 27-002, PCO Wells, LACEF Monitoring Wells, Wetlands (located in former Operable Unit 1093)," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1995, 055527)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for 53 Potential Release Sites in TA-3, TA-59, TA-60, TA-61," Los Alamos National Laboratory document LA-UR-96-726, Los Alamos, New Mexico. (LANL 1996, 052930)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for Potential Release Sites at TAs -6, -8, -22, and -40 (located in former Operable Units 1157 and 1111)," Los Alamos National Laboratory document LA-UR-97-3316, Los Alamos, New Mexico. (LANL 1997, 056664)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for Potential Release Sites 22-012, 22-015 (a, b, d, e) (located in former Operable Unit 1111)," Los Alamos National Laboratory document LA-UR-97-3340, Los Alamos, New Mexico. (LANL 1997, 056749)

LANL (Los Alamos National Laboratory), September 1998. "Work Plan for Pajarito Canyon," Los Alamos National Laboratory document LA-UR-98-2550, Los Alamos, New Mexico. (LANL 1998, 059577)

LANL (Los Alamos National Laboratory), September 30, 1998. "RFI Report for Potential Release Sites in the Eastern and Western Aggregates at Technical Area 6," Los Alamos National Laboratory document LA-UR-98-3710, Los Alamos, New Mexico. (LANL 1998, 062227)

LANL (Los Alamos National Laboratory), March 2000. "RFI Report for Material Disposal Areas G, H, and L at Technical Area 54," Los Alamos National Laboratory document LA-UR-00-1140, Los Alamos, New Mexico. (LANL 2000, 064360)

LANL (Los Alamos National Laboratory), October 2000. "Addendum to RFI Report for Field Unit 1, SWMU 3-010(a)," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 2000, 068736)

LANL (Los Alamos National Laboratory), September 2003. "Investigation Work Plan for Material Disposal Area G, at Technical Area 54," Los Alamos National Laboratory document LA-UR-03-6491, Los Alamos, New Mexico. (LANL 2003, 081174)

LANL (Los Alamos National Laboratory), October 2003. "Groundwater Investigation Work Plan for Solid Waste Management Unit 3-010(a) at Technical Area 3," Los Alamos National Laboratory document LA-UR-03-7349, Los Alamos, New Mexico. (LANL 2003, 081599)

LANL (Los Alamos National Laboratory), December 13, 1999. "Plan for Characterization of Groundwater, Surface Water, and Sediments at SWMU 3-010(a)," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2003, 081607)

LANL (Los Alamos National Laboratory), October 15, 2007. "Submittal of Certification of Culvert Repair Behind the SM-30 Warehouse, in the Vicinity of Solid Waste Management Units 03-010(a) and 03-001(e)," Los Alamos National Laboratory letter (EP2007-0635) to J.P. Bearzi (NMED-HWB) from S. Stiger (LANL) and D. Gregory (DOE-LASO), Los Alamos, New Mexico. (LANL 2007, 099171)

Appendix D, References (continued)

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LANL (Los Alamos National Laboratory), July 2008. "Historical Investigation Report for Threemile Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-08-4713, Los Alamos, New Mexico. (LANL 2008, 102244)

LANL (Los Alamos National Laboratory), October 2008. "Investigation Work Plan for Threemile Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-6727, Los Alamos, New Mexico. (LANL 2008, 105673)

LANL (Los Alamos National Laboratory), August 2009. "Pajarito Canyon Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-09-4670, Los Alamos, New Mexico. (LANL 2009, 106939)

LANL (Los Alamos National Laboratory), January 2010. "Historical Investigation Report for Twomile Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-0386, Los Alamos, New Mexico. (LANL 2010, 108330)

LANL (Los Alamos National Laboratory), May 2010. "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-2899, Los Alamos, New Mexico. (LANL 2010, 109520)

LANL (Los Alamos National Laboratory), July 2010. "Investigation Work Plan for Lower Pajarito Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-3302, Los Alamos, New Mexico. (LANL 2010, 109636)

LANL (Los Alamos National Laboratory), July 2010. "Historical Investigation Report for Lower Pajarito Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-3299, Los Alamos, New Mexico. (LANL 2010, 109639)

LANL (Los Alamos National Laboratory), September 2010. "Historical Investigation Report for Starmer/Upper Pajarito Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-6031, Los Alamos, New Mexico. (LANL 2010, 110528)

LANL (Los Alamos National Laboratory), November 2010. "Investigation Report for Threemile Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-7227, Los Alamos, New Mexico. (LANL 2010, 111324.14)

LANL (Los Alamos National Laboratory), November 2010. "Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-7635, Los Alamos, New Mexico. (LANL 2010, 111328)

LANL (Los Alamos National Laboratory), March 2011. "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-1821, Los Alamos, New Mexico. (LANL 2011, 111794)

LANL (Los Alamos National Laboratory), March 2012. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2011, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-12-10341, Los Alamos, New Mexico. (LANL 2012, 211408)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

Appendix D, References (continued)

Volume 3 (continued)

LANL (Los Alamos National Laboratory), March 2014. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2013, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-14-20839, Los Alamos, New Mexico. (LANL 2014, 254067)

McGehee, E.D., E. Loomis, K.L.M. Garcia, K. Towery, J. Ronquillo, N. Naranjo, and J. Isaacson, September 2004. "Engineering the Bomb: Detonator and Plutonium Recovery Research at Two-Mile Mesa Site (TA-6)," Historic Context and Property Documentation, Historic Building Survey Report No. 236, Los Alamos National Laboratory document LA-UR-04-7130, Los Alamos, New Mexico. (McGehee et al. 2004, 108213)

Appendix D, References (continued)

Volume 4

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. II of IV (TA-10 through TA-25), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007512)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1082," Los Alamos National Laboratory document LA-UR-93-1196, Los Alamos, New Mexico. (LANL 1993, 020948)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory document LA-UR-92-3968, Los Alamos, New Mexico. (LANL 1993, 020946)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1085," Los Alamos National Laboratory document LA-UR-94-1033, Los Alamos, New Mexico. (LANL 1994, 034755)

LANL (Los Alamos National Laboratory), July 1994. "RFI Work Plan for Operable Unit 1082, Addendum I," Los Alamos National Laboratory document LA-UR-94-1580, Los Alamos, New Mexico. (LANL 1994, 039440)

LANL (Los Alamos National Laboratory), October 30, 1995. "RFI Report for Field Unit 2 (OU 1086), Potential Release Sites 15-004(b,c), 15-004(a,d), 15-004(f), 15-007(b), 15-008(a,b), 15-012(b), 15-009(e,j), C-15-004," Environmental Restoration Project, Los Alamos National Laboratory document LA-UR-95-3738, Los Alamos, New Mexico. (LANL 1995, 050294)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory document LA-UR-95-1038, Los Alamos, New Mexico. (LANL 1995, 057225)

LANL (Los Alamos National Laboratory), September 1995. "RFI Report for Potential Release Sites 36-003(a), 36-003(b), 36-005, C-36-003 (located in former Operable Unit 1130)," Los Alamos National Laboratory document LA-UR-95-3375, Los Alamos, New Mexico. (LANL 1995, 053985)

LANL (Los Alamos National Laboratory), January 1996. "Voluntary Corrective Action Completion Report for Potential Release Site C-36-001, Test Containment Vessel, Revision 1," Los Alamos National Laboratory document LA-UR-96-276, Los Alamos, New Mexico. (LANL 1996, 053779)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for Potential Release Sites at TA-14 and TA-12/67 (located in former Operable Unit 1085)," Los Alamos National Laboratory document LA-UR-96-511, Los Alamos, New Mexico. (LANL 1996, 054086)

LANL (Los Alamos National Laboratory), May 1996. "Interim Action Plan for Potential Release Site 36-001," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1996, 054449)

LANL (Los Alamos National Laboratory), May 1996. "RFI Report for Potential Release Sites at TA-15, 15-001, 15-002, 15-004(g,h), 15-005(b,c), 15-006(c,d), 15-007(a), 15-008(c,g), 15-009(a,f,i,k), 15-010(a-c), 15-011(a-c), 15-012(a), 15-014(a,b,d,e,g-l), C-15-001, C-15-005, C-15-007, C-15-010, and C-15-011 (located in former Operable Unit 1086)," Los Alamos National Laboratory document LA-UR-95-1685, Los Alamos, New Mexico. (LANL 1996, 054977)

Appendix D, References (continued)

Volume 4 (continued)

LANL (Los Alamos National Laboratory), June 1996. "RFI Report for Potential Release Sites at TA-36, 36-001, 36-004(d), (Skunk Works and Burn [P]its), 36-006 (located in former Operable Unit 1130)," Los Alamos National Laboratory document LA-UR-96-2139, Los Alamos, New Mexico. (LANL 1996, 054733)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites at TA-16, 90s-Line: 16-026(m–p), 16-029(k,l,q,s,t,u), C-16-064, C-16-067," Los Alamos National Laboratory document LA-UR-96-3285, Los Alamos, New Mexico. (LANL 1996, 062537)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Completion Report for Potential Release Site 36-003(b), Septic System," Los Alamos National Laboratory document LA-UR-96-3346, Los Alamos, New Mexico. (LANL 1996, 055072)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Report for Potential Release Site 15-004(b), Firing Site A," Los Alamos National Laboratory document LA-UR-96-3339, Los Alamos, New Mexico. (LANL 1996, 055046)

LANL (Los Alamos National Laboratory), March 20, 1997. "Voluntary Corrective Measures Plan for Potential Release Sites at TA-16: 16-005(d), 16-006(g,h), 16-013, 16-017, 16-025(x), 16-026(q), 16-029(g2,h2,w,x), 16-031(c,d), 16-034(p), C-16-065, C-16-068, C-16-074," Los Alamos National Laboratory document LA-UR-97-640, Los Alamos, New Mexico. (LANL 1997, 055653)

LANL (Los Alamos National Laboratory), July 1997. "Interim Action Plan for Potential Release Sites 36-004(e) - I-J Firing Site, 15-008(f) - The Mounds, C-36-006(e) - Projectile Test Area," Los Alamos National Laboratory document LA-UR-97-2739, Los Alamos, New Mexico. (LANL 1997, 062453)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for Potential Release Sites at TA-16: 11-012(a,b), 13-003(a), 16-006(c,d), 16-010(a), 16-021(a), 16-026(c,d,v), 16-028(a), 16-030(g)," Los Alamos National Laboratory document LA-UR-97-3072, Los Alamos, New Mexico. (LANL 1997, 062539)

LANL (Los Alamos National Laboratory), September 1997. "Voluntary Corrective Action Report for Potential Release Site 15-009(e), Septic Tank," Los Alamos National Laboratory document LA-UR-97-3919, Los Alamos, New Mexico. (LANL 1997, 074091)

LANL (Los Alamos National Laboratory), September 1998. "RFI Report for Potential Release Site 16-021(c)," Los Alamos National Laboratory document LA-UR-98-4101, Los Alamos, New Mexico. (LANL 1998, 059891)

LANL (Los Alamos National Laboratory), August 2005. "Material Disposal Area P Site Closure Certification Report, Revision 1," Volume 2 of 2, Los Alamos National Laboratory document LA-UR-05-6536, Los Alamos, New Mexico. (LANL 2005, 091141)

LANL (Los Alamos National Laboratory), August 2005. "Material Disposal Area P Site Closure Certification Report, Revision 1," Los Alamos National Laboratory document LA-UR-05-6536, Los Alamos, New Mexico. (LANL 2005, 092251)

Appendix D, References (continued)

Volume 4 (continued)

LANL (Los Alamos National Laboratory), September 2006. "Historical Investigation Report for Cañon de Valle Aggregate Area," Los Alamos National Laboratory document LA-UR-06-4961, Los Alamos, New Mexico. (LANL 2006, 091697)

LANL (Los Alamos National Laboratory), December 2007. "Investigation Work Plan for S-Site Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-07-8366, Los Alamos, New Mexico. (LANL 2007, 102216)

LANL (Los Alamos National Laboratory), April 2009. "Historical Investigation Report for Potrillo and Fence Canyons Aggregate Area," Los Alamos National Laboratory document LA-UR-09-2341, Los Alamos, New Mexico. (LANL 2009, 105251)

LANL (Los Alamos National Laboratory), July 2009. "Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-09-4327, Los Alamos, New Mexico. (LANL 2009, 106657.8)

LANL (Los Alamos National Laboratory), August 2010. "Historical Investigation Report for Upper Water Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-5226, Los Alamos, New Mexico. (LANL 2010, 110410)

LANL (Los Alamos National Laboratory), February 2011. "Investigation Report for S-Site Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-0561, Los Alamos, New Mexico. (LANL 2011, 111810.32)

LANL (Los Alamos National Laboratory), April 7, 2011. "Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, April 7, 2011, Volume 4, Water Canyon and Cañon de Valle Watershed," Environmental Programs document no. EP-DIR-PLAN-10006, R.0, Los Alamos National Laboratory document LA-UR-11-1554, Los Alamos, New Mexico. (LANL 2011, 204887)

LANL (Los Alamos National Laboratory), September 2011. "Phase II Investigation Work Plan for S-Site Aggregate Area," Los Alamos National Laboratory document LA-UR-11-5388, Los Alamos, New Mexico. (LANL 2011, 206485)

LANL (Los Alamos National Laboratory), September 2011. "Investigation Report for Water Canyon/Cañon de Valle," Los Alamos National Laboratory document LA-UR-11-5478, Los Alamos, New Mexico. (LANL 2011, 207069)

LANL (Los Alamos National Laboratory), November 2011. "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-6217, Los Alamos, New Mexico. (LANL 2011, 208336)

LANL (Los Alamos National Laboratory), March 2012. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2011, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-12-10341, Los Alamos, New Mexico. (LANL 2012, 211408)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

Appendix D, References (continued)

Volume 4 (continued)

LANL (Los Alamos National Laboratory), March 2014. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2013, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-14-20839, Los Alamos, New Mexico. (LANL 2014, 254067)

LANL (Los Alamos National Laboratory), August 13, 2015. "Request for Certificates of Completion for Nineteen Solid Waste Management Units and Two Areas of Concern in the Cañon de Valle Aggregate Area," Los Alamos National Laboratory letter (ADESH-15-106) to J. Kieling (NMED-HWB) from A.M. Dorries (LANL) and C. Gelles (DOE-EM-LA), Los Alamos, New Mexico. (LANL 2015, 600775)

LANL (Los Alamos National Laboratory), September 2015. "Supplemental Investigation Report for Potrillo and Fence Canyons Aggregate Area," Los Alamos National Laboratory document LA-UR-15-27131, Los Alamos, New Mexico. (LANL 2015, 600935)

LANL (Los Alamos National Laboratory), November 2015. "Supplemental Investigation Report for S-Site Aggregate Area," Los Alamos National Laboratory document LA-UR-15-28016, Los Alamos, New Mexico. (LANL 2015, 601008)

NMED (New Mexico Environment Department), January 23, 2008. "Approval of Los Alamos National Laboratory Proposal for No Further Action," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2008, 100116)

Nonno, L., February 22, 2012. "Documentation of 'No Further Action' under the Consent Order for 20 RCRA Hazardous Waste Management Units," Los Alamos National Laboratory memorandum to file from L. Nonno (LANL), Los Alamos, New Mexico. (Nonno 2012, 210148)

Appendix D, References (continued)

Volume 5

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1122," Los Alamos National Laboratory document LA-UR-92-925, Los Alamos, New Mexico. (LANL 1992, 007671)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1132," Los Alamos National Laboratory document LA-UR-93-768, Los Alamos, New Mexico. (LANL 1993, 015316)

LANL (Los Alamos National Laboratory), December 1995. "RFI Report for Potential Release Sites 33-004(b), 33-004(c), 33-004(j), 33-004(m), 33-006(a), 33-006(b), 33-007(a), 33-007(b), 33-010(a), 33-010(b), 33-010(c), 33-010(d), 33-010(g), 33-010(h), 33-011(b), 33-011(c), 33-014," Los Alamos National Laboratory document LA-UR-95-4439, Los Alamos, New Mexico. (LANL 1995, 051903)

LANL (Los Alamos National Laboratory), January 31, 1995. "Field Unit 3, Operable Unit 1122, Technical Area 33, RFI Report for PRSs 33-004(d), 33-004(g), 33-004(h), 33-004(i), 33-005(a), 33-005(b), 33-005(c), 33-010(e), 33-010(f), 33-011(e), 33-012(a), 33-015, 33-007(c), 33-011(a)," Los Alamos National Laboratory document LA-UR-95-0882, Los Alamos, New Mexico. (LANL 1995, 071262)

LANL (Los Alamos National Laboratory), April 1995. "RFI Report for Potential Release Sites 39-002(a-f), 39-005, 39-006(a), 39-007(a) (d) (located in former Operable Unit 1132)," Los Alamos National Laboratory document LA-UR-95-1069, Los Alamos, New Mexico. (LANL 1995, 046190)

LANL (Los Alamos National Laboratory), September 29, 1995. "RFI Report for Field Unit 3, Operable Unit 1122, Technical Area 33, RFI Report for PRSs 33-003(a), 33-004(a), 33-007(c), 33-009, 33-011(d), 33-013, 33-016, 33-017, Revised Sampling Plans for PRSs 33-003(b), 33-004(k), 33-008(a), 33-008(b), C-33-001, C-33-002," Los Alamos National Laboratory document LA-UR-95-3626, Los Alamos, New Mexico. (LANL 1995, 071300)

LANL (Los Alamos National Laboratory), January 1996. "Voluntary Corrective Action Completion Report for Potential Release Site 39-002(c), Waste Container Storage Area, Revision 1," Los Alamos National Laboratory document LA-UR-96-445, Los Alamos, New Mexico. (LANL 1996, 054401)

LANL (Los Alamos National Laboratory), February 1996. "Interim Action Report for Potential Release Site 33-007(c)," Los Alamos National Laboratory document LA-UR-96-710, Los Alamos, New Mexico. (LANL 1996, 052919)

LANL (Los Alamos National Laboratory), May 1996. "Interim Action Report for Potential Release Site 33-007(b)," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1996, 054623)

LANL (Los Alamos National Laboratory), June 1996. "Voluntary Corrective Action Completion Report for Solid Waste Management Units at TA-33, 33-010(a), Canyon-Side Disposal Area, 33-010(d), Surface Disposal Area, 33-010(g), Canyon-Side Disposal Area, 33-011(b), General Storage Area," Los Alamos National Laboratory document LA-UR-96-1839, Los Alamos, New Mexico. (LANL 1996, 054755)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Report for a Solid Waste Management Unit at TA-33, 33-007(c)," Los Alamos National Laboratory document LA-UR-96-3198, Los Alamos, New Mexico. (LANL 1996, 062541)

Appendix D, References (continued)

Volume 5 (continued)

LANL (Los Alamos National Laboratory), March 1997. "Interim Action Report for Potential Release Site 33-006(a), Operable Unit 1122, Technical Area 33," Los Alamos National Laboratory document LA-UR-97-641, Los Alamos, New Mexico. (LANL 1997, 055865)

LANL (Los Alamos National Laboratory), March 1997. "RFI Report for Potential Release Sites at TA-39, 39-001(a&b), 39-004(a-e), and 39-008 (located in former Operable Unit 1132)," Los Alamos National Laboratory document LA-UR-97-1408, Los Alamos, New Mexico. (LANL 1997, 055633)

LANL (Los Alamos National Laboratory), March 23, 1999. "VCA Plan for Potential Release Sites 33-007(b), 33-010(c), C-33-003," Los Alamos National Laboratory document LA-UR-99-3002, Los Alamos, New Mexico. (LANL 1999, 063678)

LANL (Los Alamos National Laboratory), August 18, 2000. "Submittal of Response to Request for Supplemental Information (RSI) for the Voluntary Corrective Action (VCA) Plan for Potential Release Sites (PRSs) 33-007(b), 33-010(c), and C-33-003 [and attached 'Segmented Gate System, Voluntary Corrective Action Status Report for Potential Release Sites 33-007(b), 33-010(c), C-33-033]," Los Alamos National Laboratory letter (ER2000-0171) to J. Kieling (NMED-HWB) from J.A. Canepa (LANL) and T.J. Taylor (DOE-LAAO), Los Alamos, New Mexico. (LANL 2000, 066889)

LANL (Los Alamos National Laboratory), September 2007. "Investigation Work Plan for North Ancho Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-07-5947, Los Alamos, New Mexico. (LANL 2007, 098280)

LANL (Los Alamos National Laboratory), September 2007. "Historical Investigation Report for North Ancho Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-07-5948, Los Alamos, New Mexico. (LANL 2007, 098281)

LANL (Los Alamos National Laboratory), December 2007. "Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-07-8272, Los Alamos, New Mexico. (LANL 2007, 101894)

LANL (Los Alamos National Laboratory), January 2008. "Investigation Work Plan for Sites at Technical Area 49 Outside the Nuclear Environmental Site Boundary, Revision 1," Los Alamos National Laboratory document LA-UR-08-0449, Los Alamos, New Mexico. (LANL 2008, 102215)

LANL (Los Alamos National Laboratory), January 2008. "Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1," Los Alamos National Laboratory document LA-UR-08-0447, Los Alamos, New Mexico. (LANL 2008, 102691)

LANL (Los Alamos National Laboratory), April 1, 2009. "Request for Approval of Expanded Boundaries for Areas of Contamination for the Investigation and Remediation of Solid Waste Management Units 39-001(a) and 39-001(b) at Technical Area 39," Los Alamos National Laboratory letter (EP2009-0180) to J.P. Bearzi (NMED-HWB) from M.J. Graham (LANL) and D.R. Gregory (DOE-LASO), Los Alamos, New Mexico. (LANL 2009, 105720)

LANL (Los Alamos National Laboratory), January 2010. "Investigation Report for North Ancho Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-0125, Los Alamos, New Mexico. (LANL 2010, 108500.11)

Appendix D, References (continued)

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LANL (Los Alamos National Laboratory), November 2010. "Investigation Work Plan for Chaquehui Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-10-7226, Los Alamos, New Mexico. (LANL 2010, 111298.9)

LANL (Los Alamos National Laboratory), February 2011. "Phase II Investigation Work Plan for Sites at Technical Area 49 Outside the Nuclear Environmental Site Boundary," Los Alamos National Laboratory document LA-UR-11-0553, Los Alamos, New Mexico. (LANL 2011, 111691)

LANL (Los Alamos National Laboratory), March 2011. "Phase II Investigation Work Plan for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary," Los Alamos National Laboratory document LA-UR-11-1818, Los Alamos, New Mexico. (LANL 2011, 201570)

LANL (Los Alamos National Laboratory), June 2011. "Investigation Report for Ancho, Chaquehui, and Indio Canyons, Revision 1," Los Alamos National Laboratory document LA-UR-11-3305, Los Alamos, New Mexico. (LANL 2011, 204397)

LANL (Los Alamos National Laboratory), March 2012. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2011, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-12-10341, Los Alamos, New Mexico. (LANL 2012, 211408)

LANL (Los Alamos National Laboratory), March 2013. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2012, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-13-20566, Los Alamos, New Mexico. (LANL 2013, 237680)

LANL (Los Alamos National Laboratory), March 2014. "Storm Water Individual Permit Annual Report, Reporting Period: January 1–December 31, 2013, NPDES Permit No. NM0030759," Los Alamos National Laboratory document LA-UR-14-20839, Los Alamos, New Mexico. (LANL 2014, 254067)

LANL (Los Alamos National Laboratory), February 10, 2015. "NPDES Permit No. NM0030759, Supplemental Information for Permit Renewal Application," Los Alamos National Laboratory letter (ENV-DO-15-0036) to I. Chen (EPA Region 6) from A.R. Grieggs (LANL) and D.S. Rhodes (DOE-NA-LA), Los Alamos, New Mexico. (LANL 2015, 600289)

LANL (Los Alamos National Laboratory), July 2015. "Investigation Work Plan for South Ancho Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-15-25429, Los Alamos, New Mexico. (LANL 2015, 600531)

NMED (New Mexico Environment Department), April 6, 2010. "Approval, Request for Certificates of Completion for Two Solid Waste Management Units and Five Areas of Concern in the North Ancho Canyon Aggregate Area," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2010, 110430)

Appendix E
Potential Pollutants of Concern

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
R-SMA-0.5	R001	C-00-020	Ra	Cyanide	Metals		HE		
R-SMA-1	R002	C-00-041							SVC
R-SMA-1.95	R003	00-015	Ra	Cyanide	Metals		HE		
R-SMA-2.05	R004	00-011(c)	Ra	Cyanide	Metals		HE		
R-SMA-2.3	R005	00-011(e)							
R-SMA-2.5	R006	00-011(a)	Ra	Cyanide	Metals		HE		
B-SMA-0.5	B001	10-001(a)	Ra	Cyanide	Metals				HE
B-SMA-0.5	B001	10-001(b)	Ra	Cyanide	Metals				HE
B-SMA-0.5	B001	10-001(c)	Ra	Cyanide	Metals				HE
B-SMA-0.5	B001	10-001(d)	Ra	Cyanide	Metals				HE
B-SMA-0.5	B001	10-004(a)	Ra	Cyanide	Metals				
B-SMA-0.5	B001	10-004(b)	Ra	Cyanide	Metals				
B-SMA-0.5	B001	10-008	Ra	Cyanide	Metals				
B-SMA-0.5	B001	10-009	Ra	Cyanide	Metals				
B-SMA-1	B002	00-011(d)	Ra	Cyanide	Metals		HE		
ACID-SMA-1.05	P001	00-030(g)							
ACID-SMA-2	P002	01-002(b)-00				PCBs			
ACID-SMA-2	P002	45-001							
ACID-SMA-2	P002	45-002							
ACID-SMA-2	P002	45-004							
ACID-SMA-2.01	P002A	00-030(f)	Ra	Cyanide	Metals				
ACID-SMA-2.1	P003	01-002(b)-00				PCBs			
P-SMA-0.3	P004	00-018(b)							
P-SMA-1	P005	73-001(a)	Ra	Cyanide	Metals				
P-SMA-1	P005	73-004(d)	Ra	Cyanide	Metals				
P-SMA-2	P006	73-002	Ra	Cyanide	Metals			Dioxin	
P-SMA-2	P006	73-006	Ra	Cyanide	Metals			Dioxin	
P-SMA-2.15	P007	31-001	Ra	Cyanide	Metals	PCBs			
P-SMA-2.2	P008	00-019	Ra	Cyanide	Metals	PCBs			
P-SMA-3.05	P009	00-018(a)							
LA-SMA-0.85	L001	03-055(c)							
LA-SMA-0.9	L002	00-017	Ra	Cyanide	Metals	PCBs			
LA-SMA-0.9	L002	C-00-044	Ra	Cyanide	Metals	PCBs			
LA-SMA-1	L003	00-017							
LA-SMA-1.25	L005	C-43-001							

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
LA-SMA-2.1	L006	01-001(f)				PCBs			
LA-SMA-2.3	L007	01-001(b)	Ra	Cyanide	Metals				
LA-SMA-3.1	L008	01-001(e)	Ra	Cyanide	Metals	PCBs			
LA-SMA-3.1	L008	01-003(a)	Ra	Cyanide	Metals	PCBs			
LA-SMA-3.9	L009	01-001(g)	Ra	Cyanide	Metals				
LA-SMA-3.9	L009	01-006(a)	Ra	Cyanide	Metals				
LA-SMA-4.1	L010	01-003(b)							
LA-SMA-4.1	L010	01-006(b)							
LA-SMA-4.2	L011	01-001(c)	Ra	Cyanide	Metals	PCBs			
LA-SMA-4.2	L011	01-006(c)	Ra	Cyanide	Metals	PCBs			
LA-SMA-4.2	L011	01-006(d)	Ra	Cyanide	Metals	PCBs			
LA-SMA-5.01	L012	01-001(d)	Ra	Cyanide	Metals	PCBs			
LA-SMA-5.01	L012	01-006(h)	Ra	Cyanide	Metals	PCBs			
LA-SMA-5.02	L012A	01-003(e)							
LA-SMA-5.2	L013	01-003(d)	Ra	Cyanide	Metals				SVC
LA-SMA-5.31	L015	41-002(c)	Ra	Cyanide	Metals				
LA-SMA-5.33	L016	32-004	Ra	Cyanide	Metals				
LA-SMA-5.35	L014	C-41-004	Ra	Cyanide	Metals				
LA-SMA-5.361	L017	32-002(b) 32-002(b1) 32-002(b2)	Ra	Cyanide	Metals				
LA-SMA-5.362	L017A	32-003	Ra	Cyanide	Metals	PCBs			
LA-SMA-5.51	L018	02-003(a)							
LA-SMA-5.51	L018	02-003(e)							
LA-SMA-5.51	L018	02-004(a)			Hg				
LA-SMA-5.51	L018	02-005							
LA-SMA-5.51	L018	02-006(b)			Hg				
LA-SMA-5.51	L018	02-006(c)							
LA-SMA-5.51	L018	02-006(d)							
LA-SMA-5.51	L018	02-006(e)			Hg				
LA-SMA-5.51	L018	02-008(a)							
LA-SMA-5.51	L018	02-009(b)			Hg				
LA-SMA-5.51	L018	02-011(a)			Hg	PCBs			
LA-SMA-5.51	L018	02-011(b)							
LA-SMA-5.51	L018	02-011(c)							
LA-SMA-5.51	L018	02-011(d)							
LA-SMA-5.52	L018A	02-003(b)							

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
LA-SMA-5.52	L018A	02-007							
LA-SMA-5.52	L018A	02-008(c)			Hg				
LA-SMA-5.53	L018B	02-009(a)	Ra	Cyanide	Metals	PCBs			
LA-SMA-5.54	L018C	02-009(c)							
LA-SMA-5.91	L019	21-009	Ra	Cyanide	Metals				
LA-SMA-5.91	L019	21-021	Ra	Cyanide	Metals				
LA-SMA-5.91	L019	21-023(c)	Ra	Cyanide	Metals				
LA-SMA-5.91	L019	21-027(d)	Ra	Cyanide	Metals				SVC
LA-SMA-5.92	L019A	21-013(b)							
LA-SMA-5.92	L019A	21-013(g)							
LA-SMA-5.92	L019A	21-018(a)							
LA-SMA-5.92	L019A	21-021							
LA-SMA-6.25	L020	21-021	Ra	Cyanide	Metals				
LA-SMA-6.25	L020	21-024(d)	Ra	Cyanide	Metals				SVC
LA-SMA-6.25	L020	21-027(c)	Ra	Cyanide	Metals				
LA-SMA-6.27	L021	21-021	Ra	Cyanide	Metals				
LA-SMA-6.27	L021	21-027(c)	Ra	Cyanide	Metals				
LA-SMA-6.3	L022	21-006(b)	Ra	Cyanide	Metals			SVC	
LA-SMA-6.31	L022A	21-027(a)	Ra	Cyanide	Metals			SVC	Dioxin
LA-SMA-6.32	L023	21-021	Ra	Cyanide	Metals				
LA-SMA-6.34	L024	21-021	Ra	Cyanide	Metals				
LA-SMA-6.34	L024	21-022(h)	Ra	Cyanide	Metals				SVC
LA-SMA-6.36	L025	21-021	Ra	Cyanide	Metals				
LA-SMA-6.36	L025	21-024(a)	Ra	Cyanide	Metals				
LA-SMA-6.38	L026	21-021	Ra	Cyanide	Metals				
LA-SMA-6.38	L026	21-024(c)	Ra	Cyanide	Metals				PCBs
LA-SMA-6.395	L027	21-021	Ra	Cyanide	Metals				
LA-SMA-6.395	L027	21-024(j)	Ra	Cyanide	Metals				
LA-SMA-6.5	L028	21-021	Ra	Cyanide	Metals	PCBs		SVC	
LA-SMA-6.5	L028	21-024(i)	Ra	Cyanide	Metals	PCBs		SVC	
LA-SMA-9	L029	26-001	Ra	Cyanide	Metals				HE
LA-SMA-9	L029	26-002(a)	Ra	Cyanide	Metals				
LA-SMA-9	L029	26-002(b)	Ra	Cyanide	Metals				
LA-SMA-9	L029	26-003	Ra	Cyanide	Metals				
LA-SMA-10.11	L030	53-002(a)	Ra	Cyanide	Metals				
LA-SMA-10.12	L030A	53-008	Ra	Cyanide	Metals				SVC

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
DP-SMA-0.3	D001	21-029							SVC
DP-SMA-0.4	D002	21-021							
DP-SMA-0.6	D003	21-021	Ra	Cyanide	Metals				
DP-SMA-0.6	D003	21-024(l)	Ra	Cyanide	Metals				
DP-SMA-1	D004	21-011(k)	Ra	Cyanide	Metals	PCBs			
DP-SMA-1	D004	21-021	Ra	Cyanide	Metals	PCBs			
DP-SMA-2	D005	21-021	Ra	Cyanide	Metals				
DP-SMA-2	D005	21-024(h)		Cyanide	Metals				
DP-SMA-2.35	D006	21-021	Ra	Cyanide	Metals				
DP-SMA-2.35	D006	21-024(n)	Ra	Cyanide	Metals				
DP-SMA-3	D007	21-013(c)							
DP-SMA-3	D007	21-021							
DP-SMA-4	D008	21-021	Ra	Cyanide	Metals				
S-SMA-0.25	S001	03-013(a)							
S-SMA-0.25	S001	03-052(f)				PCBs			SVC
S-SMA-1.1	S002	03-029							SVC
S-SMA-2	S003	03-012(b)							
S-SMA-2	S003	03-045(b)							
S-SMA-2	S003	03-045(c)							
S-SMA-2	S003	03-056(c)				PCBs			SVC
S-SMA-2.01	S003A	03-052(b)							
S-SMA-2.8	S004	03-014(c2)	Ra	Cyanide	Metals	PCBs		SVC	
S-SMA-3.51	S005	03-009(i)	Ra	Cyanide	Metals	PCBs		SVC	
S-SMA-3.52	S005A	03-021	Ra	Cyanide	Metals	PCBs		SVC	
S-SMA-3.53	S005B	03-014(b2)							
S-SMA-3.6	S006	60-007(b)				PCBs			SVC
S-SMA-3.7	S007	53-012(e)	Ra	Cyanide	Metals	PCBs			
S-SMA-3.71	S008	53-001(a)	Ra	Cyanide	Metals	PCBs			SVC
S-SMA-3.72	S009	53-001(b)			Metals				
S-SMA-3.95	S010	20-002(a)	Ra	Cyanide	Metals		HE	SVC	
S-SMA-4.1	S011	53-014							
S-SMA-4.5	S012	20-002(d)	Ra	Cyanide	Metals		HE		
S-SMA-5	S013	20-002(c)	Ra	Cyanide	Metals	PCBs	HE		
S-SMA-5.2	S014	20-003(c)	Ra	Cyanide	Metals	PCBs	HE	SVC	
S-SMA-5.5	S015	20-005	Ra	Cyanide	Metals				
S-SMA-6	S016	72-001			Cu				

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
CDB-SMA-0.15	C001	04-003(a)			Metals				
CDB-SMA-0.15	C001	04-004			Metals				
CDB-SMA-0.25	C002	46-004(c2)							
CDB-SMA-0.25	C002	46-004(e2)							
CDB-SMA-0.55	C003	46-004(g)							
CDB-SMA-0.55	C003	46-004(m)							
CDB-SMA-0.55	C003	46-004(s)							
CDB-SMA-0.55	C003	46-006(f)							
CDB-SMA-1	C004	46-003(c)							
CDB-SMA-1	C004	46-004(d2)							
CDB-SMA-1	C004	46-004(f)							
CDB-SMA-1	C004	46-004(t)							
CDB-SMA-1	C004	46-004(w)							SVC
CDB-SMA-1	C004	46-008(g)				PCBs			SVC
CDB-SMA-1	C004	46-009(a)							
CDB-SMA-1	C004	C-46-001							
CDB-SMA-1.15	C005	46-004(b)	Ra	Cyanide	Metals	PCBs			SVC
CDB-SMA-1.15	C005	46-004(y)	Ra	Cyanide	Metals	PCBs			
CDB-SMA-1.15	C005	46-004(z)	Ra	Cyanide	Metals	PCBs			
CDB-SMA-1.15	C005	46-006(d)	Ra	Cyanide	Metals	PCBs			SVC
CDB-SMA-1.35	C006	46-004(a2)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.35	C006	46-004(u)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.35	C006	46-004(v)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.35	C006	46-004(x)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.35	C006	46-006(d)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.35	C006	46-008(f)	Ra	Cyanide	Metals	PCBs		PEST, SVC	
CDB-SMA-1.54	C007	46-004(h)	Ra	Cyanide	Metals	PCBs		PEST	
CDB-SMA-1.54	C007	46-004(q)	Ra	Cyanide	Metals	PCBs		PEST	
CDB-SMA-1.54	C007	46-006(d)	Ra	Cyanide	Metals	PCBs		PEST	
CDB-SMA-1.55	C008	46-003(e)	Ra	Cyanide	Metals				
CDB-SMA-1.65	C009	46-003(b)	Ra	Cyanide	Metals				
CDB-SMA-4	C010	54-017							

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
CDB-SMA-4	C010	54-018							
CDB-SMA-4	C010	54-020							
M-SMA-1	M001	03-050(a)							
M-SMA-1	M001	03-054(e)							
M-SMA-1.2	M002	03-049(a)			Cu				
M-SMA-1.21	M002A	03-049(e)	Ra	Cyanide	Metals				
M-SMA-1.22	M002B	03-045(h)							
M-SMA-3	M003	48-001							
M-SMA-3	M003	48-005							
M-SMA-3	M003	48-007(c)							SVC
M-SMA-3.1	M004	48-001	Ra	Cyanide	Metals	PCBs			
M-SMA-3.1	M004	48-007(b)	Ra	Cyanide	Metals	PCBs			
M-SMA-3.5	M005	48-001	Ra	Cyanide	Metals	PCBs			
M-SMA-3.5	M005	48-003	Ra	Cyanide	Metals	PCBs			
M-SMA-4	M006	48-001							
M-SMA-4	M006	48-005							
M-SMA-4	M006	48-007(a)							
M-SMA-4	M006	48-007(d)							
M-SMA-4	M006	48-010							
M-SMA-5	M007	42-001(a)	Ra	Cyanide	Metals	PCBs			Dioxin
M-SMA-5	M007	42-001(b)	Ra	Cyanide	Metals	PCBs			Dioxin
M-SMA-5	M007	42-001(c)	Ra	Cyanide	Metals	PCBs			Dioxin
M-SMA-5	M007	42-002(a)	Ra	Cyanide	Metals	PCBs			
M-SMA-5	M007	42-002(b)	Ra	Cyanide	Metals	PCBs			
M-SMA-6	M008	35-016(h)							
M-SMA-7	M009	35-016(g)							
M-SMA-7.9	M010	50-006(d)				PCBs			
M-SMA-9.1	M011	35-016(f)	Ra	Cyanide	Metals	PCBs			
M-SMA-10	M012	35-008	Ra	Cyanide	Metals				
M-SMA-10	M012	35-014(e)	Ra	Cyanide	Metals				
M-SMA-10.01	M012A	35-016(e)							
M-SMA-10.3	M013	35-014(e2)							
M-SMA-10.3	M013	35-016(i)							
M-SMA-11.1	M014	35-016(o)	Ra	Cyanide	Metals	PCBs			
M-SMA-12	M015	35-016(p)			Metals	PCBs			
M-SMA-12.5	M016	05-005(b)	Ra	Cyanide	Metals		HE	SVC	

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
M-SMA-12.5	M016	05-006(c)	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.6	M017	05-004	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.7	M018	05-002	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.7	M018	05-005(a)	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.7	M018	05-006(b)	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.7	M018	05-006(e)	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.8	M019	05-001(a)	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.8	M019	05-002	Ra	Cyanide	Metals		HE	SVC	
M-SMA-12.9	M020	05-001(b)			Metals				
M-SMA-12.9	M020	05-002			Metals				
M-SMA-12.92	M021	00-001	Ra	Cyanide	Metals				
M-SMA-13	M022	05-001(c)							
Pratt-SMA-1.05	T001	35-003(h)							
Pratt-SMA-1.05	T001	35-003(p)							
Pratt-SMA-1.05	T001	35-003(r)			Hg	PCBs			
Pratt-SMA-1.05	T001	35-004(h)							
Pratt-SMA-1.05	T001	35-009(d)							
Pratt-SMA-1.05	T001	35-016(k)							
Pratt-SMA-1.05	T001	35-016(l)							
Pratt-SMA-1.05	T001	35-016(m)							
T-SMA-1	T002	50-006(a)							
T-SMA-1	T002	50-009							
T-SMA-2.5	T003	35-014(g3)	Ra	Cyanide	Metals				SVC
T-SMA-2.85	T004	35-014(g)							
T-SMA-2.85	T004	35-016(n)							
T-SMA-3	T005	35-016(b)							
T-SMA-4	T006	35-004(a)							
T-SMA-4	T006	35-009(a)							
T-SMA-4	T006	35-016(c)							
T-SMA-4	T006	35-016(d)							
T-SMA-5	T007	35-004(a)	Ra	Cyanide	Metals				
T-SMA-5	T007	35-009(a)	Ra	Cyanide	Metals				
T-SMA-5	T007	35-016(a)	Ra	Cyanide	Metals				
T-SMA-5	T007	35-016(q)	Ra	Cyanide	Metals				
T-SMA-6.8	T008	35-010(e)	Ra	Cyanide	Metals				
T-SMA-7	T009	04-003(b)	Ra	Cyanide	Metals				

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
T-SMA-7.1	T010	04-001	Ra	Cyanide	Metals				
T-SMA-7.1	T010	04-002	Ra	Cyanide	Metals				
2M-SMA-1	E001	03-010(a)							SVC
2M-SMA-1.42	E002	06-001(a)							
2M-SMA-1.43	E003	22-014(a)							HE
2M-SMA-1.43	E003	22-015(a)			Al				SVC
2M-SMA-1.44	E004	06-001(b)			Cu				SVC
2M-SMA-1.45	E005	06-006	Ra	Cyanide	Metals				PCBs
2M-SMA-1.5	E006	22-014(b)	Ra	Cyanide	Metals		HE	SVC	
2M-SMA-1.65	E007	40-005	Ra	Cyanide	Metals				
2M-SMA-1.67	E008	06-003(h)	Ra	Cyanide	Metals		HE		
2M-SMA-1.7	E009	03-055(a)							PCBs
2M-SMA-1.8	E010	03-001(k)							PCBs
2M-SMA-1.9	E011	03-003(a)							SVC, PCBs
2M-SMA-2	E012	03-050(d)							
2M-SMA-2	E012	03-054(b)							
2M-SMA-2.2	E013	03-003(k)							
2M-SMA-2.5	E015	40-001(c)							
2M-SMA-3	E014	07-001(a)			Cu				
2M-SMA-3	E014	07-001(b)			Cu				
2M-SMA-3	E014	07-001(c)							
2M-SMA-3	E014	07-001(d)			Cu				
2M-SMA-2.5	E015	40-001(c)	Ra	Cyanide	Metals				
3M-SMA-0.2	H001	15-010(b)	Ra	Cyanide	Metals				HE
3M-SMA-0.4	H002	15-006(b)	Ra	Cyanide	Metals		HE		
3M-SMA-0.5	H003	15-006(c)							
3M-SMA-0.5	H003	15-009(c)			Cu				
3M-SMA-0.6	H004	15-008(b)	Ra	Cyanide	Metals				
3M-SMA-2.6	H005	36-008	Ra	Cyanide	Metals		HE	SVC	
3M-SMA-2.6	H005	C-36-003	Ra	Cyanide	Metals		HE	SVC	
3M-SMA-4	H006	18-002(b)			Cu				
3M-SMA-4	H006	18-003(c)							SVC, PCBs
3M-SMA-4	H006	18-010(f)							
PJ-SMA-1.05	J001	09-013				PCBs			
PJ-SMA-2	J002	09-009	Ra	Cyanide	Metals				

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
PJ-SMA-3.05	J003	09-004(o)							HE
PJ-SMA-4.05	J004	09-004(g)	Ra	Cyanide	Metals				HE
PJ-SMA-4.05	J004	09-005(g)	Ra	Cyanide	Metals				HE
PJ-SMA-5	J005	22-015(c)			Cu				
PJ-SMA-5.1	J006	22-016 22-010(b)			Cu, Zn				
PJ-SMA-6	J007	40-010	Ra	Cyanide	Metals				
PJ-SMA-7	J008	40-006(c)	Ra	Cyanide	Metals		HE		
PJ-SMA-8	J009	40-006(b)	Ra	Cyanide	Metals		HE		
PJ-SMA-9	J010	40-009			Cu				
PJ-SMA-10	J012	40-006(a)			Cu				
PJ-SMA-11	J013	40-003(a)							HE
PJ-SMA-11.1	J014	40-003(b)							HE
PJ-SMA-13	J015	18-002(a)	Ra	Cyanide	Metals		HE		
PJ-SMA-13.7	J016	18-010(b)	Ra	Cyanide	Metals				
PJ-SMA-14	J017	54-004	Ra	Cyanide	Metals		HE		
PJ-SMA-14.2	J018	18-012(b)	Ra	Cyanide	Metals				
PJ-SMA-14.3	J019	18-003(e)	Ra	Cyanide	Metals				SVC, PCBs
PJ-SMA-14.4	J020	18-010(d)	Ra	Cyanide	Metals				
PJ-SMA-14.6	J021	18-010(e)	Ra	Cyanide	Metals				
PJ-SMA-14.8	J022	18-012(a)							
PJ-SMA-16	J023	27-002							
PJ-SMA-17	J024	54-018							
PJ-SMA-18	J026	54-014(d)							
PJ-SMA-18	J026	54-017							
PJ-SMA-19	J025	54-013(b)							
PJ-SMA-19	J025	54-017							
PJ-SMA-19	J025	54-020							
PJ-SMA-20	J027	54-017							
STRM-SMA-1.05	J028	08-009(f)							
STRM-SMA-1.5	J029	08-009(d)			Ag				
STRM-SMA-4.2	J030	09-008(b)							
STRM-SMA-5.05	J031	09-013							
CDV-SMA-1.2	V001	16-017(b)-99							
CDV-SMA-1.2	V001	16-029(k)							
CDV-SMA-1.3	V002	16-017(a)-99	Ra	Cyanide	Metals		HE		

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
CDV-SMA-1.3	V002	16-026(m)	Ra	Cyanide	Metals				HE
CDV-SMA-1.4	V003	16-020							
CDV-SMA-1.4	V003	16-026(l)							
CDV-SMA-1.4	V003	16-028(c)							HE
CDV-SMA-1.4	V003	16-030(c)							
CDV-SMA-1.45	V004	16-026(i)	Ra	Cyanide	Metals				HE
CDV-SMA-1.7	V005	16-019			Cu		HE		
CDV-SMA-2	V006	16-021(c)	Ra	Cyanide	Metals			SVC	HE
CDV-SMA-2.3	V007	13-001							
CDV-SMA-2.3	V007	13-002							
CDV-SMA-2.3	V007	16-003(n)							HE
CDV-SMA-2.3	V007	16-003(o)							HE
CDV-SMA-2.3	V007	16-029(h)							HE
CDV-SMA-2.3	V007	16-031(h)							HE
CDV-SMA-2.41	V008	16-018				PCBs			HE
CDV-SMA-2.42	V008A	16-010(b)							HE
CDV-SMA-2.5	V009	16-010(c)							
CDV-SMA-2.5	V009	16-010(d)							
CDV-SMA-2.5	V009	16-028(a)							
CDV-SMA-2.51	V009A	16-010(i)	Ra	Cyanide	Metals		HE	SVC	
CDV-SMA-3	V010	14-009	Ra	Cyanide	Metals		HE		
CDV-SMA-4	V011	14-010	Ra	Cyanide	Metals		HE		
CDV-SMA-6.01	V012	14-001(g)			Cu				
CDV-SMA-6.01	V012	14-006							
CDV-SMA-6.02	V012A	14-002(d) 14-002(c)							
CDV-SMA-6.02	V012A	14-002(e)							
CDV-SMA-7	V013	15-008(d)							
CDV-SMA-8	V014	15-011(c)							
CDV-SMA-8.5	V015	15-014(a)	Ra	Cyanide	Metals				
CDV-SMA-9.05	V016	15-007(b)	Ra	Cyanide	Metals			SVC	HE
F-SMA-2	F001	36-004(c)			Cu				
PT-SMA-0.5	I001	15-009(e)							
PT-SMA-0.5	I001	C-15-004							
PT-SMA-1	I002	15-004(f)			Cu				
PT-SMA-1	I002	15-008(a)							
PT-SMA-1.7	I003	15-006(a)	Ra	Cyanide	Metals		HE		

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
PT-SMA-2	I004	15-008(f)			Cu				
PT-SMA-2	I004	36-003(b)							
PT-SMA-2	I004	36-004(e)			Cu				
PT-SMA-2.01	I004A	C-36-001	Ra	Cyanide	Metals		HE	SVC	
PT-SMA-2.01	I004A	C-36-006(e)	Ra	Cyanide	Metals		HE	SVC	
PT-SMA-3	I005	36-004(a)	Ra	Cyanide	Metals		HE		
PT-SMA-3	I005	36-006	Ra	Cyanide	Metals		HE		
PT-SMA-4.2	I007	36-004(d)							
W-SMA-1	W001	16-017(j)-99							
W-SMA-1	W001	16-026(c2)							
W-SMA-1	W001	16-026(v)							
W-SMA-1.5	W002	16-026(b2)			Cu				SVC
W-SMA-1.5	W002	16-028(d)			Cu				
W-SMA-2.05	W003	16-028(e)							HE
W-SMA-3.5	W004	16-026(y)	Ra	Cyanide	Metals				HE
W-SMA-4.1	W005	16-003(a)	Ra	Cyanide	Metals		HE		
W-SMA-5	W006	16-001(e)							
W-SMA-5	W006	16-003(f)							HE
W-SMA-5	W006	16-026(b)							HE
W-SMA-5	W006	16-026(c)							HE
W-SMA-5	W006	16-026(d)							HE
W-SMA-5	W006	16-026(e)							HE
W-SMA-6	W007	11-001(c)	Ra	Cyanide	Metals		HE		
W-SMA-7	W008	16-029(e) 16-026(h2)							HE
W-SMA-7.8	W009	16-031(a)	Ra	Cyanide	Metals				
W-SMA-7.9	W010	16-006(c)	Ra	Cyanide	Metals			SVC	
W-SMA-8	W011	16-016(g)			Al, Cu				
W-SMA-8	W011	16-028(b)			Al, Cu				
W-SMA-8.7	W012	13-001							
W-SMA-8.7	W012	13-002							
W-SMA-8.7	W012	16-004(a)							
W-SMA-8.7	W012	16-026(j2)							HE
W-SMA-8.7	W012	16-029(h)							
W-SMA-8.7	W012	16-035							HE
W-SMA-8.71	W012A	16-004(c)							
W-SMA-9.05	W013	16-030(g)							

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
W-SMA-9.5	W014	11-012(c)	Ra	Cyanide	Metals				
W-SMA-9.7	W015	11-011(a)							
W-SMA-9.7	W015	11-011(b)							
W-SMA-9.8	W016	11-005(c)	Ra	Cyanide	Metals				
W-SMA-9.9	W017	11-006(b)							HE
W-SMA-10	W018	11-002	Ra	Cyanide	Metals				HE
W-SMA-10	W018	11-003(b)	Ra	Cyanide	Metals				HE
W-SMA-10	W018	11-005(a)	Ra	Cyanide	Metals				
W-SMA-10	W018	11-005(b)	Ra	Cyanide	Metals				
W-SMA-10	W018	11-006(c)	Ra	Cyanide	Metals				HE
W-SMA-10	W018	11-006(d)	Ra	Cyanide	Metals				HE
W-SMA-10	W018	11-011(d)	Ra	Cyanide	Metals				
W-SMA-11.7	W019	49-008(c)							HE, SVC
W-SMA-12.05	W020	49-001(g)	Ra	Cyanide	Metals		HE		
W-SMA-14.1	W021	15-004(h)							
W-SMA-14.1	W021	15-014(l)							
W-SMA-15.1	W022	49-005(a)	Ra	Cyanide	Metals				
A-SMA-1.1	A001	39-004(a)	Ra	Cyanide	Metals		HE		
A-SMA-1.1	A001	39-004(d)	Ra	Cyanide	Metals		HE		
A-SMA-2	A002	39-004(b)			Cu				
A-SMA-2	A002	39-004(e)			Cu				
A-SMA-2.5	A003	39-010	Ra	Cyanide	Metals				HE
A-SMA-2.7	A004	39-002(c)							SVC
A-SMA-2.7	A004	39-008							
A-SMA-2.8	A005	39-001(b)	Ra	Cyanide	Metals				PCBs
A-SMA-3	A006	39-002(b)			Cu	PCBs			SVC
A-SMA-3	A006	39-004(c)			Al, Cu, Hg	PCBs			
A-SMA-3.5	A007	39-006(a)							
A-SMA-4	A008	33-010(d)	Ra	Cyanide	Metals		HE		
A-SMA-6	A009	33-004(k)							
A-SMA-6	A009	33-007(a)							
A-SMA-6	A009	33-010(a)							
CHQ-SMA-0.5	Q001	33-004(g)							
CHQ-SMA-0.5	Q001	33-007(c)							
CHQ-SMA-0.5	Q001	33-009				PCBs			
CHQ-SMA-1.01	Q002	33-002(d)	Ra	Cyanide	Metals	PCBs			

Appendix E, Potential Pollutants of Concern (continued)

SMA Number	PF	Site Number	Radioactivity	Cyanide	Metals	PCBs	High Explosives	Others	Add
CHQ-SMA-1.02	Q002A	33-004(h)							
CHQ-SMA-1.02	Q002A	33-008(c)			Cu				
CHQ-SMA-1.02	Q002A	33-011(d)			Cu				
CHQ-SMA-1.02	Q002A	33-015							Dioxin
CHQ-SMA-1.03	Q002B	33-008(c)			Cu	PCBs			
CHQ-SMA-1.03	Q002B	33-012(a)			Cu	PCBs			SVC
CHQ-SMA-1.03	Q002B	33-017							
CHQ-SMA-1.03	Q002B	C-33-001				PCBs			SVC
CHQ-SMA-1.03	Q002B	C-33-003							
CHQ-SMA-2	Q003	33-004(d)							
CHQ-SMA-2	Q003	33-007(c)			Al, Cu				
CHQ-SMA-2	Q003	C-33-003							
CHQ-SMA-3.05	Q004	33-010(f)	Ra	Cyanide	Metals	PCBs		PEST	
CHQ-SMA-4	Q005	33-011(e)	Ra	Cyanide	Metals	PCBs	HE		
CHQ-SMA-4.1	Q006	33-016	Ra	Cyanide	Metals	PCBs	HE		
CHQ-SMA-4.5	Q007	33-011(b)	Ra	Cyanide	Metals				
CHQ-SMA-5.05	Q008	33-007(b)	Ra	Cyanide	Metals				HE
CHQ-SMA-6	Q009	33-004(j)							
CHQ-SMA-6	Q009	33-006(a)			Cu				
CHQ-SMA-6	Q009	33-007(b)			Cu				
CHQ-SMA-6	Q009	33-010(c)			Cu				
CHQ-SMA-6	Q009	33-010(g)							
CHQ-SMA-6	Q009	33-010(h)							
CHQ-SMA-6	Q009	33-014							Dioxin
CHQ-SMA-7.1	Q010	33-010(g)	Ra	Cyanide	Metals		HE		