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Date: APR 2 2 2019
Refer To: N3B-19-0108

Esteban Herrera, Chief
Water Enforcement Branch (6EN-WS)
Compliance Assurance and Enforcement Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Subject: NPDES Permit No. NM0030759 - Alternative Compliance Requests for Seven Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources

Dear Mr. Herrera:

Enclosed please find one hard copy each with electronic files of the U.S. Department of Energy (DOE) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (the Permittees) written requests for alternative compliance for seven Site Monitoring Area (SMA)/Site combinations at Los Alamos National Laboratory (the Laboratory). The requests are being made in accordance with National Pollutant Discharge Elimination System Permit No. NM0030759 (the Individual Permit).

If the Permittees believe they have installed control measures to minimize pollutants in storm water discharges from Sites but are unable to certify completion of corrective action under Part I.E.2(a) through (d) of the Individual Permit, Part I.E.3 allows the Permittees to request the Sites be placed into alternative compliance. The enclosed requests address seven SMA/Site combinations where target action level (TAL) exceedances result from non-Site-related nonpoint sources.

As required by Part I.E.3 of the Individual Permit, the Permittees will notify the public of submittal of the alternative compliance requests by publishing a notice in the Los Alamos Monitor, the Taos News, and the Santa Fe New Mexican newspapers, and by posting the notice on the Individual Permit page of N3B's public website for a public review and comment period of 45 days. The Permittees will prepare written responses to all relevant significant comments, which will also be posted on the Individual Permit page of N3B's public website.

After the 45-day comment period, the Permittees will submit the alternative compliance requests, along with the complete record of public comment and the Permittees' response to comments, to the U.S. Environmental Protection Agency, Region 6, for a final determination on the requests.

If you have any questions, please contact Steve Veenis at (505) 309-1362 (steve.veenis@em-la.doe.gov) or David Rhodes at (505) 665-5325 (david.rhodes@em.doe.gov).

Sincerely,

Frazer Lockhart
Program Manager
Regulatory and Stakeholder Interface
N3B-Los Alamos

Sincerely,

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

Enclosure(s): One hard copy with electronic files –
1. Alternative Compliance Request for 3M-SMA-4 (EM2019-0101)
2. Alternative Compliance Request for ACID-SMA-2 (EM2019-0103)
3. Alternative Compliance Request for ACID-SMA-2.1 (EM2019-0100)
4. Alternative Compliance Request for LA-SMA-3.1 (EM2019-0108)
5. Alternative Compliance Request for M-SMA-1.2 (EM2019-0102)
6. Alternative Compliance Request for PT-SMA-1 (EM2019-0099)
7. Alternative Compliance Request for T-SMA-7 (EM2019-0104)

Cy: (letter and enclosure[s] emailed)
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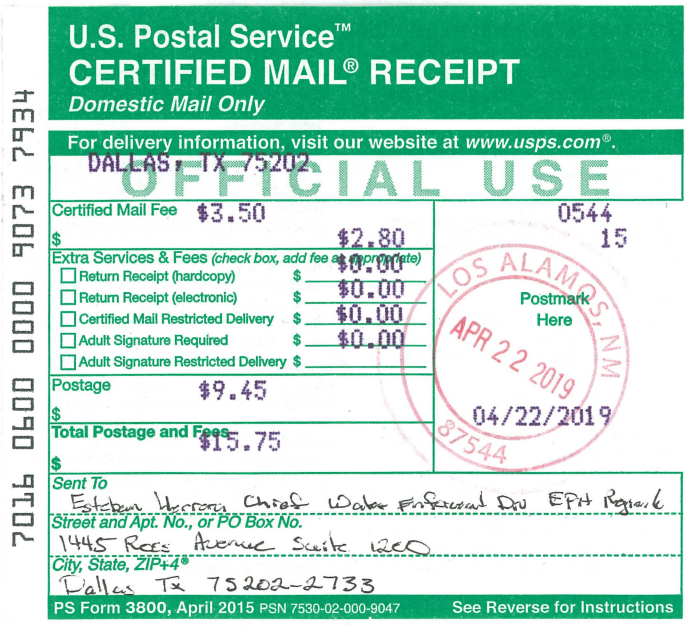
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City, State, ZIP+4®
Dallas Tx 75202-2733
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April 2019
EM2019-0101

Alternative Compliance Request for 3M-SMA-4

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for 3M-SMA-4

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."

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

4/11/2019
Date

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

4-22-2019
Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) 3M-SMA-4, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. The completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for 3M-SMA-4 is the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, the concentration of the POC (copper) in the storm water discharge from 3M-SMA-4 is approximately equivalent to upgradient concentrations, which are below storm water background concentrations from upgradient sources.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
bgs	below ground surface
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
D&D	decontamination and decommissioning
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
HE	high explosives
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
Site	AOC and/or SWMU identified in the Permit
SMA	site monitoring area

SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA 3M-SMA-4 contains two SWMUs, 18-002(b) and 18-003(c), and one AOC, 18-010(f), and is located near Pajarito Road in Threemile Canyon. Compliance Order on Consent (Consent Order) investigations for these Sites have not yet begun. Confirmation monitoring samples collected in 2017 from 3M-SMA-4 showed copper at a concentration above the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of the corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the 2016 Consent Order, administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Sites in 3M-SMA-4 being identified as SWMUs and an AOC in the 1990 SWMU report (LANL 1990), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.
- Section 5.0, Description of Control Measures Installed within 3M-SMA-4, details the baseline and enhanced control measures that were installed in 3M-SMA-4.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of the corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of the corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls (PCBs), radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media, and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of the corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines “completion of corrective action” as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1.(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is “extended for a one (1) year period following the first successful confirmation sampling event.” Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of the corrective action on a case-by-case basis, and EPA may require a new individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of the corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of the corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

The 1050.75-acre 3M-SMA-4 watershed, which includes SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f) is located in Technical Area 18 (TA-18), off Pajarito Road. The SMA consists of 1.5% developed area and 98.5% undeveloped area. The undeveloped area consists of 563 acres of sparse grass and 471 acres of ponderosa pine forest.

SWMU 18-002(b) is the former location of a firing point at TA-18 in Threemile Canyon near the location of former building 18-32. The firing site was used from 1944 to 1945 (LANL 1993). Materials used in shots at the site include uranium, thorium, high explosives (HE), beryllium, cadmium, lead, and possibly barium (LANL 1990, LANL 1993). The site consisted of a 2-ft-long × 2-ft-wide × 2-ft-deep firing chamber (former structure 18-04) constructed from 1-in.-thick steel and an aboveground armored bunker (structure 18-05), commonly called a "battleship," used to protect shot instrumentation (LANL 1990, LANL 1993). The top of the firing chamber was open and set flush with the ground west of structure 18-05. A ground-level wooden structure (former structure 18-06), located east of structure 18 05, was the battery building for the firing site cable conduit system and contained racks of lead-acid batteries (LANL 1993). Structure 18-04 was removed in 1945 and structure 18-06 was dismantled in 1951. Three additional former firing points that were located upcanyon and west of the first former firing point are associated with SWMU 18-002(b). Firing Point C (beneath former building 18-0032) and Firing Point G (located at the southeast corner of the former storage building 18-0122) were used in firing operations involving smaller charges, while the third firing point, Medium Firing Point, was built to handle HE charges of up to 2 tons (LANL 1993, LANL 1995a). A flat graded area west of former building 18-32 marks the former location of this firing point. The firing points were removed in the late 1940s, before the construction of former building 18-32 (LANL 1993).

SWMU 18-003(c) is an inactive septic system at TA-18 that received sanitary waste from former building 18-32 (a critical assembly building that underwent decontamination and decommissioning [D&D] in 2016) from 1952 to 1995. The system includes an inlet line, a reinforced concrete septic tank (structure 18-42), a discharge line, a drain field, and an outfall. The septic tank is located approximately 90 ft northeast of former building 18-32 (LANL 1995b). The tank had a capacity of 650 gal. (LANL 1999). The inlet line leading to the tank is approximately 130 ft in length, and the total length of the outlet line is approximately 115 ft. The drain field begins approximately 60 ft east of the septic tank and extends east 55 ft. The drain field consists of four drainlines spaced approximately 10 ft apart. Each drainline is approximately 75 ft long. An outfall, located at the distal end of the drain field, discharged into the stream channel in Threemile Canyon (LANL 1999). During the 1996 interim action conducted at the Site, the septic tank contents were removed and disposed of off-site and the tank was pressure washed (LANL 1999). In addition, the floor drains in former building 18-32 were sealed by fastening a gasket and metal plate over the drain opening; water service to the building was shut off (LANL 2010). During the 2000 voluntary corrective measure conducted at the Site, samples were collected from the tank interior and from subsurface soils around and beneath the tank (LANL 2010). The septic tank received sanitary wastewater from a restroom in building 18-32. The septic tanks contents were sampled in the early 1990s and the solids were found to contain low levels of organic and radionuclide contamination (Santa Fe Engineering Ltd. 1992).

AOC 18-010(f) is a former outfall at TA-18 that received discharges from the roof and floor drains associated with former building 18-32 (LANL 2010). Roof and floor drains associated with former building 18-32 discharged to a drainline that was located at the northeast corner of the building (LASL 1958). The drainline ran under the pavement and discharged to an outfall in a small grassy gully leading to the main stream channel in Pajarito Canyon. The outfall is approximately 200 ft north of the stream channel (LANL 2010). Because of the sandy soils at the site, discharges reportedly infiltrated within 5 to 10 ft from the outfall (LANL 1993). The date this outfall became operational is not known, but it is likely that the outfall was operational from the time building 18-32 was constructed in 1951 until D&D in 2016 (LANL 2010). The floor drains in building 18-32 received floor washings (Santa Fe Engineering Ltd. 1992). Potential contaminants include uranium, lead, and solvents (LANL 1993).

SWMUs 18-002(b) and 18-003(c) and AOC 18-010(f) are included in the Consent Order as part of the Lower Pajarito Canyon Aggregate Area. Consent Order investigations for this aggregate area have not yet begun. Decision-level data are not available for Sites 18-002(b) or 18-010(f). Decision-level data for SWMU 18-003(c) are available from soil samples collected from the interval 0–3 ft below ground surface (bgs) during the 1997 voluntary correction action (LANL 2010). Mercury and zinc in soil are likely to be Site related.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN 3M-SMA-4

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for 3M-SMA-4 is shown in Figure 5.0-1. A baseline storm water sample was collected on July 26, 2017. Analytical results from this sample yielded the following TAL exceedance:

- copper concentration of 8.11 µg/L (MTAL is 4.3 µg/L).

The TAL exceedance data are summarized in Table 6.0-1. Figures 6.0-1 and 6.0-2 are graphs that show the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

The watercourse sampler, Threemile above Pajarito, collected storm water data from August 2003 to January 2008. This sampler was located approximately 800 ft upstream of the current 3M-SMA-4 sampling location. During the time Threemile above Pajarito collected data, storm water samples collected in 2004, 2006, and 2007 exhibited copper concentrations approximately equivalent to the concentration detected at the 3M-SMA-4 sampler and within background.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TAL (copper) is within the range expected for storm water runoff from developed or undeveloped landscapes.

Part I.E.3(a) lists a number of factors that could prevent the Permittees from certifying the completion of corrective action certification under Part I.E.2(a) through I.E.2 (d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at 3M-SMA-4 are detailed below.

7.1 Potential Sources of TAL Exceedances

The SMA contains non-Site-affected developed and undeveloped landscapes that contribute storm water to the SMA sampler. Storm water samples collected at this SMA represent runoff from landscapes not affected by the Sites, as well as areas potentially affected by releases from the Sites. Potential non-Site-related and Site-related sources of copper in storm water samples are summarized below.

7.1.1 Runoff from Developed Landscapes

Copper is known to be present in storm water runoff from developed landscapes from various anthropogenic sources (e.g., automobile brake pads, galvanized metal, building materials, use as a flocculent in water). Storm water samples were collected from 2009 to 2012 in developed watersheds on the Pajarito Plateau and analyzed for metals to determine the contribution of metals to runoff from developed landscapes not affected by Laboratory operations. These results are summarized in the Laboratory publication entitled "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" (hereafter, the Background Metals Report) (LANL 2013). Sampling locations were selected to avoid any known Laboratory-related contamination and to provide reasonable estimates of runoff from a variety of developed landscapes representative of buildings, parking lots, and roads.

In the Background Metals Report, the 95% upper tolerance limit (UTL) was used to represent the upper limit of storm water natural background concentrations of a constituent. A UTL defines the uppermost limit of the range of data that occurs within the specified percentage; so the 95% UTL is the largest value in the 95% of the data collected. EPA provides methods for calculating the UTL using the ProUCL program (EPA 2013). When a single result is compared with background (as performed in evaluation of storm water data), the ProUCL technical guidance recommends comparing the concentrations of that result with the UTL background concentration. The UTL for copper in runoff from developed areas is 32.3 µg/L (LANL 2013).

As discussed above, the copper concentration in the storm water discharge is less than the storm water concentrations from developed landscapes. Table 7.1-1 compares TAL-exceeding constituent(s) with UTLs from developed and undeveloped landscapes.

7.1.2 Site-Related Source of Copper

Copper, although used at the Laboratory, is not known to be associated with industrial materials managed or released as significant industrial materials and is not known to be exposed to storm water at any of the Sites addressed in this request.

7.2 Rationale for Alternative Compliance

As described in section 7.1, storm water runoff from 3M-SMA-4, addressed in this request, contains non-Site-affected contributions from developed and undeveloped landscapes. The concentration of copper detected in storm water runoff is within the range of copper concentrations in runoff from developed landscapes and only slightly above the range of concentrations in runoff from undeveloped landscapes.

After reviewing the Site histories and comparing the storm water sampling results with the Background Metals Report UTLs (LANL 2013), the Permittees have concluded that the detected copper exceedance is a result of nonpoint source runoff from developed landscape background sources.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of the TAL-exceeding constituents in storm water runoff that are different from concentrations in storm water runoff from developed landscapes. The Permittees believe the Sites are not contributing to the TAL exceedance and the developed landscape not affected by the Sites are the sources of this TAL-exceeding constituent. Therefore, mitigating Site-related storm water would not reduce concentrations of this TAL-exceeding constituent within this SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.2.1 Enhanced Control Measures to Meet the TAL

The Sites addressed in this request receive runoff from undeveloped and developed landscapes. The concentration of copper in storm water is within the range of background concentration expected for these landscapes. Although copper exceeds the TAL, concentrations in storm water are within the range of what would be expected from storm water concentrations from similar landscape types not affected by Site activities. In addition, the Sites are not considered sources of the copper TAL exceedance based on Site histories and available soil sampling data.

If storm water discharges from the Sites were mitigated through the installation of enhanced controls, the SMA and receiving waters downstream of the Sites would still continue to receive runoff from developed and undeveloped landscapes, both within the SMA and surrounding areas. The background levels of copper from developed landscape nonpoint sources would likely continue to exceed the TAL. Concentrations collected upgradient are above the TAL and essentially the same as concentrations collected at the SMA.

7.2.2 Control Measures that Totally Retain and Prevent Discharge from Storm Water

For the Sites addressed in this request, it may be possible to completely retain storm water runoff so no discharge occurs. If storm water discharges from the Sites were completely retained, the receiving waters downstream of the Sites would continue to receive runoff from developed and undeveloped landscapes not affected by the Sites. The level of copper from nonpoint sources in the SMA's developed landscape would likely continue to exceed the TAL.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no corrective action is required for the Sites submitted herein for alternative compliance because the Sites are not considered a source of the copper exceeding the TAL. In conclusion, the primary source of copper is nonpoint source runoff from developed landscapes within the SMA and upgradient of the SMA.

The Permittees propose to continue to inspect and maintain existing controls until the Sites are removed from the Individual Permit.

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency) 2010. "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas (September 30, 2010).

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

LANL (Los Alamos National Laboratory) 1993. "RFI Work Plan for Operable Unit 1093," Los Alamos National Laboratory document LA-UR-93-422, Los Alamos, New Mexico (May 1993).

LANL (Los Alamos National Laboratory) 1995a. "Volume I, 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 (located in former Operable Unit 1093)," Los Alamos National Laboratory document LA-UR-95-3833, Los Alamos, New Mexico (October 1995).

LANL (Los Alamos National Laboratory) 1995b. "Utility Records Drawings, Sanitary Sewer System, TA-18," Engineering Drawing AB476, sheet number 4 of 5, Los Alamos, New Mexico. (December 14, 1995)

LANL (Los Alamos National Laboratory) 1999. "Voluntary Corrective Measures Plan for Potential Release Sites 18-003(a-h), Septic Tank Systems," Los Alamos National Laboratory document LA-UR-99-1167, Los Alamos, New Mexico (March 17, 1999).

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

LANL (Los Alamos National Laboratory) 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 (April 2013)

LASL (Los Alamos Scientific Laboratory) 1958. "Utility Location Plan, TA-18, Pajarito Site, Sewer and Process Piping System," Engineering Drawing ENG-R1065, sheet number 7 of 15, Los Alamos, New Mexico. (September 10, 1958)

Santa Fe Engineering Ltd.1992. "Wastewater Stream Characterization for TA-18 at Los Alamos National Laboratory, Environmental Study, Characterization Report #40," report prepared for Los Alamos National Laboratory, Santa Fe, New Mexico. (August 1992).

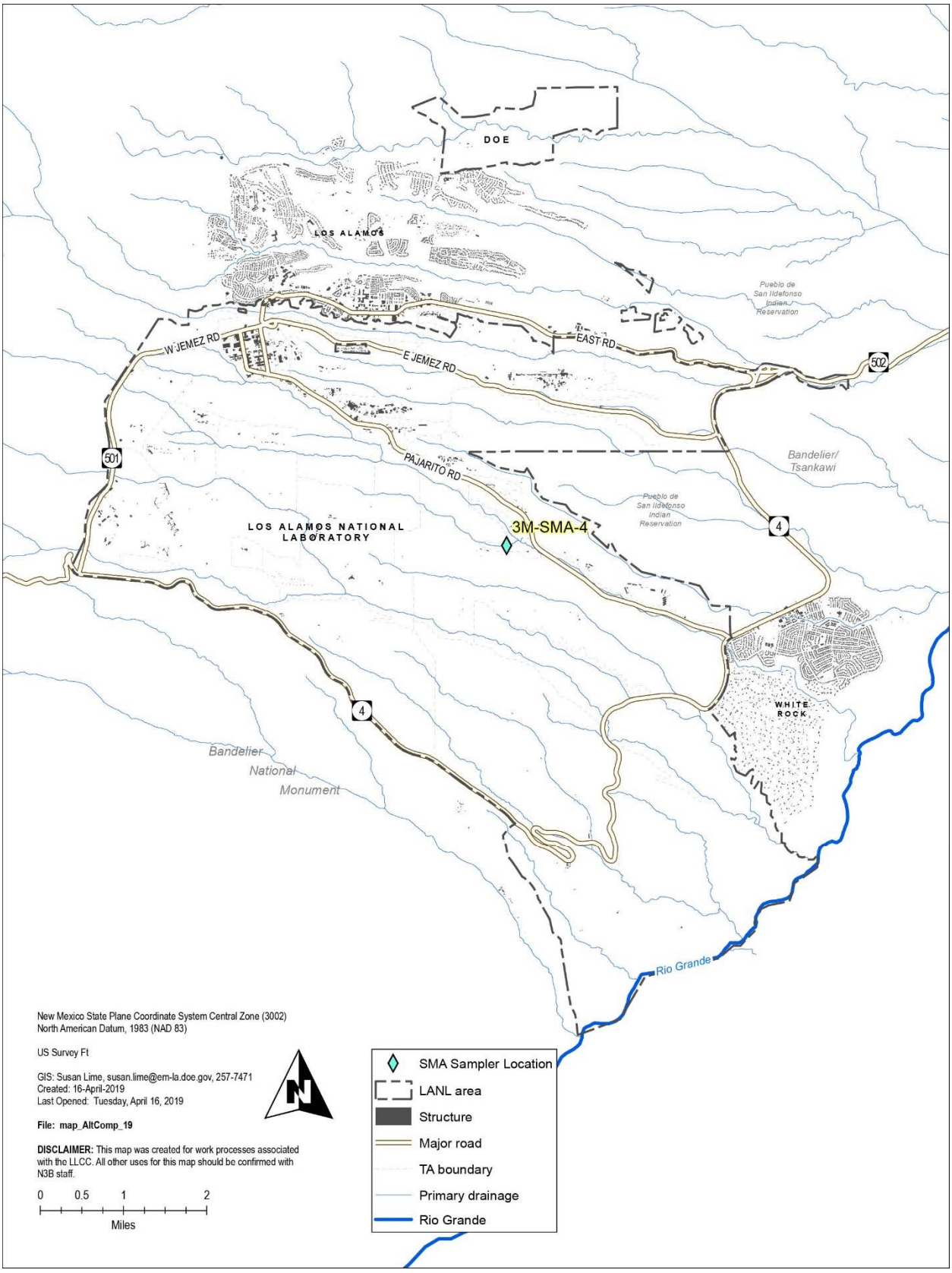
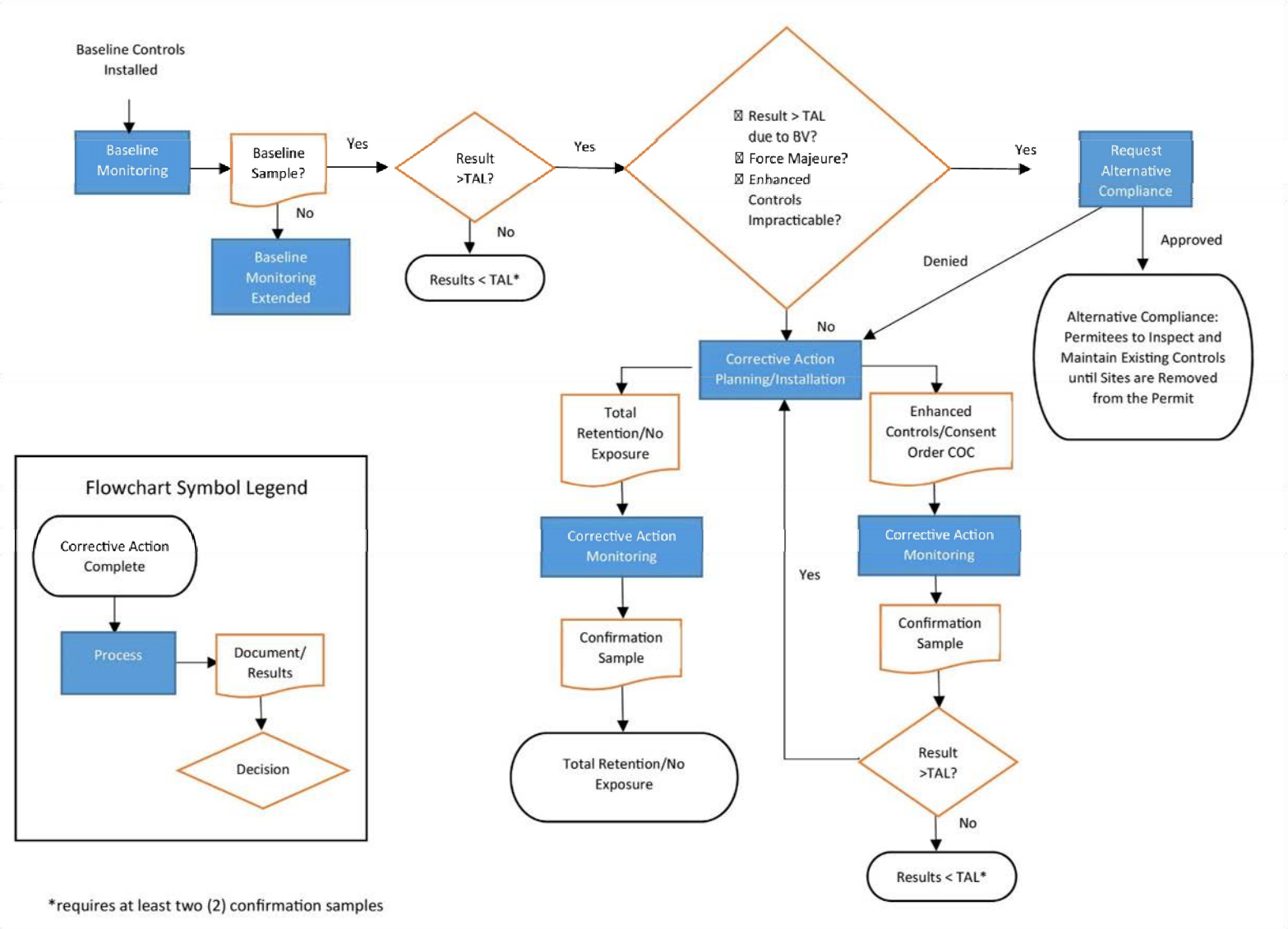


Figure 1.0-1 Location of the Laboratory



Note: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

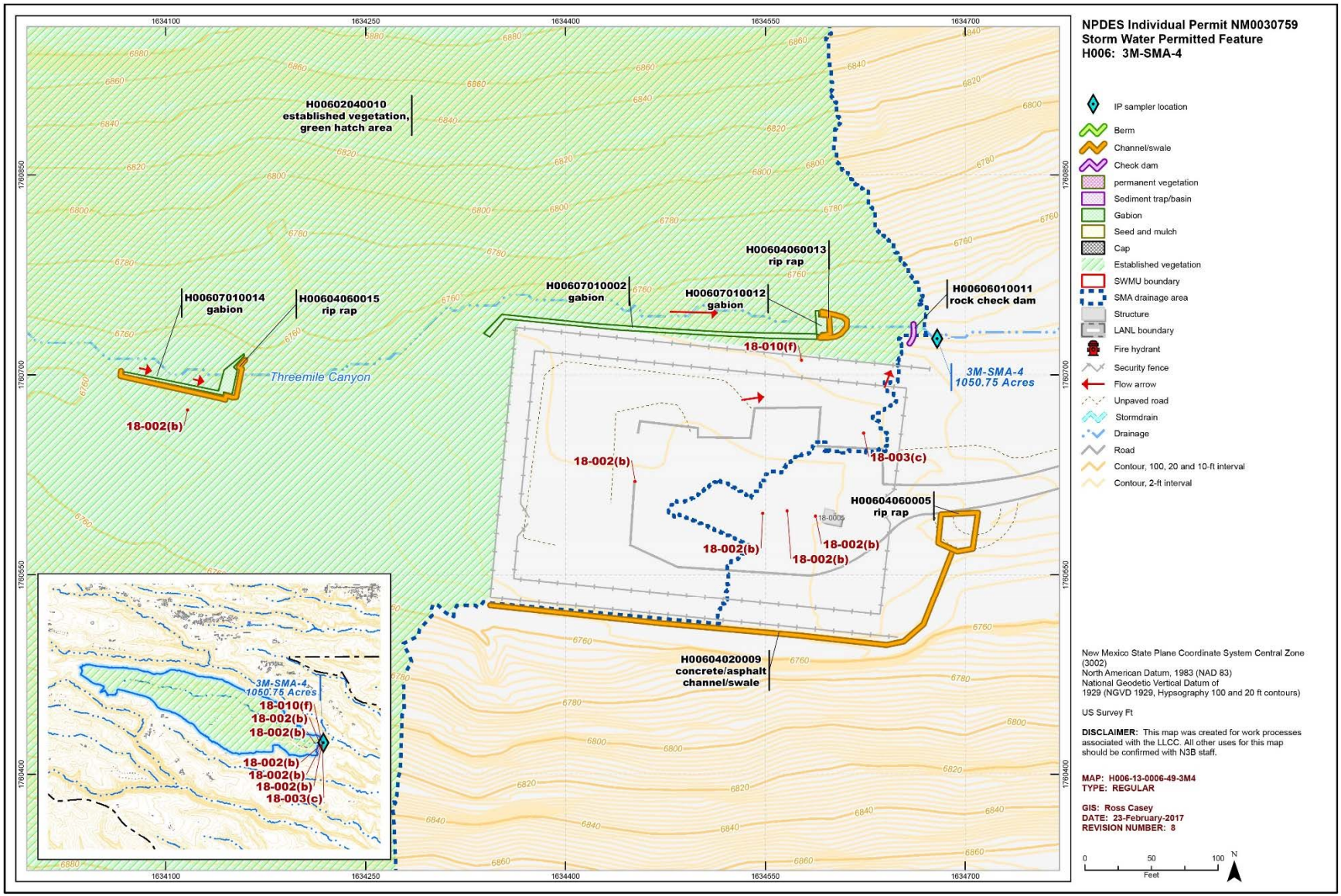
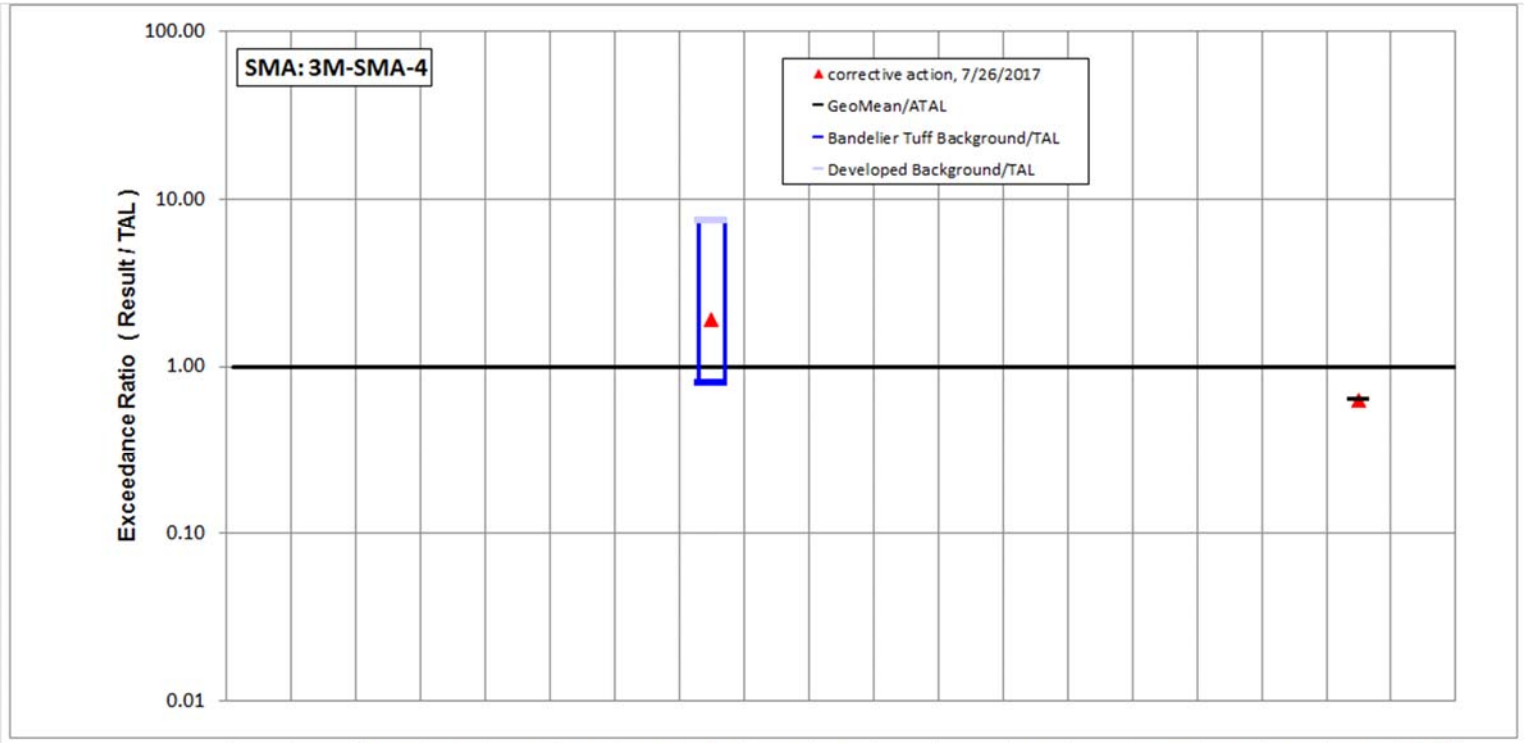


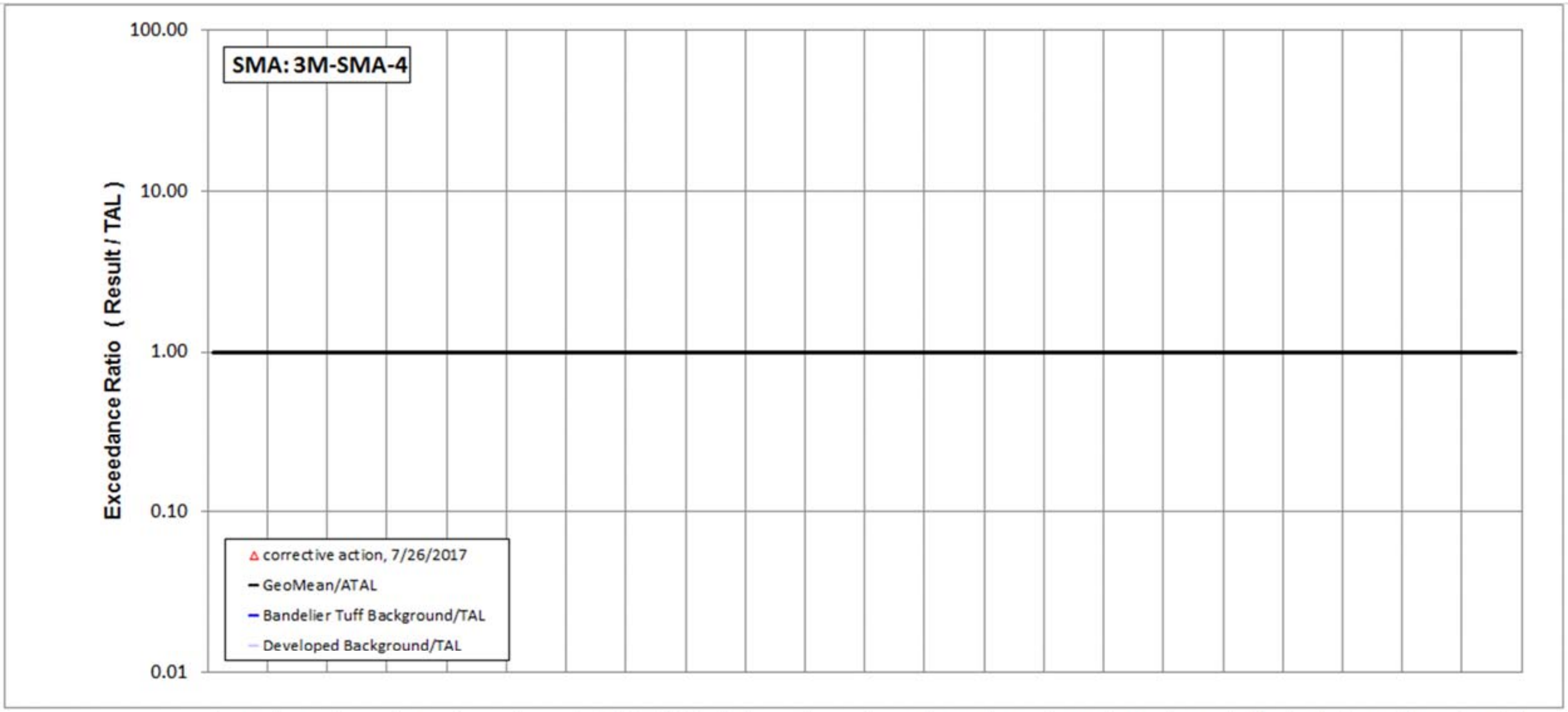
Figure 5.0-1 3M-SMA-4 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	-	-	-	-	-	-	-	MTAL	-	-	-	-	-	-	-	-	-	ATAL	-
std value	-	-	-	-	-	-	-	4.3	-	-	-	-	-	-	-	-	-	15	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/26/2017 result	-	-	-	-	-	-	-	**8.11**	-	-	-	-	-	-	-	-	-	9.4	-
result / TAL	-	-	-	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	0.63	-

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 inorganic analytical results summary plot for 3M-SMA-4



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/26/2017 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.095*	-	-	-	*0.095*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*5E-04*	-	-	-	*0.005*

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-2 2017 organic analytical results summary plot for 3M-SMA-4

Table 5.0-1
Active Control Measures, 3M-SMA-4

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
H00602040010	Established vegetation	No	Yes	No	Yes	B[a]
H00604020009	Concrete/asphalt channel/swale	Yes	No	No	Yes	CB[b]
H00604060005	Riprap	Yes	No	No	Yes	CB
H00604060013	Riprap	No	Yes	No	Yes	EC[c]
H00604060015	Riprap	No	Yes	No	Yes	EC
H00606010011	Rock check dam	No	Yes	Yes	No	EC
H00607010002	Gabions	Yes	No	Yes	No	CB
H00607010012	Gabions	No	Yes	Yes	No	EC
H00607010014	Gabions	No	Yes	Yes	No	EC

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

[c] EC = Enhanced control measure.

Table 6.0-1
Summary of Storm Water Exceedances

Sampler	Analyte	Unit	Number of Detects	Concentration	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
3M-SMA-4	Copper	µg/L	1	8.11	4.3	1	1.89
Threemile above Pajarito	Copper	µg/L	3	5.6-5.8	4.3	3	1.35

Table 7.1-1
2017 Storm Water Exceedances and UTLs, 3M-SMA-4

TAL Exceedances (see scatter plots)	Exceeds Storm Water Undeveloped Landscape Background UTL	Exceeds Storm Water Developed Landscape Background UTL
Copper (1.89×) – 8.11 µg/L, MTAL is 4.3 pCi/L	(UTL: 3.43 µg/L[a)] ☒ **Yes** ☐ **No**	(UTL: 32.3 µg/L[b]) ☐ Yes ☒ No

[a] LANL 2013, Table 3.

[b] LANL 2013, Table 13.

April 2019
EM2019-0103

Alternative Compliance Request for ACID-SMA-2

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for ACID-SMA-2

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."

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

4/11/2019
Date

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

4-22-2019
Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request is for alternative compliance addresses site monitoring area (SMA) ACID-SMA-2, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. The completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for ACID-SMA-2 is the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, the concentrations of the POCs (aluminum, polychlorinated biphenyls, and gross-alpha activity) in the storm water discharge from ACID-SMA-2 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
IA	interim action
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
RLW	radioactive liquid waste
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSL	soil screening level

SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA ACID-SMA-2 contains four SWMUs: 01-002(b)-00, 45-001, 45-002, and 45-004. Confirmation monitoring samples collected in 2017 from ACID-SMA-2 showed aluminum, gross-alpha activity, and total polychlorinated biphenyls (PCBs) at concentrations above the applicable target action levels (TALs). Because of these TAL exceedances, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit , but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Sites in ACID-SMA-2 being identified as SWMUs in the 1990 SWMU report (LANL 1990a), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.
- Section 5.0, Description of Control Measures Installed within ACID-SMA-2, details the baseline and enhanced control measures that were installed in ACID-SMA-2.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.

- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of the corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of the corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, PCBs, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of the corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of the corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges, as required by Part I.A of the Permit, at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of the corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

The 52.4-acre ACID-SMA-2 watershed, which includes SWMUs 01-002(b)-00, 45-001, 45-002, and 45-004, is located in the middle of Los Alamos townsite. The SMA consists of 67% developed area and 33% undeveloped area. The undeveloped area is composed entirely of 17 acres of ponderosa pine. ACID-SMA-2 is part of a larger SMA, ACID-SMA-2.1.

SWMU 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located within the boundaries of former Technical Area 45 (TA-45) at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. This outfall was used from 1943 to 1951 to discharge untreated radioactive liquid waste (RLW) generated in laboratories and research facilities at former TA-01. Contaminants potentially present in the untreated wastewater include any chemicals or radionuclides used in buildings connected to the waste lines. These contaminants include plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals, and solvents (LANL 1992a). Discharges of untreated RLW ceased when the TA-45 RLW treatment plant began operation in 1951 (LANL 1990b, LANL 1992a, LANL 1992b, LANL 1995). In 1966, the SWMU 01-002(b)-00 outlet pipe, associated weir box, tuff around the outfall, and tuff from the canyon wall below the outfall were removed (Stoker et al. 1981, LANL 1992b). In September 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992b). A radiological survey of the remediated area conducted in 1981 concluded that residual contamination at the site was below allowable limits at that time (Stoker et al. 1981).

An interim action (IA) was conducted in the south fork of Acid Canyon in 2001, downstream of the SWMU 01-002(b)-00 outfall to reduce potential radiation doses to recreational users of the south fork of Acid Canyon to levels as low as reasonably achievable. Approximately 483 yd^3 of sediment was removed during the IA to meet the cleanup goal of 280 pCi/g of plutonium-239/240 (LANL 2002).
SWMU 01-002(b)-00 is currently eligible for a COC with controls, limiting land use to recreational. LANL submitted a request to NMED for the corrective action complete with controls for SWMU 01-002(b)-00 on September 30, 2014 (LANL 2014). In 2015, NMED requested additional information (NMED 2015).

SWMU 45-001 consists of the former TA-45 liquid waste treatment plant and its two associated outfalls. The TA-45 RLW treatment plant (building 45-2) was the first such facility at LANL and was located near the current intersection of Canyon Road and Central Avenue in the Los Alamos townsite (LANL 1992b). The treatment plant began operation in 1951 and operated until 1964 (LANL 1990a). The capacity of the plant was originally 90 gal./min but was expanded to 145 gal./min in 1957 (LANL 1992b). The treatment plant included neutralization and storage tanks, flocculation tanks, sedimentation basins, vacuum filters, and granular media filters (Stoker et al. 1981). Contaminants potentially present in the untreated wastewater include any chemicals or radionuclides used in buildings connected to the waste lines. These contaminants include plutonium, uranium, americium, tritium, cesium-137, strontium-90, solvents, and other chemicals (Stoker et al. 1981, LANL 1990a). Effluent from the plant discharged to Acid Canyon through two outfalls located near the canyon rim and flowed to the south fork of Acid Canyon [SWMU 01 002(b)-00] (LANL 1990a; LANL 1992b). Decontamination and decommissioning of SWMU 45-001 began in October 1966 and included demolition and removal of the treatment plant equipment, facilities, and waste lines and excavation of contaminated soil (Stoker et al. 1981, LANL 1992b). In July 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992b). NMED issued a COC without controls for SWMU 45-001 in February 2013 (NMED 2013).

SWMU 45-002 consists of a former vehicle decontamination facility used to remove radioactive contamination from vehicles and large equipment, including filters from the Sigma Building, trash dumpsters, wing tanks from airplanes, and lead bricks (LANL 1995). This former decontamination facility was composed of former building 45-1, a sump, and a drain system used to collect water for the RLW treatment facility (LANL 1990a). SWMU 45-002 was located approximately 40 ft south of the TA-45 RLW

treatment plant (SWMU 45-001). Vehicles and other equipment were decontaminated by steam cleaning (LANL 1995). Decontamination wastes consisted of oil and grease contaminated with radionuclides (LANL 1990a). The decontamination facility was constructed in 1951, began operation in 1952, was operated approximately once per week until 1964, and was decommissioned in 1966 (IT Corporation 1991, LANL 1992b, LANL 1995). Decontamination wastewater was initially discharged to Acid Canyon until 1955 when it was routed to the RLW treatment plant (LANL 1992b). In July 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992b). NMED issued a COC without controls for SWMU 45-002 in February 2013 (NMED 2013).

SWMU 45-004 consists of a former sanitary sewer outfall. This outfall was associated with the sanitary sewer system that was constructed at TA-45 in 1947 to serve the Los Alamos townsite (LANL 1992b). This sewer system included a sanitary sewer lift station (former structure 45-3) and sanitary sewer manholes (former structures 45-5 and 45-6) (LANL 1990a). The outfall was located to the north of the lift station, approximately 100 ft north of the TA-45 treatment plant (SWMU 45-001) and was used for emergency discharge of overflow (LANL 1995). The outfall discharged into a drainage channel leading into Acid Canyon. The sanitary sewer manholes (structures 45-5 and 45-6) were plugged with concrete during the decontamination and decommissioning of TA-45 in 1966 and 1967, and the sanitary sewer system was transferred to Los Alamos County in 1967 (LANL 1992b). NMED issued a COC without controls for SWMU 45-004 in February 2013 (NMED 2013).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN ACID-SMA-2

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for ACID-SMA-2 is shown in Figure 5.0-1. Enhanced control confirmation samples were collected from ACID-SMA-2 on July 8, 2017, and July 26, 2017. Analytical results from these samples yielded the following TAL exceedances:

- aluminum concentration of 798 µg/L (MTAL is 750 µg/L),
- gross-alpha activities of 236 pCi/L and 47.9 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 0.057 µg/L and 0.105 µg/L (ATAL is 0.00064 µg/L).

The data are summarized in Table 6.0-1. Figures 6.0-1 and 6.0-2 are graphs that show the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituents exceeding TALs (aluminum, gross alpha, total PCBs) are within the range expected for storm water runoff from developed or undeveloped landscapes.

Part I.E.3(a) lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through I.E.2(d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of pollutants of concern, site conditions that make it impracticable to install further control measures, and pollutants of concern contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at ACID-SMA-2 are detailed below.

7.1 Potential Sources of TAL Exceedances

The SMA contains non-Site-affected developed and undeveloped landscapes that contribute storm water to the SMA sampler (Table 7.1-1). Storm water samples collected at this SMA represent runoff from landscapes not affected by the Sites, as well as areas potentially affected by releases from the Sites. Potential non-Site-related and Site-related sources of aluminum, PCBs, and gross-alpha radioactivity in storm water samples are summarized below.

7.1.1 Runoff from Developed Landscapes

Aluminum is known to be present in storm water runoff from developed landscapes from various anthropogenic sources (e.g., automobile brake pads, galvanized metal, building materials, use as a flocculent in water). Storm water samples were collected from 2009 to 2012 in developed watersheds on the Pajarito Plateau and analyzed for metals to determine the contribution of metals to runoff from developed landscapes not affected by Laboratory operations. These results are summarized in the Laboratory publication entitled "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" (hereafter, the Background Metals Report) (LANL 2013). Sampling locations were selected to avoid any known Laboratory-related contamination and to provide reasonable estimates of runoff from a variety of developed landscapes representative of buildings, parking lots, and roads.

In the Background Metals Report, the 95% upper tolerance limit (UTL) was used to represent the upper limit of storm water natural background concentrations of a constituent. A UTL defines the uppermost limit of the range of data that occurs within the specified percentage; so the 95% UTL is the largest value in 95% of the data collected. EPA provides methods for calculating the UTL using the ProUCL program (EPA 2013). When a single result is compared with background (as performed in evaluation of storm water data), the ProUCL technical guidance recommends comparing the concentrations of that result with the UTL background concentration. The UTL for aluminum in runoff from developed areas is 245 µg/L (LANL 2013).

PCBs are common anthropogenic-sourced constituents that result from environmental cycling on a global scale of past releases of PCBs and also come from contamination due to the historical use of PCBs as additives in hundreds of industrial and commercial applications. These applications included electrical, heat-transfer, and hydraulic equipment; plasticizers in paints, plastics, calking, and rubber products; pigments, dyes, and carbonless copy paper; and many other uses (LANL 2012). DOE, the NMED-DOE Oversight Bureau, and LANL conducted a multiyear cooperative study to characterize PCBs in certain

surface waters located in the upper Rio Grande watershed in and around the Los Alamos townsite and Laboratory. The May 2012 report entitled “Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed” (hereafter, the PCB Background Report), was submitted to EPA on February 1, 2013 (LANL 2012).

The PCB Background Report documents the results of storm water sampling conducted in locations representing storm water runoff from relatively small urban watersheds. Samplers were placed around the edge of urban development to collect storm water runoff primarily from developed landscapes such as buildings, parking lots, and roads; no samplers were placed below any known areas of contamination. The UTL for PCBs in storm water runoff from developed landscapes is 0.098 µg/L (LANL 2012).

As discussed above, for these Sites, the PCB concentrations in the storm water discharges are less than the storm water concentrations from developed landscapes. Table 7.1-2 compares TAL-exceeding constituent(s) with background UTLs from developed landscapes.

7.1.2 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4), and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Aluminum and several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in the Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring metals and radionuclides to runoff from undeveloped areas not affected by Site operations, storm water samples were collected from 2009 to 2012 in remote watersheds on the Pajarito Plateau and analyzed for metals and radioactivity, including gross-alpha radioactivity. These results are summarized in the Background Metals Report (LANL 2013). Sampling locations were selected to avoid any known contaminated areas or developed areas and to provide reasonable estimates of concentrations of metals and gross-alpha activity in natural background storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water was composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 95% UTL was used to represent the background concentration of a constituent. The UTLs for aluminum and gross-alpha radioactivity calculated for storm water runoff from remote watersheds (undeveloped landscapes) containing primarily weathered Bandelier Tuff material are 2210 µg/L and 1490 pCi/L, respectively (LANL 2013). These values are considered to be the natural background concentrations for undeveloped landscapes and apply to SMAs with undeveloped landscapes in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

As discussed above, for these Sites, the aluminum concentration and the gross-alpha activity in storm water runoff are both less than the storm water natural background values for aluminum and gross-alpha activity. Table 7.1-2 compares TAL-exceeding constituent(s) with background UTLs from undeveloped landscapes.

7.1.3 Site-Related Sources of Aluminum and PCBs

Aluminum, although used at the Laboratory, is not known to be associated with industrial materials managed or released as significant industrial materials, and is not known to be exposed to storm water, at any of the Sites in this request. The PCB TAL exceedances detected at ACID-SMA-2 are likely linked to industrial activities at SWMU 01-002(b)-00, a former industrial waste line outfall and drainage area. However, soil concentrations for PCBs are below soil screening levels (SSLs), and Individual Permit storm water sampling PCB concentrations are below developed landscape background levels.

7.1.4 Site-Related Sources of Adjusted Gross Alpha

Storm water samples collected at the SMA addressed by this request were analyzed for gross-alpha radioactivity, which is a measure of the alpha radioactivity associated with all alpha-emitting radionuclides detected in the sample. The TAL contained in the Individual Permit, however, is for adjusted gross-alpha radioactivity. Adjusted gross-alpha radioactivity does not include the alpha radioactivity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha radioactivity of a sample will always be greater than the adjusted gross-alpha radioactivity, use of gross-alpha radioactivity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha radioactivity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Sites contained in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha radioactivity from these significant materials associated with industrial activities and then potentially released to storm water discharges at these Sites would not contribute to adjusted gross-alpha radioactivity. There are, therefore, no sources of adjusted gross-alpha radioactivity associated with the Sites contained in this request.

7.2 Rationale for Alternative Compliance

As described in section 7.1, storm water runoff from ACID-SMA-2, addressed in this request, contains non-Site-affected contributions from developed and undeveloped landscapes. The concentration of aluminum detected in storm water runoff is within the range of aluminum concentrations in runoff from undeveloped landscapes. The concentrations of PCBs detected in storm water runoff are below the range of PCB concentrations in runoff from developed landscapes.

After reviewing the Site histories and comparing storm water sampling results with the Background Metals Report UTLs (LANL 2013), the Permittees have concluded that the detected aluminum exceedance is a result of nonpoint source runoff from natural background sources.

At ACID-SMA-2, PCBs were detected in storm water runoff at concentrations that were less than the developed landscape storm water UTL (LANL 2012). In 2001, an IA was conducted to remove sediment contaminated with radionuclides and PCBs (LANL 2002). Confirmatory samples had PCB concentrations that were an order of magnitude less than the SSLs for PCB concentrations.

As evidenced from the low concentrations of PCBs in storm water, the Sites are no longer sources of PCBs, and concentrations of PCBs in storm water runoff are less than concentrations of PCBs in storm water runoff from developed landscapes. Therefore, further reduction of PCBs by installing enhanced controls will not improve water quality in the contributing watershed because of ambient concentrations of PCBs in storm water.

As stated in Section 7.1.4, the Sites included in this alternative compliance request are not considered sources of adjusted gross-alpha radioactivity subject to regulation under the Individual Permit.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of the TAL-exceeding constituents in storm water runoff that are different from concentrations in storm water runoff from undeveloped or developed landscape backgrounds. The Permittees believe the Sites are not contributing to the TAL exceedance(s), and undeveloped and developed landscapes not affected by the Sites are the sources of these TAL-exceeding constituents. Therefore, mitigating Site-related storm water would not reduce concentrations of TAL-exceeding constituents within this SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.2.1 Enhanced Control Measures to Meet the TAL

As shown in Table 7.1-1, the Sites contained in this request receive runoff from undeveloped and developed landscapes. The concentrations of aluminum and PCBs and the gross-alpha radioactivity in storm water samples are within the range of background concentrations expected for these landscapes (Table 7.1-2). Although these constituents exceed TALs, concentrations in storm water are within the range of what would be expected from storm water concentrations from similar landscape types not affected by Site activities. In the case of aluminum, the Sites are not considered a source of the TAL exceedances based on Site histories and available soil sampling data.

In the case of gross-alpha activities, the concentrations detected in storm water are consistent with gross-alpha activities in storm water from undeveloped landscapes (natural background). Gross-alpha activities are naturally present in sediment derived from Bandelier Tuff throughout the Pajarito Plateau (LANL 1998), including sediments in this SMA.

If storm water discharges from the Sites were mitigated through the installation of enhanced controls, the SMA and receiving waters downstream of the Sites would still continue to receive runoff from both developed and undeveloped landscapes, both within the SMA and surrounding areas. The background levels of PCBs from developed landscape nonpoint sources, and the naturally occurring background levels of aluminum and gross-alpha radioactivity in this runoff, would likely continue to exceed the TALs.

7.2.2 Control Measures that Totally Retain and Prevent Discharge from Storm Water

For the Sites in this request, it may be possible to totally retain storm water runoff so no discharge occurs. If storm water discharges from these Sites were totally retained, the receiving waters downstream of the Sites would continue to receive runoff from developed and undeveloped landscapes not affected by the Sites. The levels of PCBs from nonpoint sources and the naturally occurring background levels of aluminum and gross-alpha radioactivity in this runoff would likely continue to exceed TALs.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no additional corrective action is required for the Sites submitted herein for alternative compliance because the Sites are not considered sources of the TAL-exceeding constituents. In conclusion, the primary source of PCBs is nonpoint source runoff from developed landscapes within the SMA; the source of the aluminum and adjusted gross-alpha radioactivity in the SMA is natural background from storm water–containing sediments and soils weathered from the Bandelier Tuff. Furthermore, any gross-alpha-emitting radionuclides contributed by these Sites in this request are exempt and are not regulated under the Individual Permit.

The Permittees propose to continue to inspect and maintain existing controls until the Sites are removed from the Individual Permit.

9.0 REFERENCES

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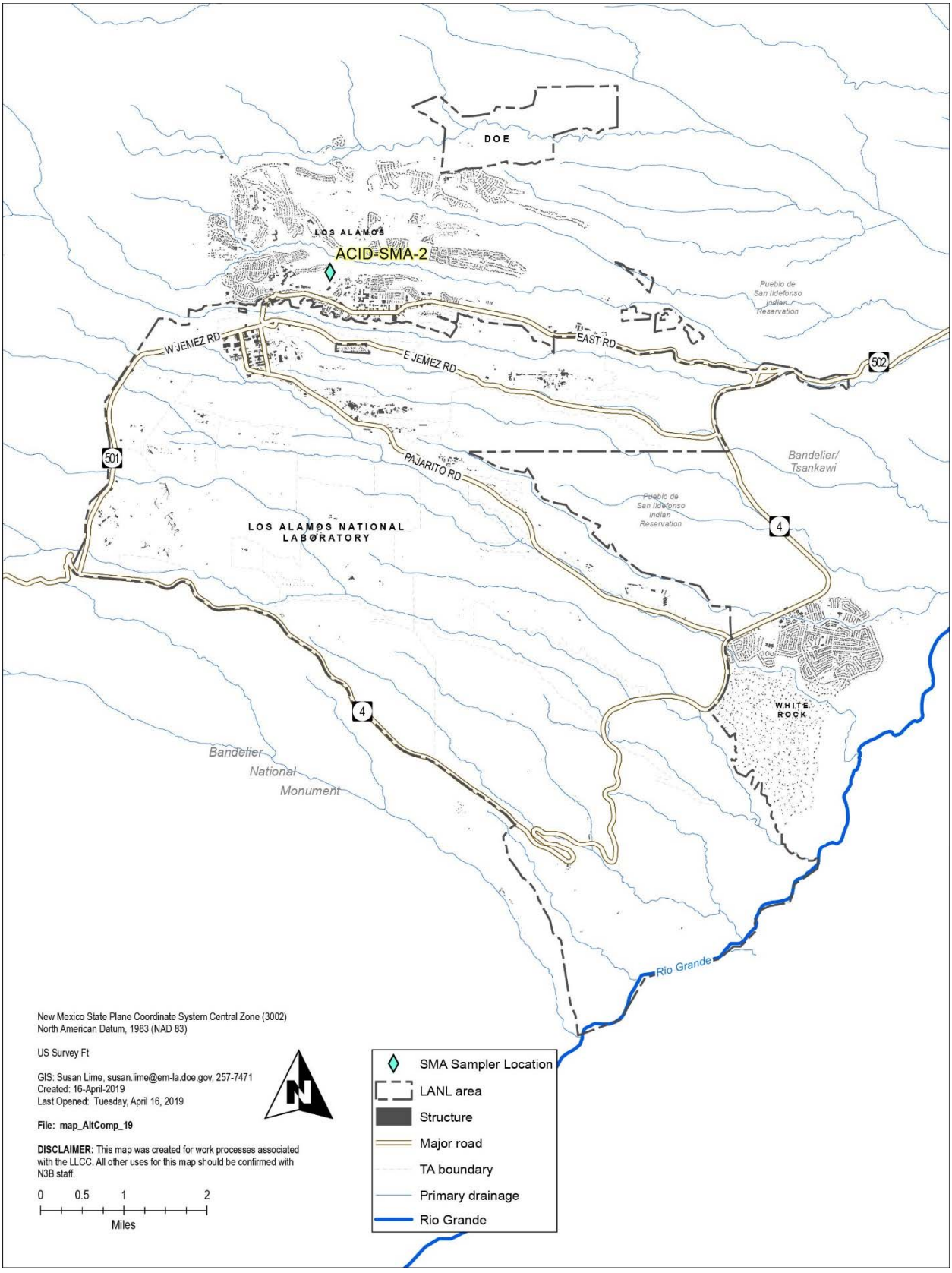
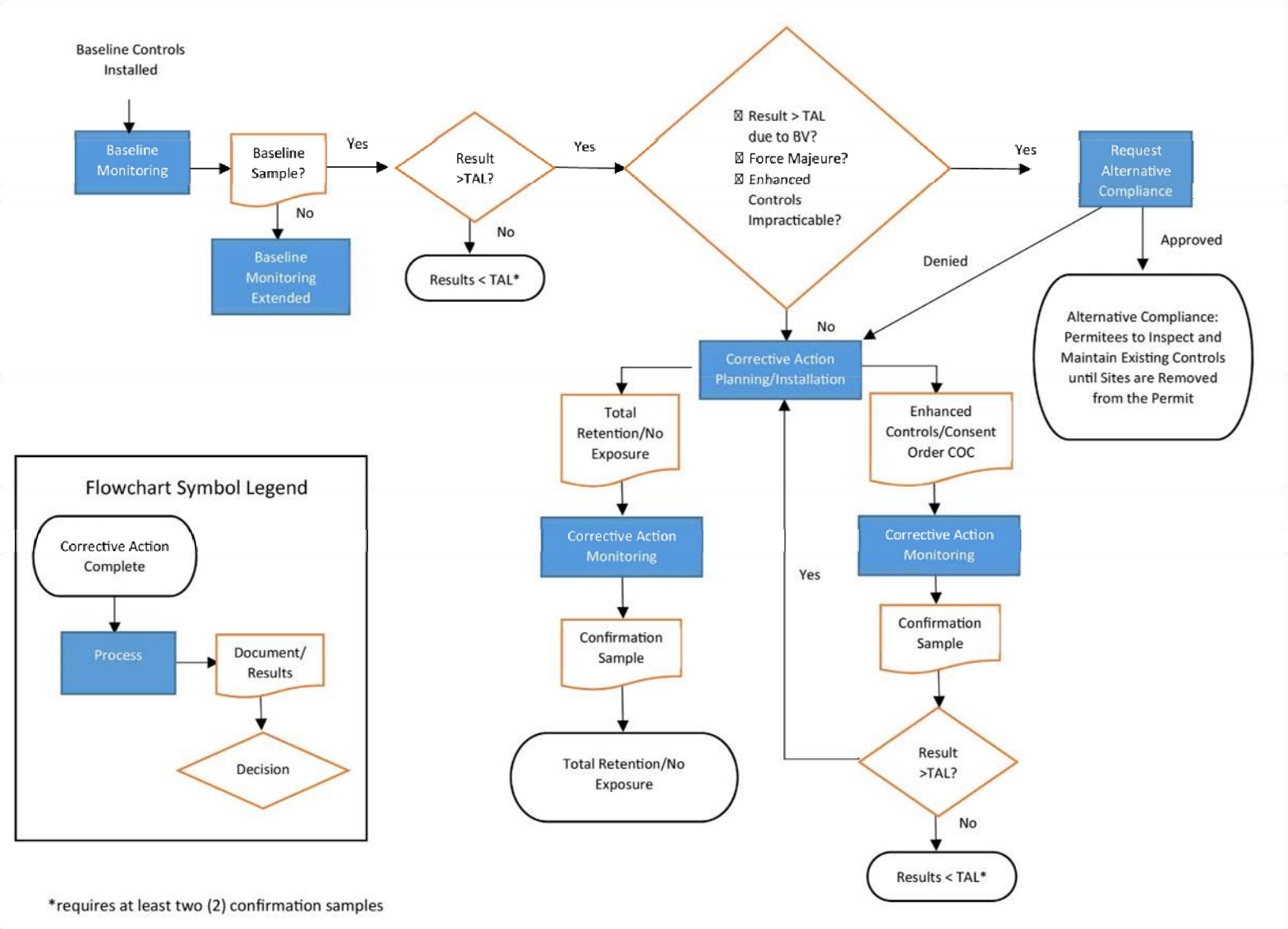


Figure 1.0-1 Location of the Laboratory



Note: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

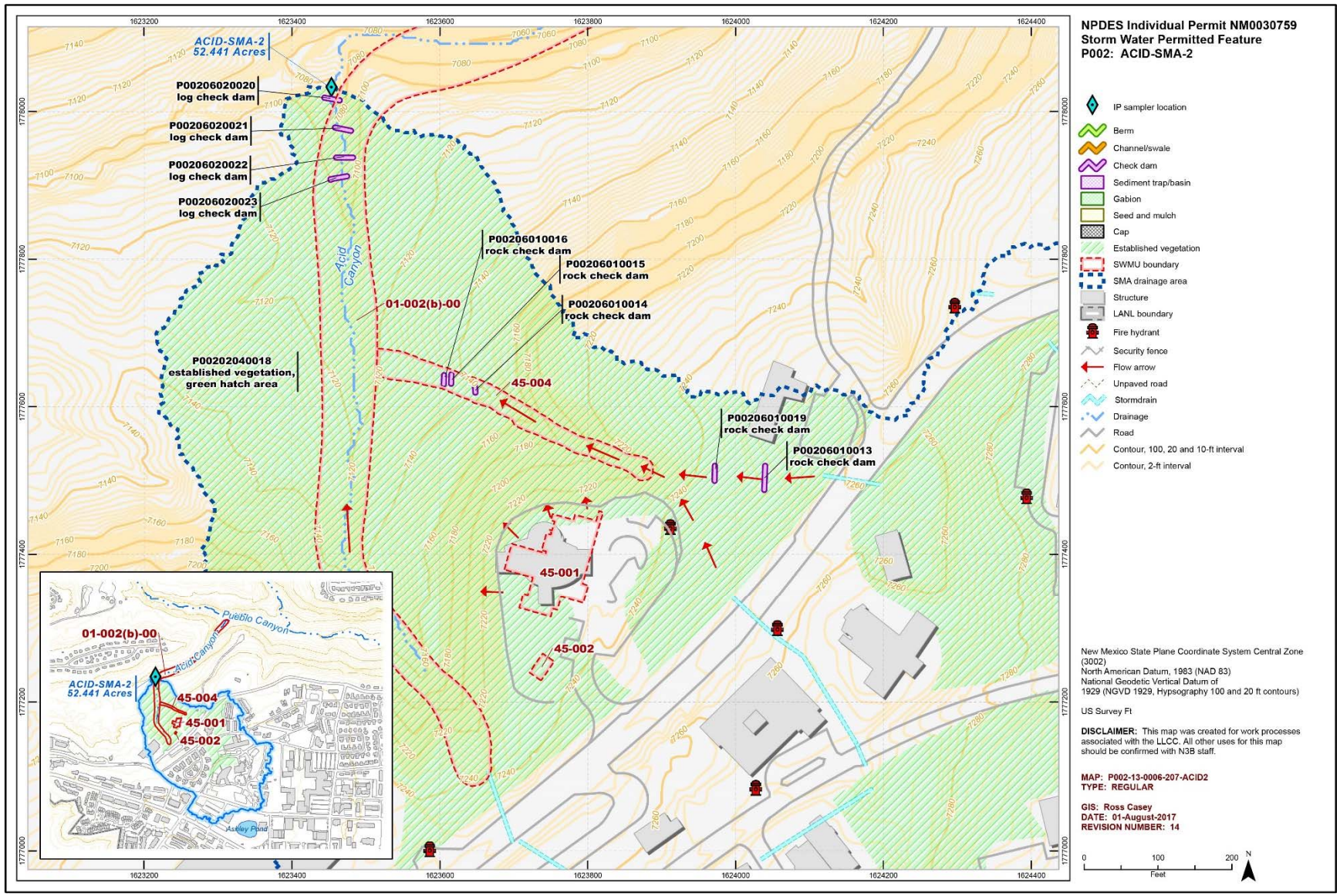
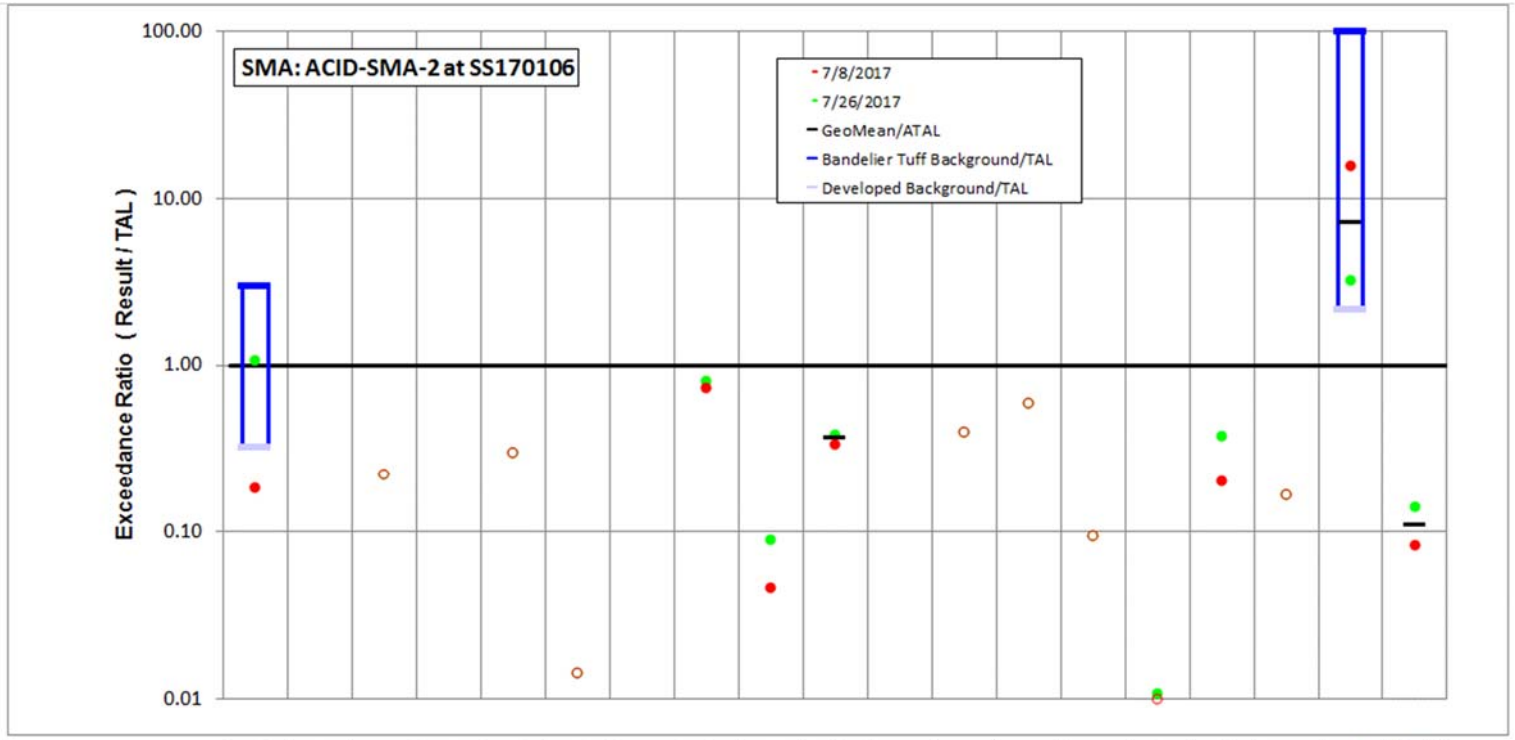


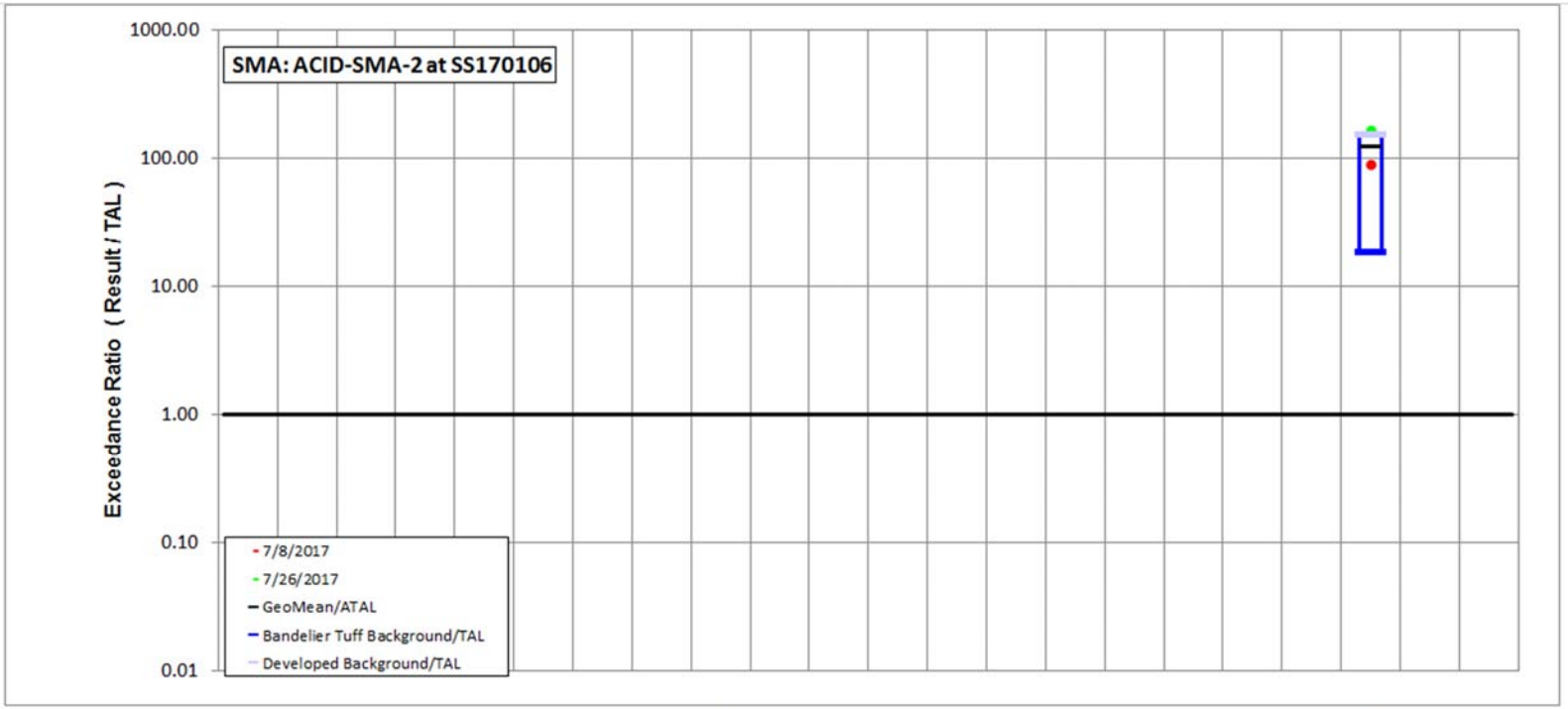
Figure 5.0-1 ACID-SMA-2 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/26/2017 result	**798**	*1*	*2*	*15*	*0.3*	*3*	*1*	3.45	1.52	0.296	1.56	*2*	*0.3*	*0.6*	1.07	16	*0.002*	**47.9**	4.26
result / TAL	**1.1**	*0.002*	*0.22*	*0.003*	*0.3*	*0.014*	*0.001*	0.8	0.089	0.38	0.0092	*0.4*	*0.6*	*0.095*	0.011	0.38	*0.17*	**3.2**	0.14
7/8/2017 result	139	*1*	*2*	*15*	*0.3*	*3*	*1*	3.14	0.782	0.262	1.25	*2*	*0.3*	*0.6*	*1*	8.55	*0.002*	**236**	2.5
result / TAL	0.19	*0.002*	*0.22*	*0.003*	*0.3*	*0.014*	*0.001*	0.73	0.046	0.34	0.0074	*0.4*	*0.6*	*0.095*	*0.01*	0.2	*0.17*	**16**	0.083

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 inorganic analytical results summary plot for ACID-SMA-2



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/26/2017 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.105**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**160**	-	-
7/8/2017 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.057**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-2 2017 organic analytical results summary plot for ACID-SMA-2

Table 5.0-1
Active Control Measures at ACID-SMA-2

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
P00202040018	Established vegetation	No	Yes	No	Yes	B[a]
P00206010013	Rock check dam	Yes	No	Yes	No	CB[b]
P00206010014	Rock check dam	No	Yes	Yes	No	EC[c]
P00206010015	Rock check dam	No	Yes	Yes	No	EC
P00206010016	Rock check dam	No	Yes	Yes	No	EC
P00206010019	Rock check dam	Yes	No	Yes	No	B
P00206020020	Log check dam	No	Yes	Yes	No	B
P00206020021	Log check dam	No	Yes	Yes	No	B
P00206020022	Log check dam	No	Yes	Yes	No	B
P00206020023	Log check dam	No	Yes	Yes	No	B

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

[c] EC = Enhanced control measure.

Table 6.0-1
Summary of Storm Water Exceedances, ACID-SMA-2

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
Aluminum	µg/L	2	139–798	n/a*	n/a	n/a	750	1	1.06
Gross alpha	pCi/L	2	47.9–236	15	106.3	7.09	n/a	n/a	n/a
Total PCBs	µg/L	2	0.0573–0.105	0.00064	0.0776	121	n/a	n/a	n/a

*n/a = not applicable.

Table 7.1-1
Percentage of Developed and Undeveloped Landscapes within ACID-SMA-2

SMA	Watershed	TAL-Exceeding Constituent	SMA Drainage Area (acre)	Developed Landscape within SMA	Undeveloped Landscape within SMA
ACID-SMA-2	Los Alamos/Pueblo Canyons	Aluminum, PCBs, Gross alpha	52.4	67%	33%

Table 7.1-2
2017 Storm Water Exceedances and UTLs, ACID-SMA-2

TAL Exceedances (see scatter plots)	Exceeds Storm Water Undeveloped Landscape Background UTL	Exceeds Storm Water Developed Landscape Background UTL
Aluminum (1.06×) – 798 µg/L, MTAL is 750 µg/L	(UTL: 2210 µg/L[a]) ☐ Yes ☒ No	(UTL: 245 µg/L[b]) ☒ Yes ☐ No
PCBs (164×) – 105 ng/L and 57.3 ng/L (geometric mean 77.57 ng/L), ATAL is 0.64 ng/L	(UTL: 11.7 ng/L[c]) ☒ Yes ☐ No	(UTL: 98 ng/L[c]) ☐ Yes ☒ No
Gross alpha (7.09×) – 236 pCi/L and 47.9 pCi/L (geometric mean 106.3 pCi/L), ATAL is 15 pCi/L	(UTL: 1490 pCi/L[d]) ☐ Yes ☒ No	(UTL: 32.5 pCi/L[e]) ☒ Yes ☐ No

[a] LANL 2013, Table 3.

[b] LANL 2013, Table 13.

[c] LANL 2012, Table 16.

[d] LANL 2013, Table 4.

[e] LANL 2013, Table 14.

April 2019
EM2019-0100

Alternative Compliance Request for ACID-SMA-2.1

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for ACID-SMA-2.1

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."

4/11/2019

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

Date

4-22-2019

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

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) ACID-SMA-2.1, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for ACID-SMA-2.1 is the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, concentrations of the POCs (aluminum, copper, polychlorinated biphenyls, and gross-alpha activity) in the storm water discharge from ACID-SMA-2.1 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
IA	interim action
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
RLW	radioactive liquid waste
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SSL	soil screening level

SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA ACID-SMA-2.1 contains two SWMUs: 01-002(b)-00 and 45-004. Confirmation monitoring samples collected in 2017 from ACID-SMA-2.1 showed aluminum, copper, gross-alpha activity, and total polychlorinated biphenyls (PCBs) at concentrations above the applicable target action levels (TALs). Because of these TAL exceedances, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of the corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Sites in ACID-SMA-2.1 being identified as SWMUs in the 1990 SWMU report (LANL 1990a), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.
- Section 5.0, Description of Control Measures Installed within ACID-SMA-2.1, details the baseline control measures that were installed in ACID-SMA-2.1.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.

- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of the corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of the corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, PCBs, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required

to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of the corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges, as required by Part I.A of the Permit, at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

The 263-acre ACID-SMA-2.1 watershed, which includes SWMUs 01-002(b)-00 and 45-004, is located in the middle of the Los Alamos townsite. The SMA consists of 57% developed area and 43% undeveloped area. The undeveloped area consists of 103 acres of ponderosa pine forest, 6.3 acres of good grass, 2.69 acres of sparse and poor grass, and 0.12 acres of bare soil. ACID-SMA-2.1 also monitors another SMA, ACID-SMA-2.

SWMU 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located within the boundaries of former Technical Area 45 (TA-45) at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. This outfall was used from 1943 to 1951 to discharge untreated radioactive liquid waste (RLW) generated in laboratories and research facilities at former TA-01. Contaminants potentially present in the untreated wastewater include any chemicals or radionuclides used in buildings connected to the waste lines. These contaminants include plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals, and solvents (LANL 1992a). Discharges of untreated RLW ceased when the TA-45 RLW treatment plant began operation in 1951 (LANL 1990b, LANL 1992a, LANL 1992b, LANL 1995). In 1966, the SWMU 01-002(b)-00 outlet pipe, associated weir box, tuff around the outfall, and tuff from the canyon wall below the outfall were removed (Stoker et al. 1981, LANL 1992b). In September 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992b). A radiological survey of the remediated area conducted in 1981 concluded that residual contamination at the site was below allowable limits at that time (Stoker et al. 1981).

An interim action (IA) was conducted in the south fork of Acid Canyon in 2001, downstream of the SWMU 01-002(b)-00 outfall to reduce potential radiation doses to recreational users of the south fork of Acid Canyon to levels as low as reasonably achievable. Approximately 483 yd^3 of sediment was removed during the IA to meet the cleanup goal of 280 pCi/g of plutonium-239 and -240 (LANL 2002).
SWMU 45-004 consists of a former sanitary sewer outfall. This outfall was associated with the sanitary sewer system that was constructed at TA-45 in 1947 to serve the Los Alamos townsite (LANL 1992b). This sewer system included a sanitary sewer lift station (former structure 45-3) and sanitary sewer manholes (former structures 45-5 and 45-6) (LANL 1990a). The outfall was located to the north of the lift station, approximately 100 ft north of the TA-45 treatment plant (SWMU 45-001) and was used for emergency discharge of overflow (LANL 1995). The outfall discharged into a drainage channel leading into Acid Canyon. The sanitary sewer manholes (structures 45-5 and 45-6) were plugged with concrete during the decontamination and decommissioning of TA-45 in 1966 and 1967 and the sanitary sewer system was transferred to Los Alamos County in 1967 (LANL 1992b).

SWMU 01-002(b)-00 is currently eligible for a COC with controls, limiting land use to recreational. A request for COC with controls (recreational land use) was submitted to NMED in September 2014 (LANL 2014). In August 2015, NMED requested the risk assessment be redone for the Site as a whole (NMED 2015). NMED issued a COC without controls for SWMU 45-004 in February 2013 (NMED 2013).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN ACID-SMA-2.1

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for ACID-SMA-2.1 is shown in Figure 5.0-1. Enhanced control confirmation samples were collected from ACID-SMA-2.1 on August 7, 2017, and August 23, 2017. Analytical results from these samples yielded the following TAL exceedances:

- aluminum concentration of 906 µg/L (MTAL is 750 µg/L),
- copper concentration of 4.69 µg/L (MTAL is 4.3 µg/L),
- gross-alpha activities of 80.2 pCi/L and 66.1 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 0.0482 µg/L and 0.0387 µg/L (ATAL is 0.00064 µg/L).

The data are summarized in Table 6.0-1. Figures 6.0-1 and 6.0-2 are graphs that show the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituents exceeding TALs (aluminum, copper, gross alpha, and total PCBs) are within the range expected for storm water runoff from developed or undeveloped landscapes.

Part I.E.3(a) lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through 1.E.2 (d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at ACID-SMA-2.1 are detailed below.

7.1 Potential Sources of TAL Exceedances

The SMA contains non-Site-affected developed and undeveloped landscapes that contribute storm water to the SMA sampler. Storm water samples collected at this SMA represent runoff from landscapes not affected by the Sites, as well as areas potentially affected by releases from the Sites. Potential non-Site-related and Site-related sources of aluminum, copper, PCBs, and gross-alpha radioactivity in storm water samples are summarized below.

7.1.1 Runoff from Developed Landscapes

Aluminum and copper are known to be present in storm water runoff from developed landscapes from various anthropogenic sources (e.g., automobile brake pads, galvanized metal, building materials, use as a flocculent in water). Storm water samples were collected from 2009 to 2012 in developed watersheds on the Pajarito Plateau and analyzed for metals to determine the contribution of metals to runoff from

developed landscapes not affected by Laboratory operations. These results are summarized in the Laboratory publication entitled “Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico” (hereafter, the Background Metals Report) (LANL 2013). Sampling locations were selected to avoid any known Laboratory-related contamination and to provide reasonable estimates of runoff from a variety of developed landscapes representative of buildings, parking lots, and roads.

In the Background Metals Report, the 95% upper tolerance limit (UTL) was used to represent the upper limit of storm water natural background concentrations of a constituent. A UTL defines the uppermost limit of the range of data that occurs within the specified percentage; so the 95% UTL is the largest value in the 95% of the data collected. EPA provides methods for calculating the UTL using the ProUCL program (EPA 2013). When a single result is compared with background (as performed in evaluation of storm water data), the ProUCL technical guidance recommends comparing the concentrations of that result with the UTL background concentration. The UTL for aluminum in runoff from developed areas is 245 µg/L (LANL 2013). The UTL for copper in runoff from developed areas is 32.3 µg/L (LANL 2013).

PCBs are common anthropogenic-sourced constituents that result from environmental cycling on a global scale of past releases of PCBs and also come from contamination due to the historical use of PCBs as additives in hundreds of industrial and commercial applications. These applications included electrical, heat-transfer, and hydraulic equipment; plasticizers in paints, plastics, calking, and rubber products; pigments, dyes, and carbonless copy paper; and many other uses (LANL 2012). DOE, the NMED-DOE Oversight Bureau, and LANL conducted a multiyear cooperative study to characterize PCBs in certain surface waters located in the upper Rio Grande watershed in and around the Los Alamos townsite and Laboratory. The May 2012 report entitled “Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed” (hereafter, the PCB Background Report), was submitted to EPA on February 1, 2013 (LANL 2012).

The PCB Background Report documents the results of storm water sampling conducted in locations representing storm water runoff from relatively small urban watersheds. Samplers were placed around the edge of urban development to collect storm water runoff primarily from developed landscapes such as buildings, parking lots, and roads; no samplers were placed below any known areas of contamination. The UTL for PCBs in storm water runoff from developed landscapes is 0.098 µg/L (LANL 2012).

As discussed above, for these Sites, the copper and PCB concentrations in the storm water discharges are both less than the storm water concentrations from developed landscapes. Table 7.1-1 compares TAL-exceeding constituent(s) with background UTLs from developed landscapes.

7.1.2 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Aluminum, copper, and several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in the Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring metals and radionuclides to runoff from undeveloped areas not affected by Site operations, storm water samples were collected from 2009 to 2012 in remote watersheds on the Pajarito Plateau and analyzed for metals and radioactivity, including gross-alpha radioactivity. These results are summarized in the Laboratory Background Metals Report (LANL 2013). Sampling locations were selected to avoid any known contaminated areas or developed areas and to provide reasonable estimates of concentrations of metals

and gross-alpha activity in natural background storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water was composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The 95% UTL was used to represent the background concentration of a constituent. The UTLs for aluminum, copper, and gross-alpha radioactivity calculated for storm water runoff from remote watersheds (undeveloped landscapes) containing primarily weathered Bandelier Tuff material are 2210 µg/L, 3.43 µg/L and 1490 pCi/L, respectively (LANL 2013). These values are considered to be the natural background concentrations for undeveloped landscapes and apply to SMAs with undeveloped landscapes in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

As discussed above, for these Sites, the aluminum concentration and the gross-alpha activity are both less than the storm water concentrations from undeveloped landscapes. Table 7.1-1 compares TAL-exceeding constituent(s) with background UTLs from undeveloped landscapes.

7.1.3 Site-Related Sources of Aluminum, Copper, and PCBs

Aluminum and copper, although used at the Laboratory, are not known to be associated with industrial materials managed or released as significant industrial materials, and are not known to be exposed to storm water, at any of the Sites addressed in this request. The PCB TAL exceedances detected at ACID-SMA-2.1 are likely linked to industrial activities at SWMU 01-002(b)-00, a former industrial waste line outfall and drainage area. However, soil concentrations for PCBs are below soil screening levels (SSLs), and the PCB concentrations in Individual Permit storm water samples are below developed landscape background levels.

7.1.4 Site-Related Sources of Adjusted Gross Alpha

Storm water samples collected at the SMA addressed by this request were analyzed for gross-alpha radioactivity, which is a measure of the alpha radioactivity associated with all alpha-emitting radionuclides detected in the sample. The TAL contained in the Individual Permit, however, is for adjusted gross-alpha radioactivity. Adjusted gross-alpha radioactivity does not include the alpha radioactivity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha radioactivity of a sample will always be greater than the adjusted gross-alpha radioactivity, use of gross-alpha radioactivity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha radioactivity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Sites contained in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha radioactivity from these significant materials associated with industrial activities and then potentially released to storm water discharges at these Sites would not contribute to adjusted gross-alpha radioactivity. There are, therefore, no sources of adjusted gross-alpha radioactivity associated with the Sites contained in this request.

7.2 Rationale for Alternative Compliance

As described in section 7.1, storm water runoff from ACID-SMA-2.1, addressed in this request, contains non-Site-affected contributions from developed and undeveloped landscapes. The concentration of aluminum detected in storm water runoff is within the range of aluminum concentrations in runoff from undeveloped landscapes. The concentration of copper detected in storm water runoff is within the range of copper concentrations in runoff from developed landscapes and only slightly above the range of concentrations in runoff from undeveloped landscapes. The concentrations of PCBs detected in storm water runoff are within the range of PCB concentrations in runoff from developed landscapes.

After reviewing the Site histories and comparing the storm water sampling results with the Background Metals Report UTLs (LANL 2013), the Permittees have concluded that the detected aluminum exceedance is a result of nonpoint source runoff from undeveloped landscape background sources, and the detected copper exceedance is a result of nonpoint source runoff from developed landscape background sources.

At ACID-SMA-2.1, PCBs were detected in storm water at concentrations that were less than the Background PCB Report developed landscape UTL (LANL 2012). In 2001, an IA was conducted to remove sediment contaminated with radionuclides and PCBs (LANL 2002). Confirmatory samples had PCB concentrations that were an order of magnitude less than the SSLs for PCB concentrations.

As evidenced from the low concentrations of PCBs in storm water, the Sites are no longer a source of PCBs, and concentrations of PCBs in storm water runoff are less than concentrations of PCBs in storm water discharged from developed landscapes. Therefore, further reduction of PCBs by installing enhanced controls will not improve water quality in the contributing watershed because of ambient concentrations of PCBs in storm water.

As stated in Section 7.1.4, the Sites included in this alternative compliance request are not considered sources of adjusted gross-alpha radioactivity subject to regulation under the Individual Permit.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of the TAL-exceeding constituents in storm water runoff that are different from concentrations in storm water runoff from undeveloped or developed landscape backgrounds. The Permittees believe the Sites are not contributing to the TAL exceedance(s), and undeveloped and developed landscapes not affected by the Sites are the sources of these TAL-exceeding constituents. Therefore, mitigating Site-related storm water would not reduce concentrations of TAL-exceeding constituents within this SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.2.1 Enhanced Control Measures to Meet the TAL

The Sites contained in this request receive runoff from undeveloped and developed landscapes. The concentrations of aluminum, copper, and PCBs and the gross-alpha radioactivity in storm water samples are within the range of background concentrations expected for these landscapes (Table 7.1-1). Although these constituents exceed TALs, concentrations in storm water are within the range of what would be expected from storm water concentrations from similar landscape types not affected by Site activities. In the case of aluminum and copper, the Sites are not considered sources of the TAL exceedances based on Site histories and available soil sampling data.

In the case of gross-alpha activities, the concentrations detected in storm water are consistent with gross-alpha activities in storm water from undeveloped landscapes (natural background). Gross-alpha activities are naturally present in sediment derived from Bandelier Tuff throughout the Pajarito Plateau (LANL 1998), including sediments in this SMA.

If storm water discharges from the Sites were mitigated through the installation of enhanced controls, the SMA and receiving waters downstream of the Sites would still continue to receive runoff from both developed and undeveloped landscapes, both within the SMA and surrounding areas. The background levels of copper and PCBs from developed landscape nonpoint sources, and the naturally occurring background levels of aluminum and gross-alpha radioactivity in this runoff, would likely continue to exceed the TALs.

7.2.2 Control Measures that Totally Retain and Prevent Discharge from Storm Water

For the Sites in this request, it may be possible to totally retain storm water runoff so no discharge occurs. If storm water discharges from these Sites were totally retained, the receiving waters downstream of the Sites would continue to receive runoff from developed and undeveloped landscapes not affected by the Sites. The levels of PCBs and copper from nonpoint sources in the developed landscapes in the SMA, and the naturally occurring background levels of aluminum and gross-alpha radioactivity from the undeveloped landscapes in the SMA, in this runoff would likely continue to exceed TALs.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no additional corrective action is required for the Sites submitted herein for alternative compliance because the Sites are not considered sources of the TAL-exceeding constituents. The primary source of copper and PCBs is nonpoint source runoff from developed landscapes within the SMA; the source of the aluminum and adjusted gross-alpha radioactivity in the SMA is natural background from storm water–containing sediments and soils weathered from the Bandelier Tuff. Furthermore, any gross-alpha-emitting radionuclides contributed by the Sites in this request are exempt and are not regulated under the Individual Permit.

The Permittees propose to continue to inspect and maintain existing controls until the Sites are removed from the Individual Permit.

9.0 REFERENCES

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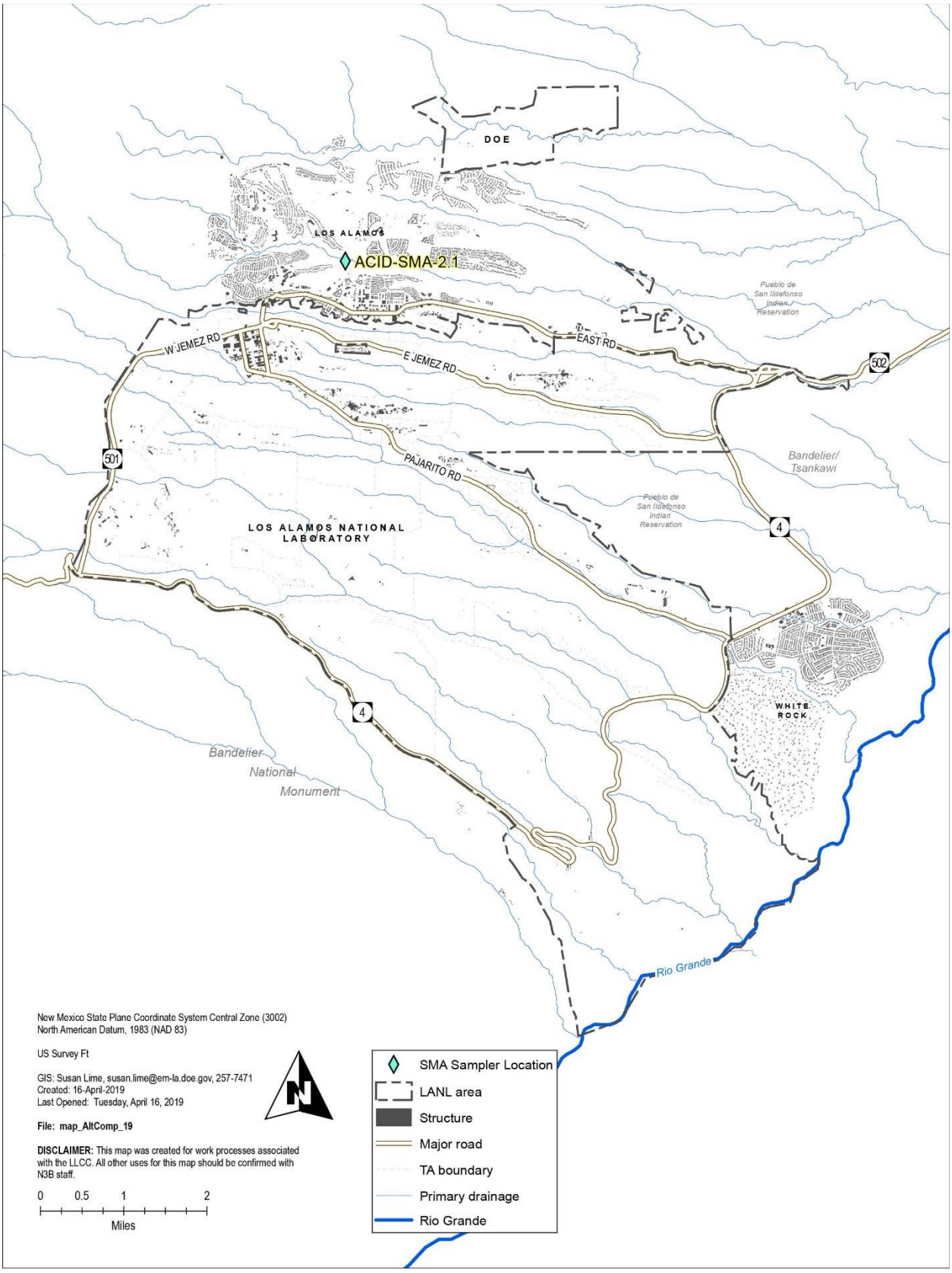
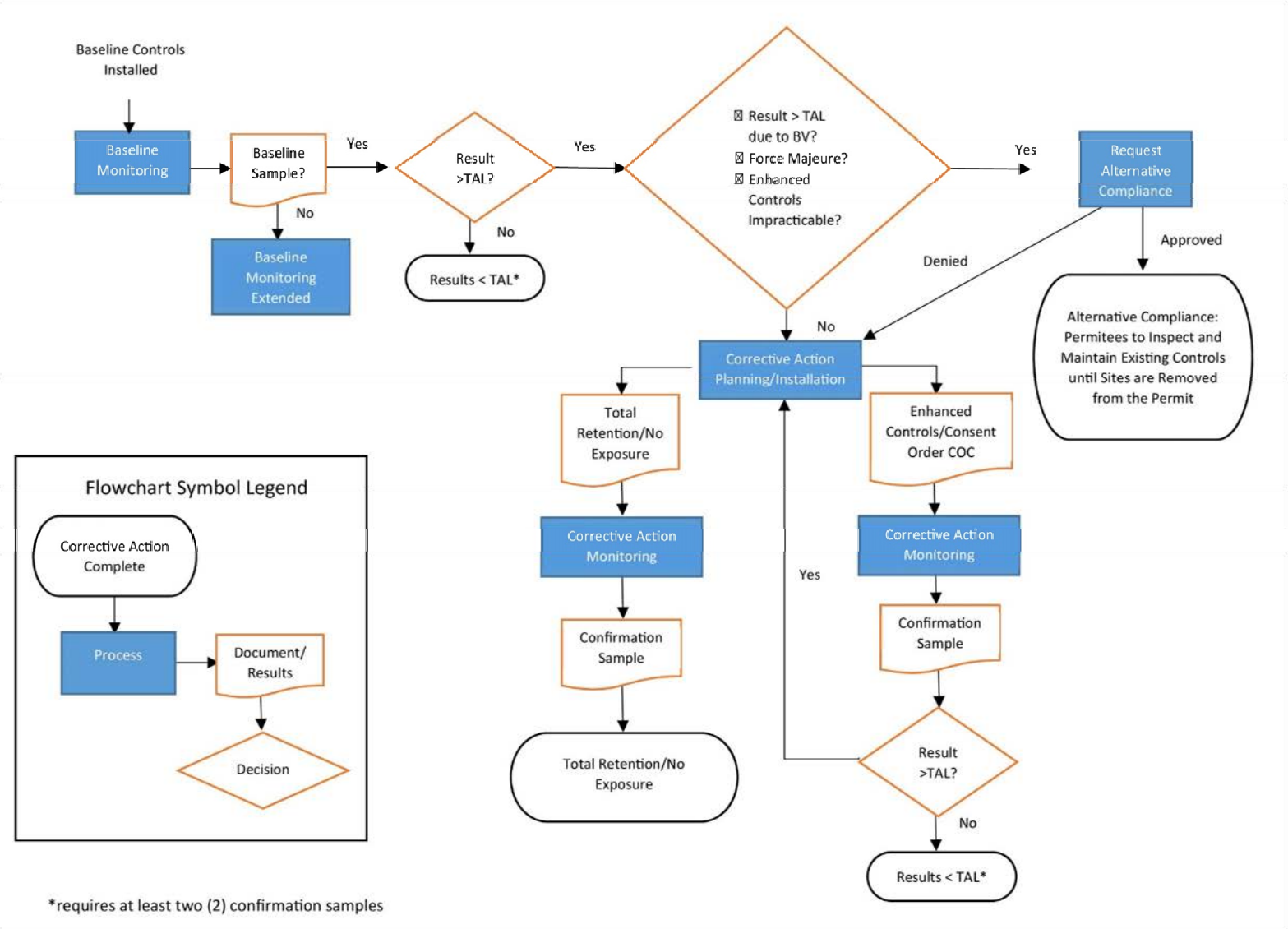


Figure 1.0-1 Location of the Laboratory



Note: BCM = baseline control measures, CA = corrective action, COC = certificate of completion, POC = pollutants of concern, TAL = target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

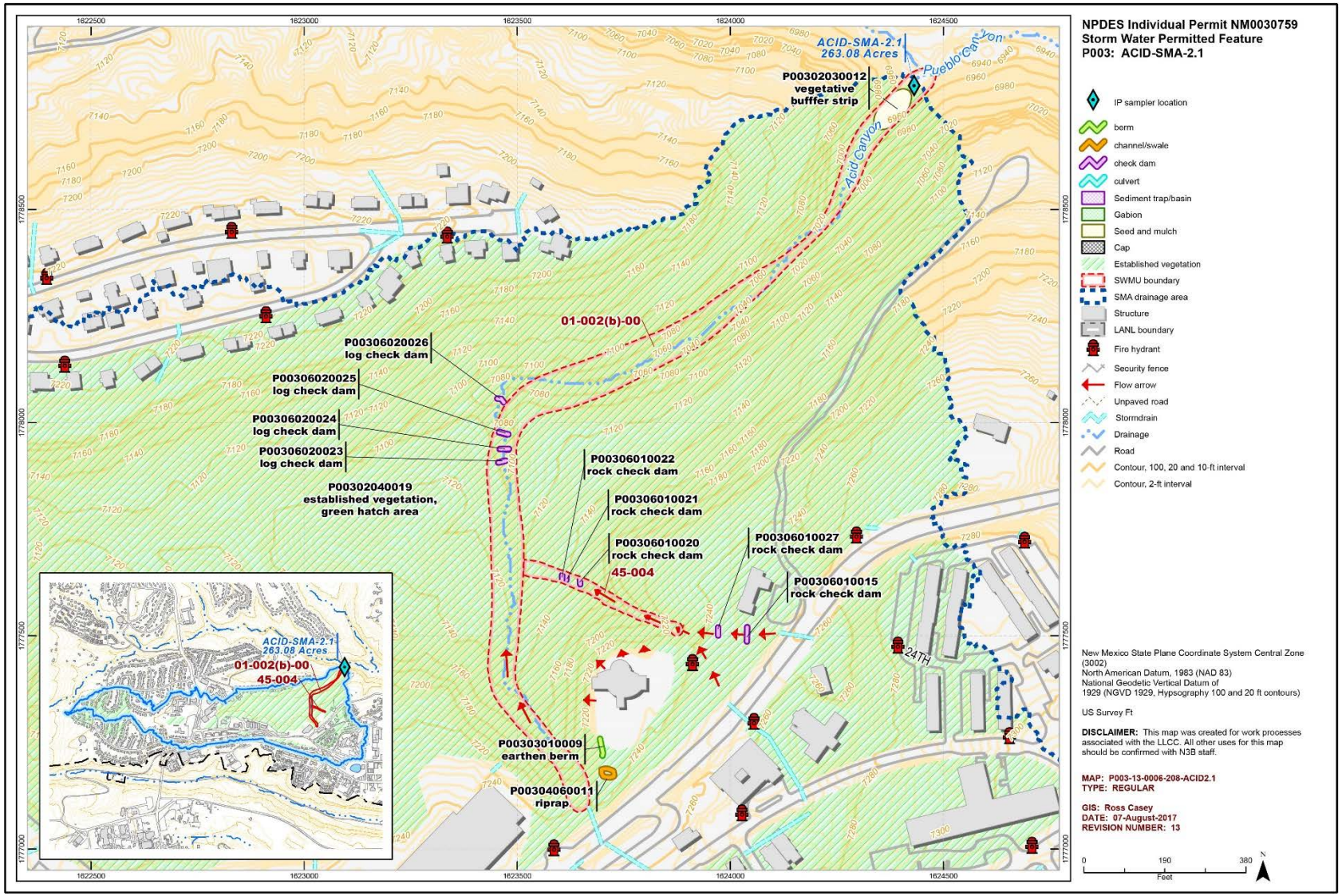
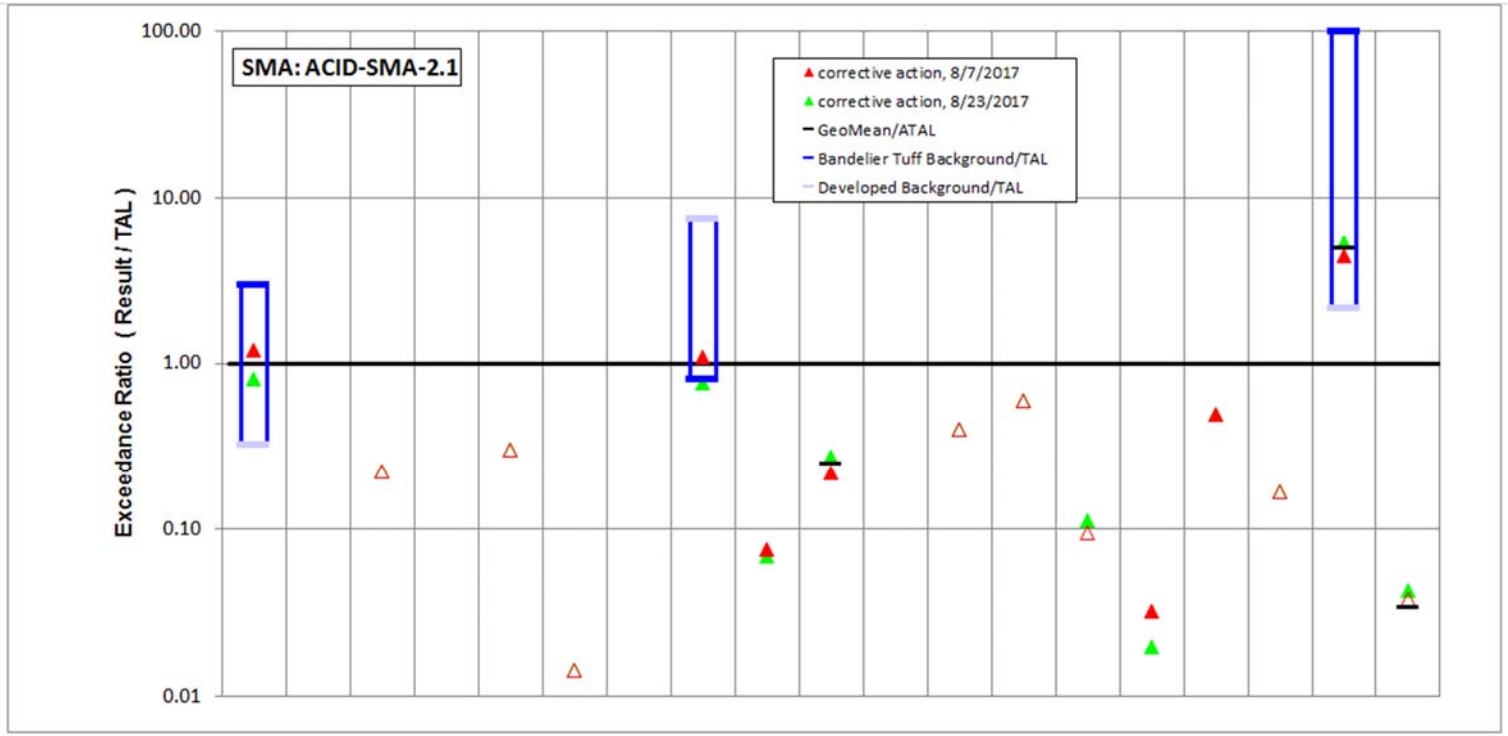


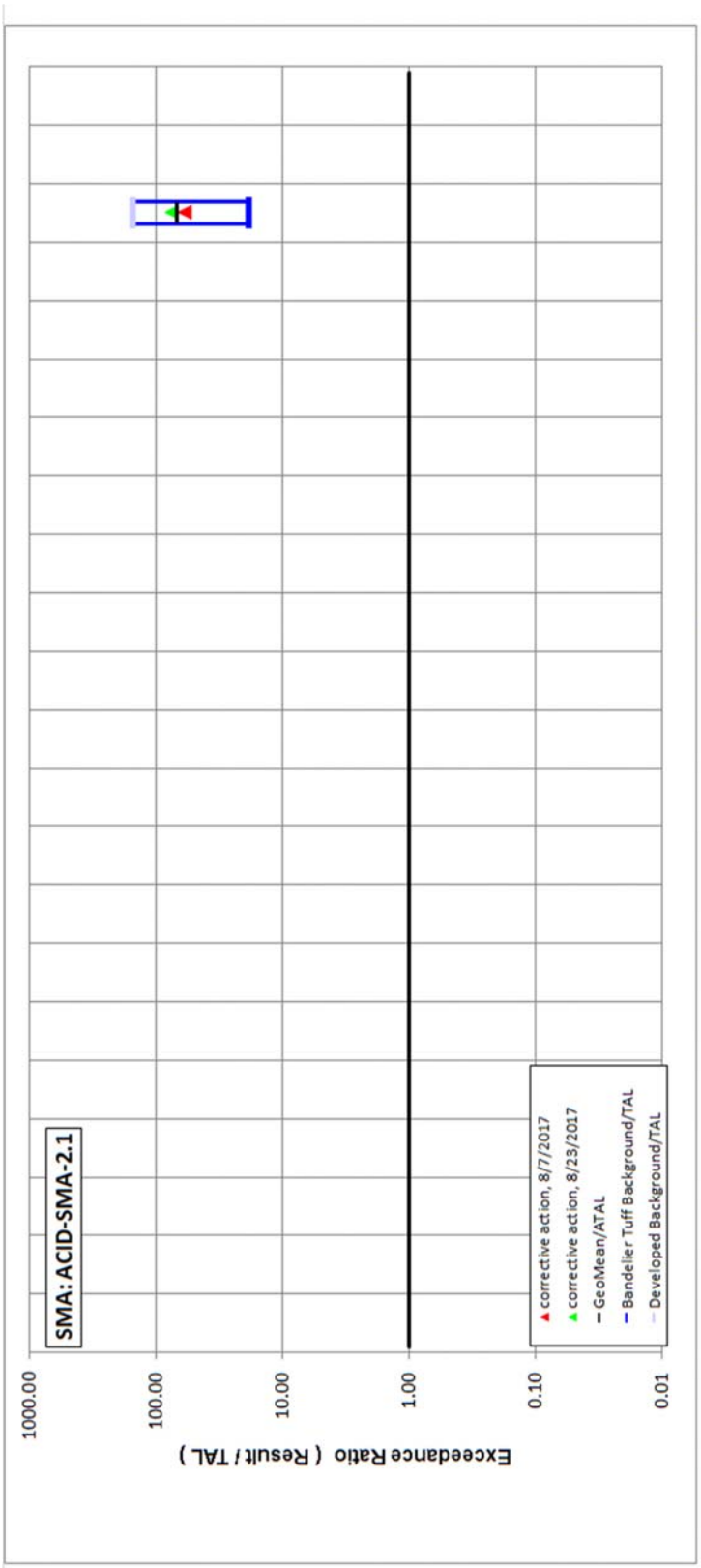
Figure 5.0-1 ACID-SMA-2.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/23/2017 result	604	*1*	*2*	26.4	*0.3*	*3*	*1*	3.27	1.16	0.211	1.18	*2*	*0.3*	0.708	1.99	20.6	*0.002*	**80.2**	1.29
result / TAL	0.81	*0.002*	*0.22*	0.0053	*0.3*	*0.014*	*0.001*	0.76	0.068	0.27	0.0069	*0.4*	*0.6*	0.11	0.02	0.49	*0.17*	**5.3**	0.043
8/7/2017 result	**906**	*1*	*2*	37.4	*0.3*	*3*	*1*	**4.69**	1.29	0.168	1.25	*2*	*0.3*	*0.6*	3.25	20.8	*0.002*	**66.1**	*1.16*
result / TAL	**1.2**	*0.002*	*0.22*	0.0075	*0.3*	*0.014*	*0.001*	**1.1**	0.076	0.22	0.0074	*0.4*	*0.6*	*0.095*	0.032	0.5	*0.17*	**4.4**	*0.039*

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 inorganic analytical results summary plot for ACID-SMA-2.1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/23/2017 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.048**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**75**	-	-
8/7/2017 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.039**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**60**	-	-

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-2 2017 organic analytical results summary plot for ACID-SMA-2.1

Table 5.0-1
Active Control Measures at ACID-SMA-2.1

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
P00302030012	Permanent vegetation vegetative buffer strip	No	Yes	Yes	Yes	CB[a]
P00302040019	Established vegetation	No	Yes	No	Yes	B[b]
P00303010009	Earthen berm	Yes	No	Y	No	CB
P00304060011	Riprap	Yes	No	No	Yes	CB
P00306010015	Rock check dam	Yes	No	Yes	No	CB
P00306010020	Rock check dam	No	Yes	Yes	No	EC[c]
P00306010021	Rock check dam	No	Yes	Yes	No	EC
P00306010022	Rock check dam	No	Yes	Yes	No	EC
P00306010027	Rock check dam	Yes	No	Yes	No	B
P00306020023	Log check dam	No	Yes	Yes	No	EC
P00306020024	Log check dam	No	Yes	Yes	No	EC
P00306020025	Log check dam	No	Yes	Yes	No	EC
P00306020026	Log check dam	No	Yes	Yes	No	EC

[a] CB = Certified baseline control measure.

[b] B = Additional baseline control measure.

[c] EC = Enhanced control measure.

Table 6.0-1
Summary of Storm Water Data and Exceedances, ACID-SMA-2.1

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
Aluminum	µg/L	2	604–906	n/a*	n/a	n/a	750	1	1.21
Copper	µg/L	2	3.27–4.69	n/a	n/a	n/a	4.3	1	1.09
Gross alpha	pCi/L	2	66.1–80.2	15	72.8	4.85	n/a	n/a	n/a
Total PCBs	µg/L	2	0.0387–0.0482	0.00064	0.0432	67.5	n/a	n/a	n/a

*n/a = Not applicable.

Table 7.1-1
2017 Storm Water Exceedances and UTLs, ACID-SMA-2.1

TAL Exceedances (see scatter plots)	Exceeds Storm Water Undeveloped Landscape Background UTL	Exceeds Storm Water Developed Landscape Background UTL
Aluminum (1.21×) – 906 µg/L, MTAL is 750 µg/L	(UTL: 2210 µg/L[a]) ☐ Yes ☒ No	(UTL: 245 µg/L[b]) ☒ Yes ☐ No
Copper (1.09×) – 4.69 µg/L, MTAL is 4.3 pCi/L	(UTL: 3.43 µg/L[a]) ☒ Yes ☐ No	(UTL: 32.3 µg/L[b]) ☐ Yes ☒ No
PCBs (75.3×) – 48.2 ng/L and 38.7 ng/L (geometric mean 43.2 ng/L), ATAL is 0.64 ng/L	(UTL: 11.7 ng/L[c]) ☒ Yes ☐ No	(UTL: 98 ng/L[c]) ☐ Yes ☒ No
Gross alpha (5.35×) – 80.2 pCi/L and 66.1 pCi/L (geometric mean 72.8 pCi/L), ATAL is 15 pCi/L	(UTL: 1490 pCi/L[d]) ☐ Yes ☒ No	(UTL: 32.5 pCi/L[e]) ☒ Yes ☐ No

[a] LANL 2013, Table 3.

[b] LANL 2013, Table 13.

[c] LANL 2012, Table 16.

[d] LANL 2013, Table 4.

[e] LANL 2013, Table 14.

April 2019
EM2019-0108

Alternative Compliance Request for LA-SMA-3.1

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for LA-SMA-3.1

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."

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

4/11/2019
Date

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

4-22-2019
Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at the Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) LA-SMA-3.1, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. The completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for the alternative compliance request for LA-SMA-3.1 is the pollutants of concern (POCs) are contributed by sources beyond the Permittees' control. Specifically, the concentration of the POC (total polychlorinated biphenyls) in the storm water discharge from LA-SMA-3.1 is below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
bgs	below ground surface
BHC	benzene hexachloride
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
cpm	counts per minute
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
Site	AOC and/or SWMU identified in the Permit
SMA	site monitoring area

SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA LA-SMA-3.1 contains two SWMUs, 01-001(e) and 01-003(a), and is located near Oppenheimer Drive in Los Alamos Canyon. Compliance Order on Consent (Consent Order) investigations for these Sites have been completed. Confirmation monitoring samples collected in 2017 from LA-SMA-3.1 showed total polychlorinated biphenyls (PCBs) at a concentration above the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part 1.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the 2016 Consent Order, administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of the Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Sites in LA-SMA-3.1 being identified as SWMUs in the 1990 SWMU report (LANL 1990), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.
- Section 5.0, Description of Control Measures Installed within LA-SMA-3.1, details the baseline control measures that were installed in LA-SMA-3.1.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, PCBs, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media, and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines “completion of corrective action” as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2013, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1.d]. Part I.E.1.d further provides that the compliance deadline for corrective action under Section E.4 is “extended for a one (1) year period following the first successful confirmation sampling event.” Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

The 13.82-acre LA-SMA-3.1 watershed, which monitors SWMUs 01-001(e) and 01-003(a), is located in former technical area (TA)-01, south of Oppenheimer Drive in Los Alamos Canyon. The SMA consists of 77.7% developed area and 22.3% undeveloped area. The undeveloped area consists of 3.09 acres of ponderosa pine.

SWMU 01-001(e) is the location of a former septic tank 139 (structure 01-139), its associated inlet and outlet drainlines, and outfall in former TA-01. The tank outfall discharged southeast of the buildings at the head of Bailey Bridge Canyon. Septic tank 139 was constructed in 1933 of reinforced concrete and measured 3 ft by 36 ft by 5 ft deep (LANL 2001) and served the D-5 Sigma vault (former structure 01-011), I Building (former structure 01-032), and Delta Building (former structure 01-016) (Ahlquist et al. 1977; LANL 1992). The tank was decommissioned and left in place in 1965 (Ahlquist et al. 1977). However, the tank was not found during the 1974–1976 radiological sampling of TA-01 (Ahlquist et al. 1977). The D-5 Sigma vault was used to store plutonium-239 and uranium-235 (LANL 1992). Radiological soil sampling (1974–1976) near the former D-5 Sigma vault showed minimal radiologic contamination, and no additional soil was removed (LANL 1988; LANL 1992). I Building was used between 1947 and 1958 to store and machine beryllium (LANL 1992). Delta Building was used as a meeting place and as a laboratory in which fission-product tracers were used. Currently, the septic tank location is on private property under Oppenheimer Drive; residential buildings; and adjacent yards, driveways, and sidewalks (LANL 2006a).

SWMU 01-003(a), also known as Bailey Bridge landfill, was a surface disposal area located at the head of Bailey Bridge Canyon, a tributary to Los Alamos Canyon. The area was used between 1959 and 1978 to dispose of debris from the demolition of former TA-01 structures (LANL 2006b). Debris included broken-up concrete walls and flooring from the former Sigma Building (structure 01-056) (Hill 1964; Ahlquist et al. 1977), the D-5 vault (former structure 01-011), HT Building (former structure 01-029), warehouse 19 (former structure 01-013), and the sheet metal shop (former structure 01-104) (Buckland 1978; DOE 1987). Only debris with activity less than 2500 counts per minute (cpm) of surface alpha contamination was disposed of in this landfill (Ahlquist et al. 1977). Upon completion of TA-01 demolition activities, the remaining debris was covered with 4 ft of earthen fill (Hill 1964). Additional fill was deposited over the landfill when the area was developed for residential housing in the 1980s; Bailey Bridge no longer exists. The mesa-top portion of the SWMU is under pavement and a series of townhouses. The area downslope of the landfill is undeveloped DOE land (LANL 2006b).

SWMUs 01-001(e) and 01-003(a) are included in the Consent Order as part of the Upper Los Alamos Canyon Aggregate Area.

Decision-level data for SWMU 01-001(e) are available from soil samples collected from the interval 0–3 ft below ground surface (bgs) during a 2008–2009 Consent Order investigation. Consent Order investigations are complete for SWMU 01-001(e). NMED issued a certification of completion with controls in September 2010 (NMED 2010).

Decision-level data for SWMU 01-003(a) are available from soil samples collected from the interval 0–3 ft bgs during a 2017–2018 Consent Order investigation. Consent Order sampling and remediation activities are complete for SWMU 01-003(a). SWMU 01-003(a) is recommended for certification of completion with controls in the Phase II investigation report for Upper Los Alamos Canyon Aggregate Area (N3B 2018).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN LA-SMA-3.1

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for LA-SMA-3.1 is shown in Figure 5.0-1. A baseline storm water sample was collected at LA-SMA-3.1 on October 24, 2018. Analytical results from this sample yielded the following TAL exceedance:

- total PCB concentration of 12.40 ng/L (ATAL is 0.64 ng/L).

The TAL exceedance data are summarized in Table 6.0-1. Figures 6.0-1 and 6.0-2 are graphs that show the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

In 2013 an NMED sampler located downgradient of LA-SMA-3.1, NMED-OB131002, collected four storm water samples exceeding the TAL for total PCBs. Table 6.0-2 summarizes the 2013 NMED storm water sample total PCB concentrations.

Storm water flow at the LA-SMA-3.1 sampler location was not sufficient for full-volume sample collection in 2013. RG055.5 recorded five storm events during the 2013 season. Table 6.0-3 summarizes rainfall data. These rain events triggered four post-storm inspections and the installation of a straw wattle. The straw wattle was installed before the sample collection at NMED-OB131002.

In 2018, the LA-SMA-3.1 monitoring station was relocated approximately 25 ft upgradient of where NMED-OB131002 was positioned when it collected the 2013 samples.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TAL (total PCBs) is within the range expected for storm water runoff from developed or undeveloped landscapes.

Part I.E.3(a) lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Part I.E.2(a) through I.E.2 (d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at LA-SMA-3.1 are detailed below.

7.1 Potential Sources of TAL Exceedances

The SMA contains non-Site-affected developed and undeveloped landscapes that contribute storm water to the SMA sampler (Table 7.1-1). Storm water samples collected at this SMA represent runoff from landscapes not affected by the Sites, as well as areas potentially affected by releases from the Sites. Potential non-Site-related and Site-related sources of PCBs in storm water samples are summarized below.

7.1.1 Runoff from Developed and Undeveloped Landscapes

PCBs are common anthropogenic-sourced constituents that result from environmental cycling on a global scale of past releases of PCBs and also come from contamination due to the historical use of PCBs as additives in hundreds of industrial and commercial applications. These applications included electrical, heat-transfer, and hydraulic equipment; plasticizers in paints, plastics, calking, and rubber products; pigments, dyes, and carbonless copy paper; and many other uses (LANL 2012). DOE, the NMED-DOE Oversight Bureau, and LANL conducted a multiyear cooperative study to characterize PCBs in certain surface waters located in the upper Rio Grande watershed in and around the Los Alamos townsite and Laboratory. The May 2012 report entitled “Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed” (hereafter, the PCB Background Report), was submitted to EPA on February 1, 2013 (LANL 2012).

The PCB Background Report documents the results of storm water sampling conducted in locations representing storm water runoff from relatively small urban watersheds. Samplers were placed around the edge of urban development to collect storm water runoff primarily from developed landscapes such as buildings, parking lots, and roads; no samplers were placed below any known areas of contamination. The upper tolerance limit (UTL) for PCBs in storm water runoff from developed landscapes is 0.098 µg/L (LANL 2012).

The 2013 NMED and the 2018 IP storm water sample PCB concentrations are less than the storm water UTL from developed landscapes. Table 7.1-2 compares TAL-exceeding constituent(s) with background UTLs from developed and undeveloped landscapes.

7.1.2 Site-Related Source of PCBs

The total PCB TAL exceedance detected at LA-SMA-3.1 is likely linked to industrial activities at SWMU 01-003(a), also known as Bailey Bridge landfill. However, soil concentrations for PCBs are below soil screening levels, and Individual Permit storm water sampling PCB concentrations are below developed landscape background levels. The total PCB concentration in the 2018 IP storm water sample at LA-SMA-3.1 is lower than the total PCB concentrations in the 2013 NMED storm water samples. The reduction in total PCB concentrations can be attributed to recent aggregate area remediation activities to clean up PCB-contaminated soil completed at SWMU 01-003(a).

7.2 Rationale for Alternative Compliance

As described in section 7.1, storm water runoff from LA-SMA-3.1, addressed in this request, contains non-Site-affected contributions from developed and undeveloped landscapes. The concentration of total PCBs detected in storm water runoff is within the range of PCB concentrations in runoff from developed landscapes and only slightly above the range of PCB concentrations in runoff from undeveloped landscapes.

After reviewing the Site histories and comparing the storm water sampling results with the PCB UTLs, the Permittees have concluded that the detected total PCB exceedance is a result of nonpoint source runoff from developed landscape background sources.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of the TAL-exceeding constituents in storm water runoff that are different from concentrations in storm water runoff from developed landscapes. The Permittees believe the Sites are not contributing to the TAL exceedance, and developed landscapes not affected by the Sites are the source of this TAL-exceeding constituent. Therefore, mitigating Site-related storm water would not reduce concentrations of this TAL-exceeding constituent within this SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.2.1 Enhanced Control Measures to Meet the TAL

As shown in Table 7.1-1, the Sites addressed in this request receive runoff from undeveloped and developed landscapes. Although the total PCB concentration exceeds the TAL, concentrations in storm water are within the range of what would be expected from storm water concentrations from similar landscape types not affected by Site activities (see Table 7.1-2). In addition, the Sites are not considered to be a source of the total PCB TAL exceedance based on Site history and available soil sampling data.

If storm water discharges from the Sites were mitigated through the installation of enhanced controls, the SMA and receiving waters downstream of the Sites would still continue to receive runoff from developed landscapes, both within the SMA and surrounding areas. The background levels of total PCBs from developed landscape nonpoint sources would likely continue to exceed the TAL.

7.2.2 Control Measures that Totally Retain and Prevent Discharge from Storm Water

Measures reasonably expected to achieve total retention demonstrate retention capacity for Site runoff volume resulting from a 3-yr, 24-hr design storm event. For the Sites addressed in this request, it may be possible to install measures to achieve total retention. If storm water discharges from the Sites were mitigated through total retention, the receiving waters downstream of the Sites would continue to receive runoff from developed landscapes not affected by the Sites. The background level of total PCBs from developed landscape nonpoint sources in this runoff would likely continue to exceed the TAL.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe the primary source of the total PCB TAL exceedance is nonpoint source runoff from developed landscapes within the SMA and adjacent areas. Therefore, runoff from within the SMA and adjacent areas would continue to exceed the TAL for total PCBs after mitigation of storm water discharges from the Sites. In conclusion, the Sites are submitted herein for alternative compliance because developed landscape is considered to be the primary source of the TAL-exceeding constituent.

The Permittees propose to continue to inspect and maintain existing controls until the Sites are removed from the Individual Permit.

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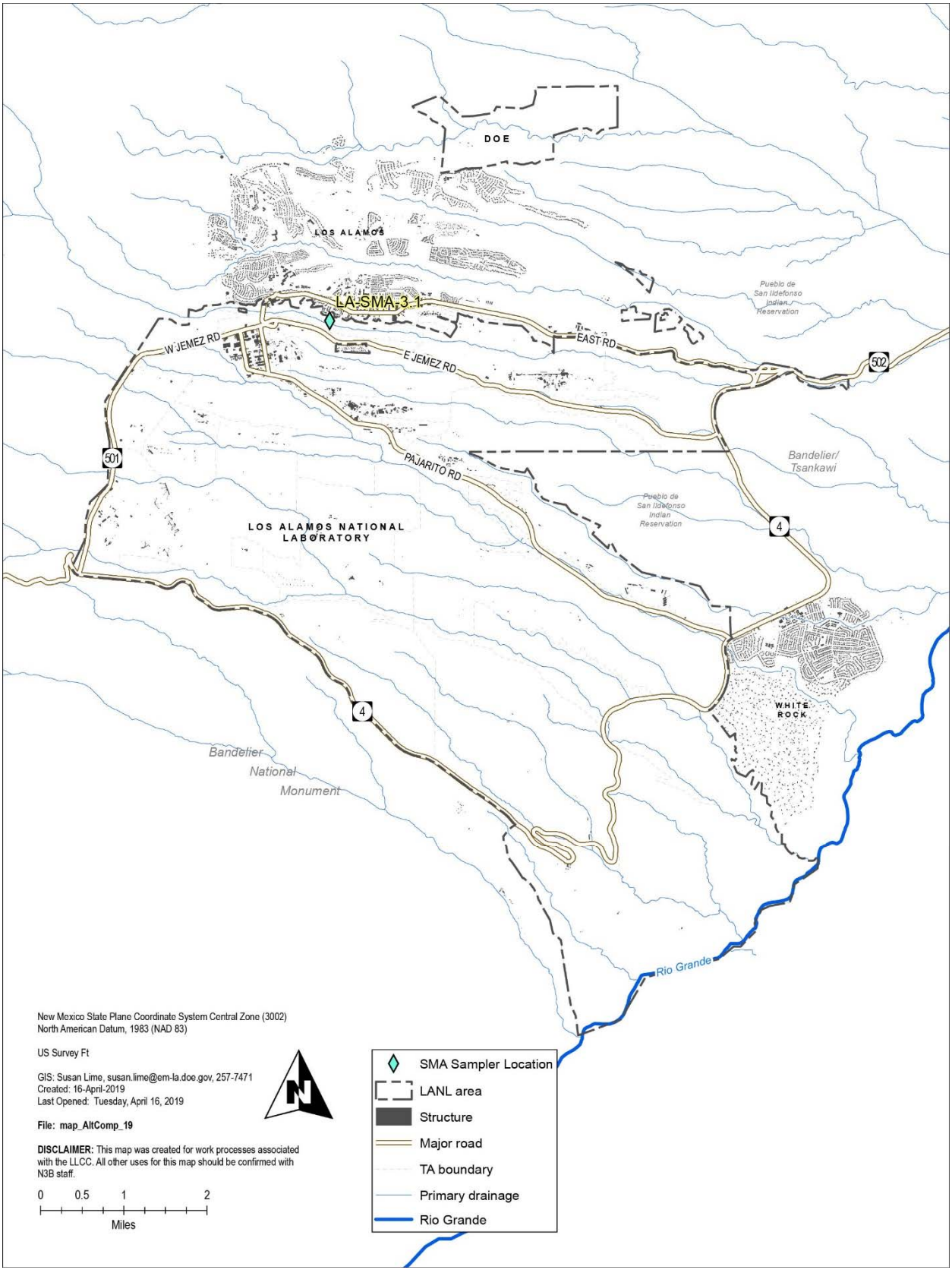
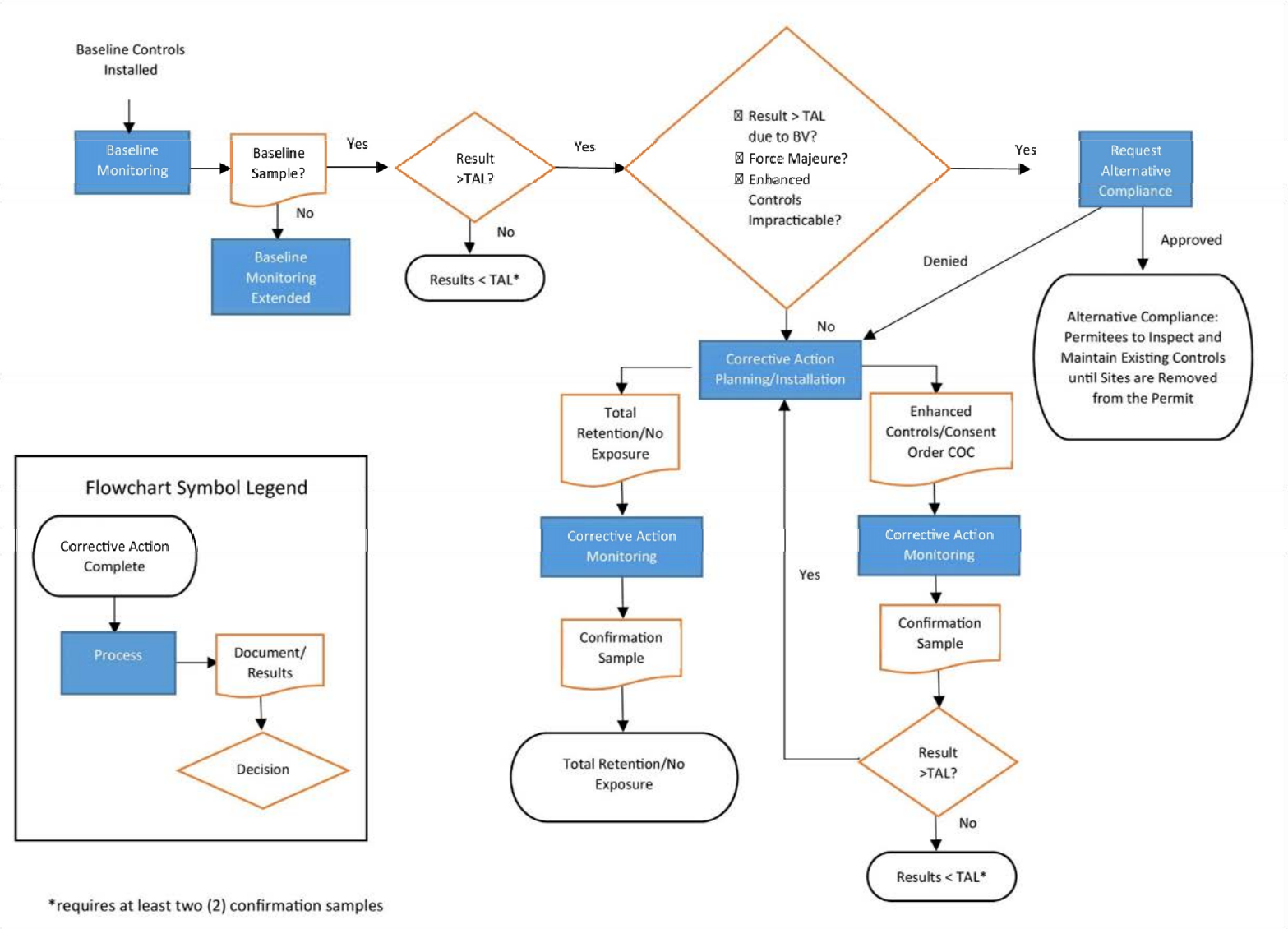


Figure 1.0-1 Location of the Laboratory



Note: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

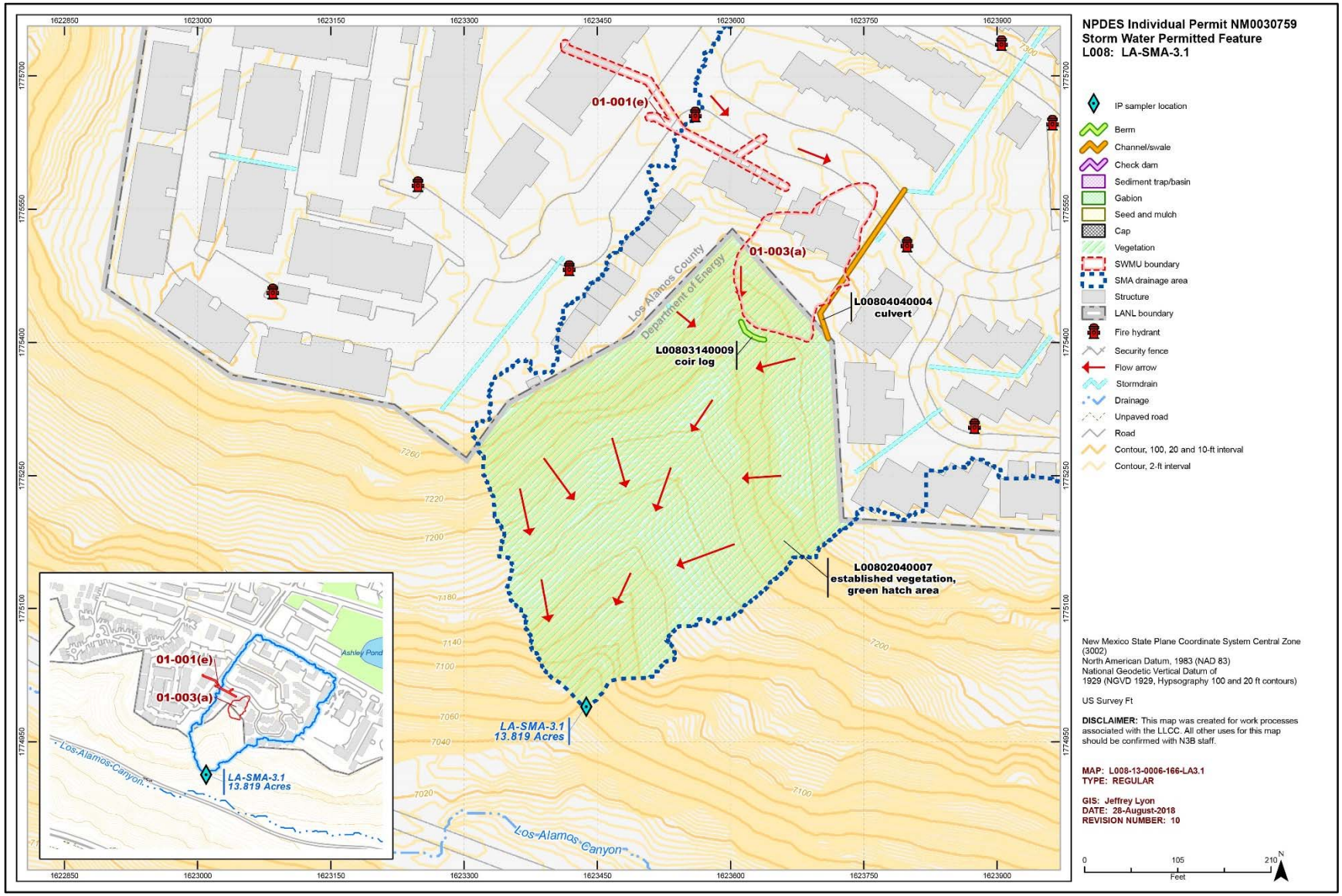
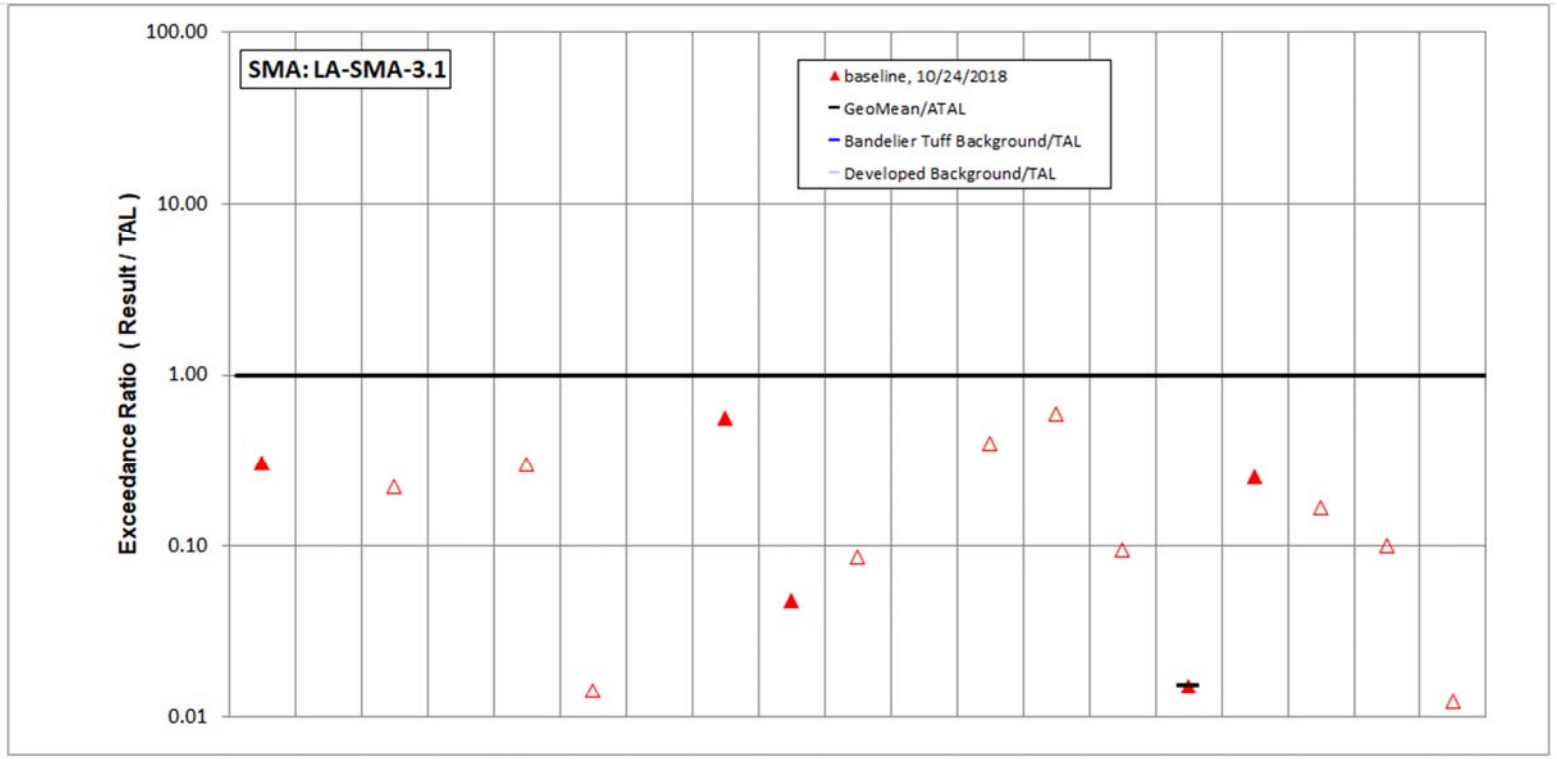


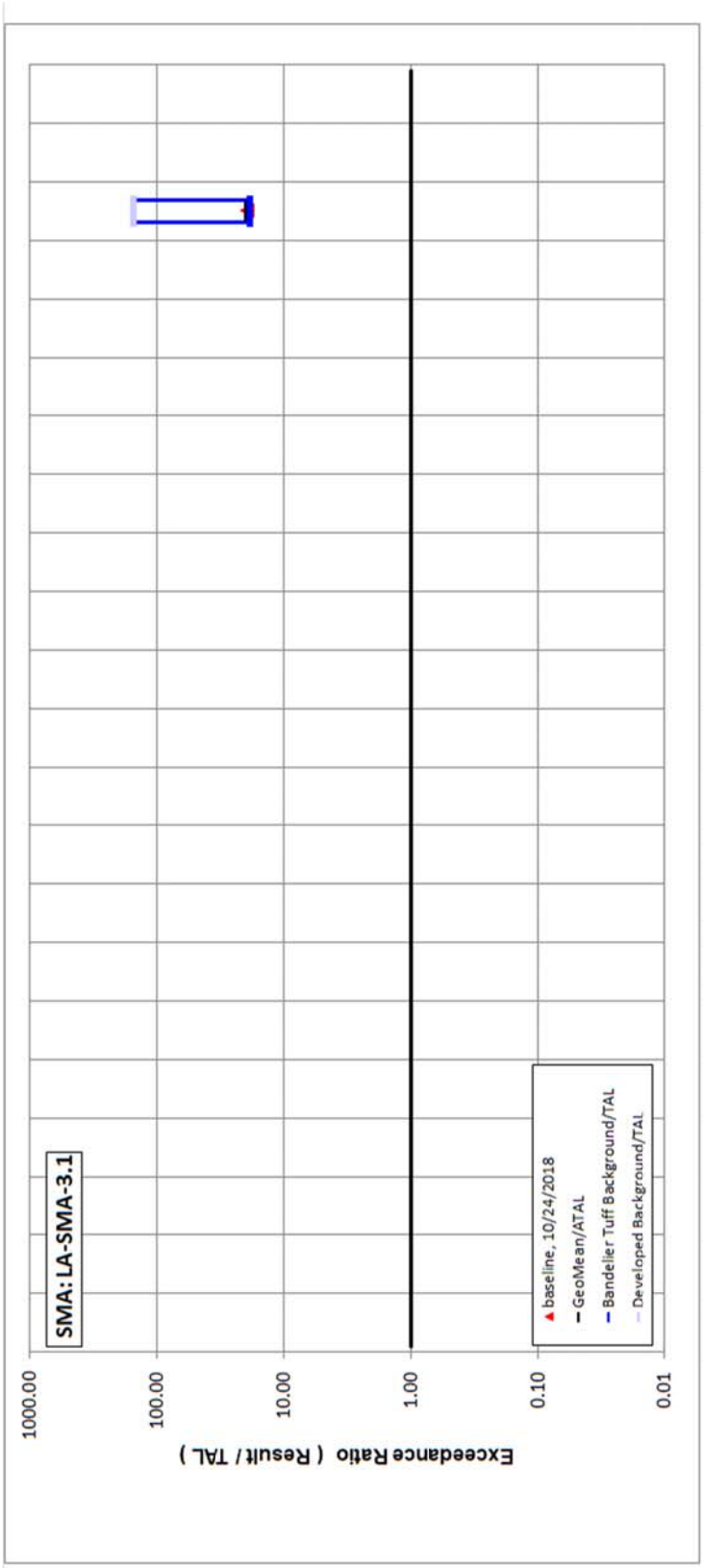
Figure 5.0-1 LA-SMA-3.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
10/24/2018 result	229	*1*	*2*	*15*	*0.3*	*3*	*1*	2.43	0.814	*0.067*	*0.6*	*2*	*0.3*	*0.6*	1.52	10.7	*0.002*	*1.5*	*0.369*
result / TAL	0.31	*0.002*	*0.22*	*0.003*	*0.3*	*0.014*	*0.001*	0.57	0.048	*0.087*	*0.004*	*0.4*	*0.6*	*0.095*	0.015	0.25	*0.17*	*0.1*	*0.012*

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2018 inorganic analytical results summary plot for LA-SMA-3.1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
10/24/2018 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.012**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**19**	-	-

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-2 2018 organic analytical results summary plot for LA-SMA-3.1

Table 5.0-1
Active Control Measures at LA-SMA-3.1

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
L00802040007	Established vegetation	No	Yes	No	Yes	B[a]
L00803140009	Coir log	No	Yes	Yes	No	B
L00804040004	Culvert	Yes	No	No	Yes	CB[b]

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, LA-SMA-3.1

Sampler	Analyte	Unit	Number of Detects	Concentration	ATAL	Number of ATAL Exceedances	Max Detect/ATAL Ratio
LA-SMA-3.1	Total PCBs	ng/L	1	12.4	0.6	1	19

Table 6.0-2
Summary of 2013 NMED Sample Total PCB Exceedances Downgradient of LA-SMA-3.1

Sampler	Analyte	Unit	Sample Date	Concentration	ATAL	ATAL Exceedance Ratio
NMED-OB131002	Total PCBs	ng/L	7/27/2013	315.00	0.64	492.18
NMED-OB131002	Total PCBs	ng/L	8/4/2013	171.00	0.64	267.19
NMED-OB131002	Total PCBs	ng/L	8/13/2013	518.00	0.64	809.38
NMED-OB131002	Total PCBs	ng/L	9/1/2013	115.00	0.64	179.69

Table 6.0-3
Summary of Rainfall Data resulting in Sample Collection from LA-SMA-3.1

Sampler	Precipitation Start Date	Precipitation at RG055.5 (in.)	Max Intensity in 30 Min (in.)	Precipitation Duration (hr)	Return Period
NMED-OB131002	7/26/2013	0.19	0.09	1.33	less than 95th percentile storm event
NMED-OB131002	8/4/2013	0.41	0.23	1.83	less than 95th percentile storm event
NMED-OB131002	8/13/2013	0.07	0.05	0.41	less than 95th percentile storm event
NMED-OB131002	9/1/2013	0.11	0.1	0.41	less than 95th percentile storm event
LA-SMA-3.1	10/24/2018	1.33	0.18	8.91	between the 2-yr and the 3-yr, 24-hr storm event

Table 7.1-1
Percentage of Developed and Undeveloped Landscapes within LA-SMA-3.1

SMA	Watershed	TAL-Exceeding Constituent	SMA Drainage Area (acre)	Developed Landscape within SMA	Undeveloped Landscape within SMA
LA-SMA-3.1	Los Alamos/Pueblo Canyons	Total PCBs	13.8	77.7%	22.3%

Table 7.1-2
2018 Storm Water Exceedances and UTLs, LA-SMA-3.1

TAL Exceedances (see scatter plots)	Exceeds Storm Water Undeveloped Landscape Background UTL	Exceeds Storm Water Developed Landscape Background UTL
Total PCBs (19×) – 12.4 ng/L, ATAL is 0.6 ng/L	(UTL: 11.7 ng/L*) ☒ **Yes** ☐ **No**	(UTL: 98 ng/L*) ☐ Yes ☒ No

* LANL 2012, Table 16.

April 2019
EM2019-0102

Alternative Compliance Request for M-SMA-1.2

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for M-SMA-1.2

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."

4/11/2019

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

Date

4-22-2019

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

Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) M-SMA-1.2, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for M-SMA-1.2 is site conditions make monitoring under the Permit impracticable. Specifically, this SMA contains a currently active NPDES-permitted outfall (04A022, formerly 03A022); and the U.S. Environmental Protection Agency stated in previous documentation that non–storm water discharges are not authorized under the Permit.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
Site	AOC and/or SWMU identified in the Permit
SMA	site monitoring area
SWMU	solid waste management unit
TA	technical area
TAL	target action level

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA M-SMA-1.2 contains one SWMU, SWMU 03-049(a). Confirmation monitoring samples collected in 2017 from M-SMA-1.2 showed copper at a concentration above the target action level (TAL). Because of this TAL exceedance, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action at that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Site addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Site in M-SMA-1.2 being identified as a SWMU in the 1990 SWMU report (LANL 1990), the current use of the Site, any Consent Order investigations and remedial actions conducted at the Site, and the current status of the Site under the Consent Order.
- Section 5.0, Description of Control Measures Installed within M-SMA-1.2, details the baseline and enhanced control measures that were installed in M-SMA-1.2.
- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.

- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b) (12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required

to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the time frame under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

The 1.1-acre M-SMA-1.2 watershed, which includes SWMU 03-049(a), is located in Technical Area 3 (TA-3), south of the Sigma Building. The Site consists of 50% developed area and 50% undeveloped area. The undeveloped area consists of 0.42 acres of ponderosa pine, 0.056 acres of wetlands, 0.044 acres of sparse grass, and 0.024 acres of cottonwood.

SWMU 03-049(a) is a drainage channel downstream of a currently permitted NPDES outfall (04A022, formerly 03A022) located south of the Sigma Building (03-66). The outfall formerly discharged treated cooling water from a former cooling tower (structure 03-127), which served the Sigma Building, and continues to discharge runoff from six roof drains on the Sigma Building. The cooling tower operated from 1960 to 1999. Hexavalent chromium was potentially used in cooling towers before the mid-1970s. From 1984 to 1990, the channel also received discharge from rinse tanks associated with the electroplating operation in the Sigma Building. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to reduce contaminant buildup, trace amounts of metals, acids, cyanide, and depleted uranium were introduced into the rinse water (LANL 1995, LANL 1997). The NPDES permit allowed discharge of 4680 gal./day of treated cooling water and 24,000 gal./day of electroplating rinse water (LANL 1995). Since 1999, the channel received treated cooling water and roof-drain runoff (LANL 2007). The 2007 NPDES permit authorized discharge of cooling tower blowdown and other wastewaters (EPA 2007). The outfall is currently authorized to discharge storm water, roof drain water, and once-through cooling water for emergency use only but is not allowed to discharge cooling tower blowdown (EPA 2014a). Phase I Consent Order sampling is complete for SWMU 03-049(a). Additional Phase II sampling to define the extent of the contamination, as well as possible remediation, was proposed in the supplemental investigation report for the Upper Mortandad Canyon Aggregate Area, submitted to NMED in December 2015.

As stated above, M-SMA-1.2 also contains a currently active NPDES-permitted outfall (04A022, formerly 03A022), which exists for intermittent discharge from a cooling tower overflow sump. The Laboratory previously submitted an alternative compliance request to EPA, which included two other Sites [03 045(b) and 03-045(c)] (LANL 2013a, LANL 2013b) containing active NPDES-permitted outfalls with mostly continuous discharges. These sites are not within M-SMA-1.2. EPA stated that non–storm water discharges from those Sites were not authorized under the Individual Permit, and the receiving stream of these discharges cannot be considered as a point discharge for the purposes of the NPDES permit (EPA 2014b). Similarly to Sites 03-045(b) and 03-045(c), SWMU 03-049(a), within M-SMA-1.2, is an active NPDES-permitted outfall with intermittent discharge, with copper concentrations greater than 50 μg/L.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN M-SMA-1.2

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for M-SMA-1.2 is shown in Figure 5.0-1. An enhanced control confirmation sample was collected on September 29, 2017. Analytical results from this sample yielded the following TAL exceedance:

- copper concentration of 55 µg/L (MTAL is 4.3 µg/L).

The data are summarized in Table 6.0-1. Figure 6.0-1 is a graph that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The Site in M-SMA-1.2, SWMU 03-049(a), is the subject of this alternative compliance request. The Individual Permit requires the Permittees to complete corrective action on or before November 1, 2015.

Based on the previous response from EPA regarding Sites containing active NPDES-permitted outfalls with mostly continuous discharges, N3B is proposing no action at this Site. EPA previously stated that non–storm water discharges from those Sites are not authorized under the Individual Permit, and the receiving stream of these discharges cannot be considered as a point discharge for the purposes of the NPDES permit (EPA 2014b). Similarly to those Sites, the Site within M-SMA-1.2 contains an active NPDES outfall with intermittent discharge.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no corrective action is required for the Site submitted herein for alternative compliance because discharges from the Site are not authorized under the Individual Permit, and the receiving stream of these discharges cannot be considered as a point discharge.

The Permittees propose to continue to inspect and maintain existing controls until this Site is removed from the Individual Permit.

9.0 REFERENCES

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LANL (Los Alamos National Laboratory) 2013b. "Alternative Compliance Request for S-SMA-2," Los Alamos National Laboratory document LA-UR-13-22840, Los Alamos, New Mexico (April 2013).

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

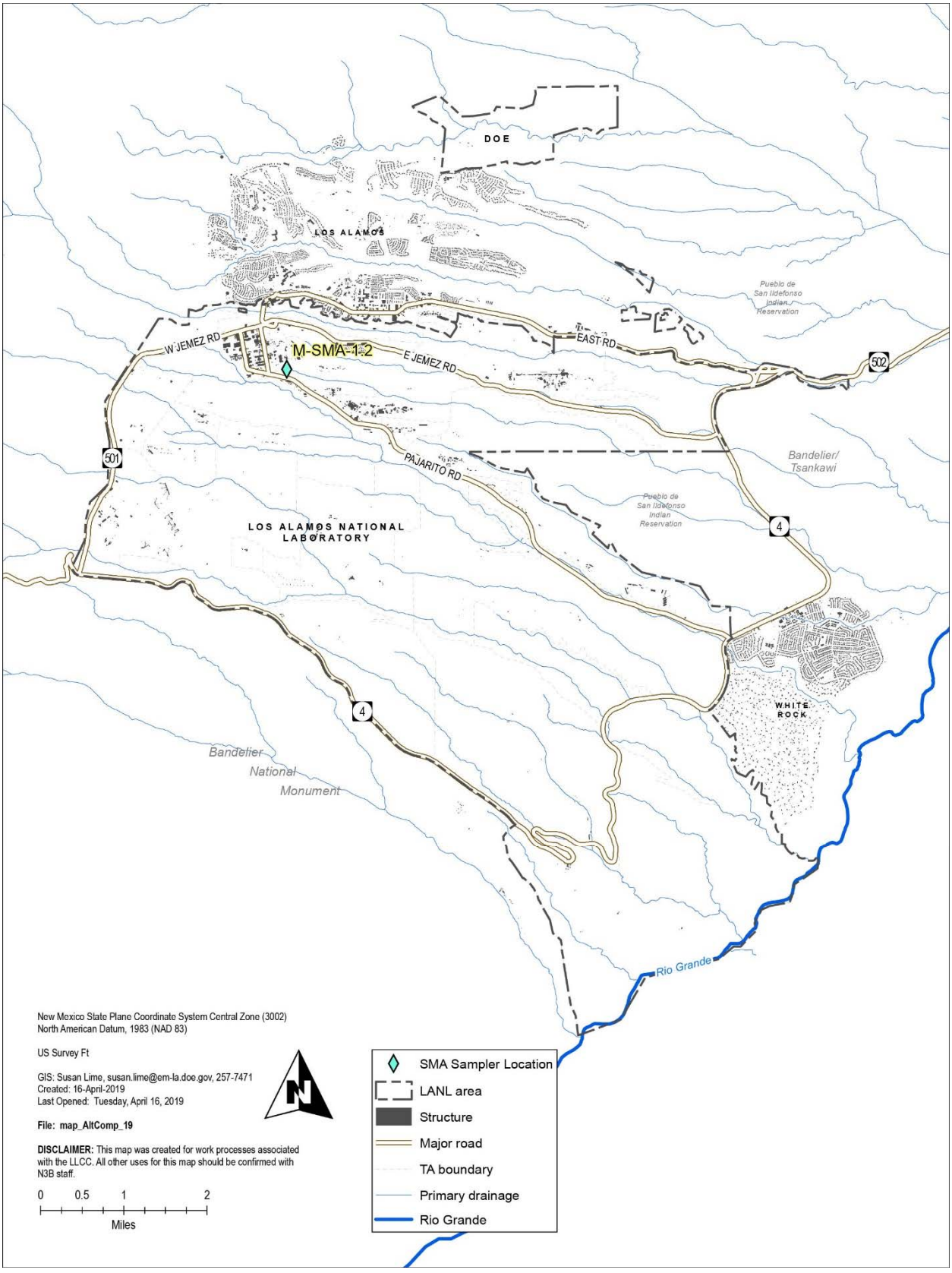
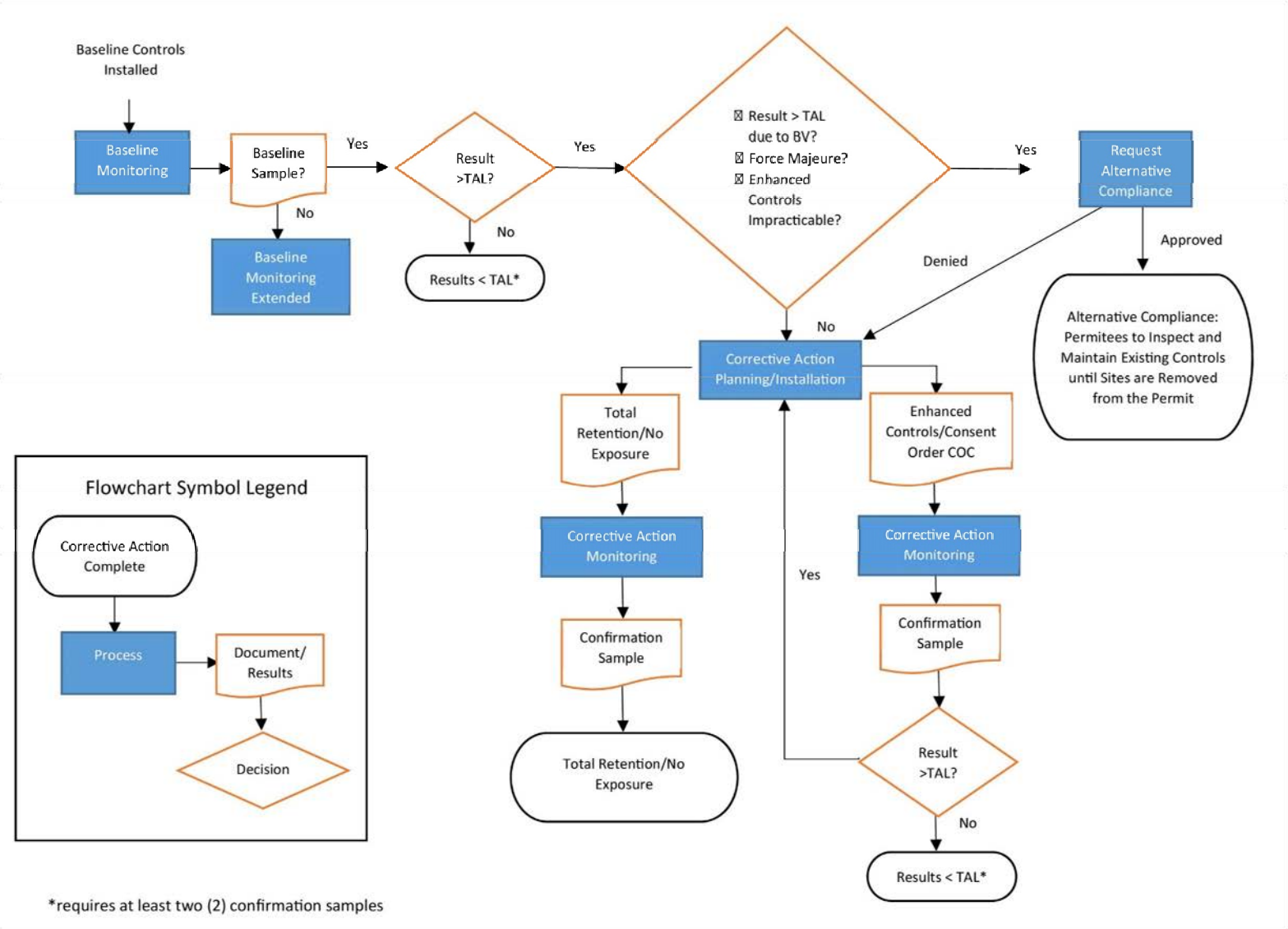


Figure 1.0-1 Location of the Laboratory



Notes: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

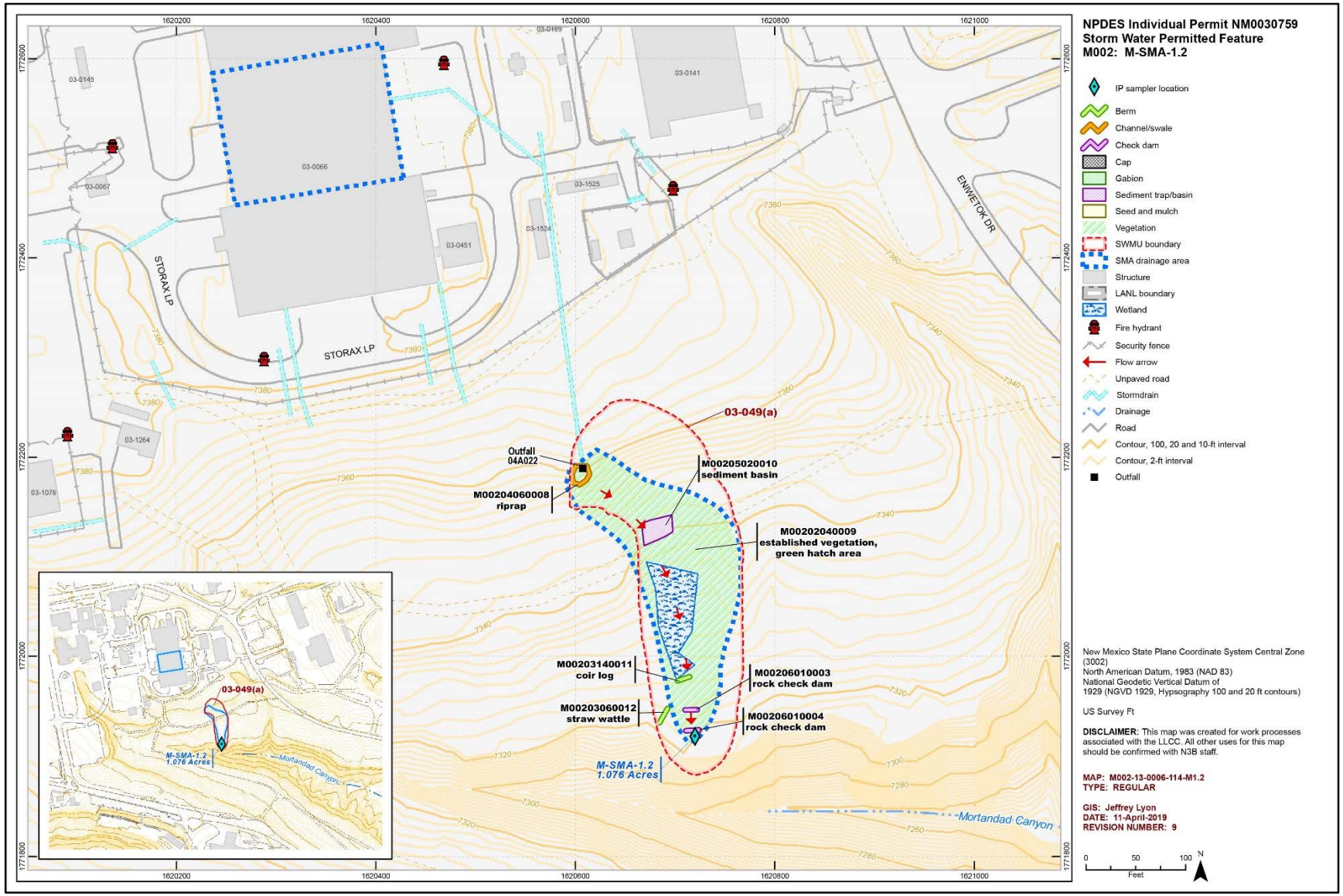
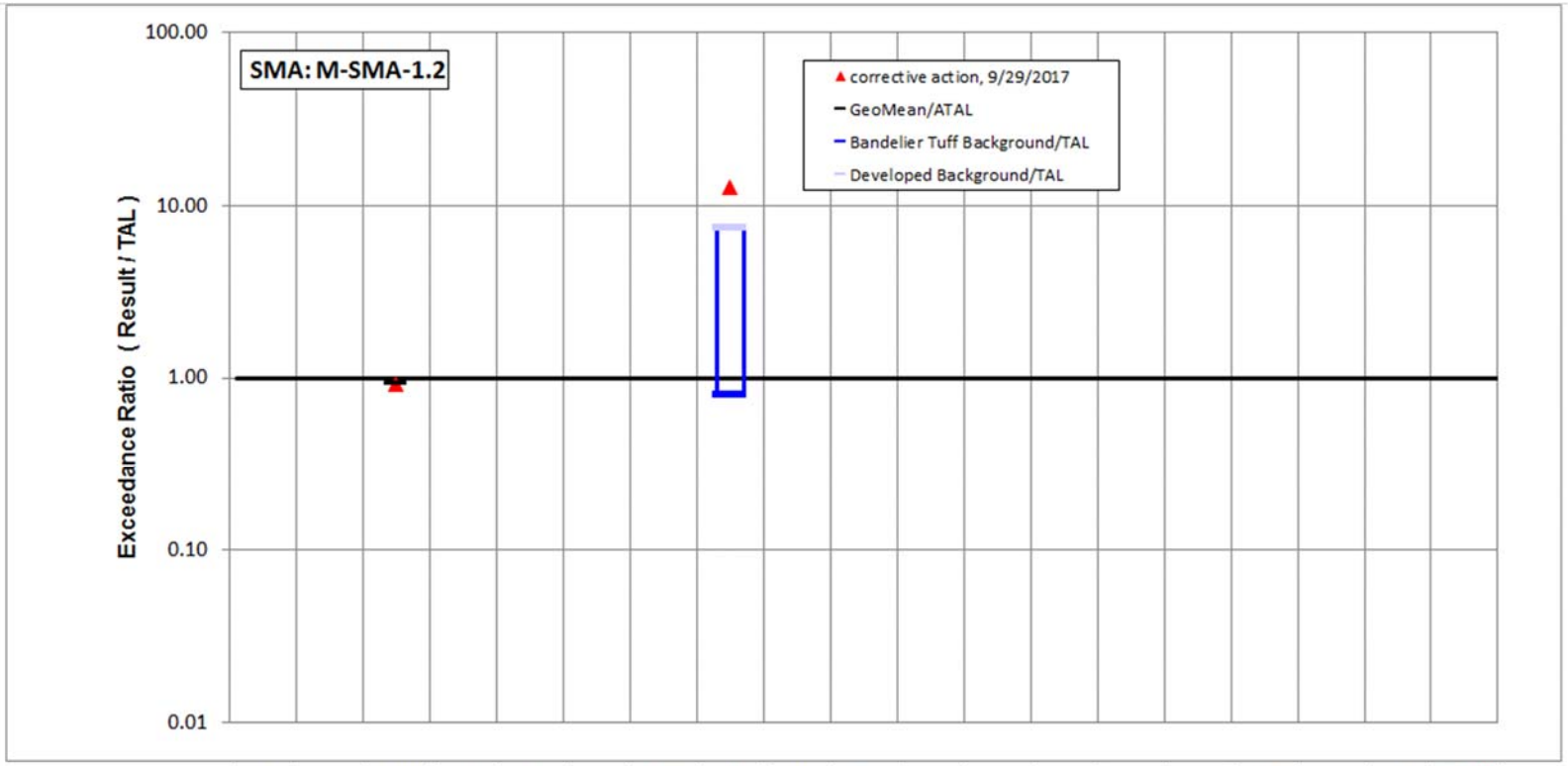


Figure 5.0-1 M-SMA-1.2 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	-	-	ATAL	-	-	-	-	MTAL	-	-	-	-	-	-	-	-	-	-	-
std value	-	-	9	-	-	-	-	4.3	-	-	-	-	-	-	-	-	-	-	-
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
9/29/2017 result	-	-	8.2	-	-	-	-	**55**	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	0.91	-	-	-	-	**13**	-	-	-	-	-	-	-	-	-	-	-

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 Inorganic analytical results summary plot for M-SMA-1.2

Table 5.0-1
Active Control Measures at M-SMA-1.2

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
M00202040009	Established vegetation	No	Yes	No	Yes	B[a]
M00203060012	Straw wattle	Yes	No	Yes	No	B
M00203140011	Coir log	No	Yes	Yes	No	EC[b]
M00204060008	Riprap	Yes	No	No	Yes	CB[c]
M00205020010	Sediment basin	No	Yes	Yes	No	EC
M00206010003	Rock check dam	No	Yes	Yes	No	CB
M00206010004	Rock check dam	No	Yes	Yes	No	CB

[a] B = Additional baseline control measure.

[b] EC = Enhanced control measure.

[c] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, M-SMA-1.2

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
Copper	µg/L	1	55	n/a*	n/a	n/a	4.3	1	12.8

*n/a = Not applicable.

April 2019
EM2019-0099

Alternative Compliance Request for PT-SMA-1

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for PT-SMA-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."

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

4/11/2019
Date

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

4-22-2019
Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) PT-SMA-1, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for PT-SMA-1 is that copper and gross-alpha radioactivity, the constituents exceeding target action levels in storm water discharges from the Sites in this SMA, have decreased significantly as a result of adding enhanced control measures and moving the sampler to a more representative monitoring location.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DOE	Department of Energy (U.S.)
DU	depleted uranium
EPA	Environmental Protection Agency (U.S.)
HE	high explosives
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
Site	AOC and/or SWMU identified in the Permit
SMA	site monitoring area
SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA PT-SMA-1 contains two SWMUs: 15-004(f) and 15-008(a). Confirmation monitoring samples collected in 2017 from PT-SMA-1 showed copper and gross alpha activity at concentrations above the applicable target action levels (TALs). Because of these TAL exceedances, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that the Sites addressed in this request can achieve completion of corrective action only through the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Descriptions, summarizes the historical operations that led to the Sites in PT-SMA-1 being identified as SWMUs in the 1990 SWMU report (LANL 1990), any Consent Order investigations and remedial actions conducted at the Sites, and the current status of the Sites under the Consent Order.
- Section 5.0, Description of Control Measures Installed within PT-SMA-1, details the baseline and enhanced control measures that were installed in PT-SMA-1.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media, and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring result exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that completely retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that completely eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the time frame under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from certifying corrective action complete: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTIONS

The 15.2-acre PT-SMA-1 watershed, which includes SWMUs 15-004(f) and 15-008(a), is located within the E-F Firing Site area of the Laboratory. The SMA consists of 1.7% developed area and 98.3% undeveloped area. The undeveloped area consists of 11.98 acres of sparse grass, 2.79 acres of piñon-juniper woodland and rock, and 0.2 acres of bare soil.

SWMU 15-004(f) is an inactive firing site, E-F Firing Site, consisting of three inactive firing points (D, E, and F) at Technical Area 15 (TA-15). E-F Firing Site began operating in 1946 and was last used in 1981. It was operated extensively from 1947 to 1973 and was the largest firing site at the Laboratory. Originally, E-F Firing Site consisted of a single firing point (D), which was built in 1946 and ceased to operate in 1949 (LANL 1990). In 1947, the firing area was expanded to include Firing Point E, which was used for large-scale shots containing up to 2500 lb of high explosives (HE), and Firing Point F, which was used for smaller-scale shots. Firing Points E and F were approximately 650 ft apart and were wired to an underground control bunker (structure 15-27) (LASL 1947). Tests at the two firing points were conducted on the ground and created depressions in the ground. After test shots, the firing points were either regraded or backfilled with gravel to fill in the depressions. Eventually, nearby soil was mounded on the north and south sides of Firing Point E to protect TA-15 structures from shrapnel (LANL 1993). Tests at E-F Firing Site involved HE, uranium, barium, beryllium, lead, and mercury. In addition, high concentrations of copper have been detected at the site (LANL 2015). Cables and wiring containing copper were also used. Between 1945 and 1957, an estimated 48 tons of natural uranium was expended at E-F Firing Site and after 1957, approximately 22 tons of depleted uranium (DU) was expended. Chunks of uranium and DU were visible across the firing site along with pieces of HE (LANL 1996). The objective of the SWMU 15-004(f) investigation in 2010 was not to determine the nature and extent of contamination but to identify areas and depths of soil requiring corrective actions. Samples were collected at the previous 1994 RCRA facility investigation grid sampling locations and at the two earthen mounds to characterize the site to support corrective actions and determine if residual contamination poses an unacceptable risk based on an industrial scenario (LANL 2015).

SWMU 15-008(a) consists of two small surface disposal areas located on the edge of Potrillo Canyon, one south and one east of E-F Firing Site [SWMU 15-004(f)], at TA-15. The disposal areas are located within approximately 350 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high (LANL 2015). Both areas were used to dispose of debris from tests conducted at the E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. Tests at E-F Firing Site involved HE, uranium, barium, beryllium, lead, and mercury (LANL 1993, LANL 2011). Between 1945 and 1957, an estimated 48 tons of natural uranium was expended at E-F Firing Site and after 1957, approximately 22 tons of DU was expended (LANL 1993). Chunks of uranium and DU were visible across the firing site along with pieces of HE (LANL 1996). The exact period of operation of the surface disposal areas is not known but probably falls within the period of operation for E-F Firing Site (1945 to 1981) (LANL 1993). All debris was removed from both surface disposal areas during the 2010 investigation (LANL 2015). Phase I Consent Order sampling is complete for

SWMU 15-008(a). SWMU 15-008(a) is located within the boundary of E-F Firing Site [SWMU 15-004(f)]. Per the Potrillo and Fence Canyons Aggregate Area supplemental investigation report submitted to NMED in September 2015, this Site will not be eligible for a COC until additional investigation and corrective actions are complete for E-F Firing Site (LANL 2015).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN PT-SMA-1

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 5.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for PT-SMA-1 is shown in Figure 5.0-1. Following a sampler move to a more representative monitoring location, a corrective action monitoring storm water sample was collected on September 26, 2017. Analytical results from this sample yielded the following TAL exceedances:

- copper concentration of 4.8 µg/L (MTAL is 4.3 µg/L)
- gross-alpha activity of 17.6 pCi/L (ATAL is 15 pCi/L).

The data are summarized in Table 6.0-1. Figures 6.0-1 and 6.0-2 are graphs that show the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituents exceeding TALs for the two Sites in PT-SMA-1, SWMUs 15-004(f) and 15-008(a), have decreased significantly as a result of adding enhanced control measures and moving a sampler to a more representative monitoring location.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Part I.E.2(a)through I.E.2 (d), individually or collectively. These factors include, but are not limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following two categories:

- Sources of pollutants
- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at PT-SMA-1 are detailed below.

7.1 Potential Sources of TAL Exceedances

The SMA contains both developed and undeveloped landscapes that contribute storm water to the SMA sampler. Storm water samples collected at this SMA represent runoff from landscapes not affected by the

Sites, as well as areas potentially affected by releases from the Sites. Potential non-Site-related and Site-related sources of copper and gross alpha in storm water samples are summarized below.

7.1.1 Runoff from Developed Landscapes

Copper is known to be present in storm water runoff from developed landscapes from various anthropogenic sources (e.g., automobile brake pads, galvanized metal, building materials, use as a flocculent in water). To determine the contribution of metals to runoff from developed landscapes not affected by Laboratory operations, storm water samples were collected from 2009 to 2012 in developed watersheds on the Pajarito Plateau and analyzed for metals. These results are summarized in the Laboratory publication entitled “Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico” (hereafter, the Background Metals Report) (LANL 2013). Sampling locations were selected to avoid any known Laboratory-related contamination and to provide reasonable estimates of runoff from a variety of developed landscapes representative of buildings, parking lots, and roads.

In the Background Metals Report (LANL 2013), the 95% upper tolerance limit (UTL) was used to represent the upper limit of storm water natural background concentrations of a constituent. A UTL defines the uppermost limit of the range of data that occurs within the specified percentage, so the 95% UTL is the largest value in the 95% of the data collected. EPA provides methods for calculating the UTL using the ProUCL program(EPA 2013). When a single result is compared with background (as performed in evaluation of storm water data), the ProUCL technical guidance recommends that the concentrations of that result be compared with the UTL background concentration. The UTL for copper in runoff from developed areas is 32.3 µg/L (LANL 2013).

As discussed above, for these Sites, the copper concentration in the storm water discharge is less than the storm water concentrations from developed landscapes. Table 7.1-1 summarizes the contributions from the developed landscape to total storm water runoff captured at the SMA.

7.1.2 Runoff from Undeveloped Landscapes

The two Sites in PT-SMA-1 receive runoff from mainly undeveloped landscapes.

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009) show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Copper and several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in the Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring metals and radionuclides to runoff from undeveloped areas not affected by Site operations, storm water samples were collected from 2009 to 2012 in remote watersheds on the Pajarito Plateau and analyzed for metals and radioactivity, including gross-alpha activity. The results of this study were published in the Background Metals Report (LANL 2013). Sampling locations were selected to avoid any known contaminated areas or developed areas and to provide reasonable estimates of concentrations of metals and gross-alpha activity in natural background storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water was composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

The UTLs for copper and gross-alpha activity calculated for storm water runoff from remote watersheds (undeveloped landscapes) containing primarily weathered Bandelier Tuff material are 3.43 µg/L and 1490 pCi/L, respectively (LANL 2013). These values are considered to be the natural background concentrations for undeveloped landscapes and apply to SMAs with undeveloped landscapes in the Individual Permit because the underlying geology of the Laboratory and surrounding area is Bandelier Tuff.

As discussed above, for these Sites, the gross-alpha activity is less than the storm water activity from undeveloped landscapes. Table 7.1-1 summarizes the contributions from the undeveloped landscape to total storm water runoff captured at PT-SMA-1.

7.1.3 Site-Related Sources of Adjusted Gross Alpha

Storm water samples collected at the SMA addressed by this request were analyzed for gross-alpha radioactivity, which is a measure of the alpha radioactivity associated with all alpha-emitting radionuclides detected in the sample. The TAL contained in the Individual Permit, however, is for adjusted gross-alpha radioactivity. Adjusted gross-alpha radioactivity does not include the alpha radioactivity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha radioactivity of a sample will always be greater than the adjusted gross-alpha radioactivity, use of gross-alpha radioactivity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha radioactivity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the two Sites in PT-SMA-1 may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha radioactivity from these significant materials associated with industrial activities and then potentially released to storm water discharges at these Sites would not contribute to adjusted gross-alpha radioactivity. There are, therefore, no sources of adjusted gross-alpha radioactivity associated with these Sites.

7.1.3 Additional Controls and Sampler Move

The Permittees have placed controls at the Sites and have moved the sampler to a more representative monitoring location. These actions have resulted in a decrease of the concentrations and activity of the analytes, as shown in Table 7.1-2.

7.2 Rationale for Alternative Compliance

As stated in section 7.1.2, the Sites included in this alternative compliance request are not considered sources of adjusted gross-alpha radioactivity subject to regulation under the Individual Permit.

The controls that the Permittees have placed at the Sites have reduced the concentrations of the analytes detected. Aluminum and zinc were detected below the TAL in samples collected in 2014 and 2017. The Permittees are considering a watershed-scale control for the Site below the sampler location and upstream of the confluence of this drainage with Potrillo Canyon.

7.2.1 Enhanced Control Measures to Meet the TALs

The two Sites in PT-SMA-1 receive runoff from mainly undeveloped landscapes.

The concentrations of copper and the gross-alpha radioactivity in storm water samples are slightly greater (1.1 times and 1.2 times) than their respective TALs and within the range of background concentrations of copper and gross-alpha activity in storm water for developed and undeveloped landscapes, respectively (Table 7.1-1).

7.2.2 Control Measures that Completely Retain and Prevent Discharge from Storm Water

For the two Sites in PT-SMA-1, it may be possible to completely retain storm water runoff so no discharge occurs. If storm water discharges from the Sites were completely retained, the receiving waters downstream of the Sites would continue to receive runoff from developed and undeveloped landscapes not affected by the Sites. The background levels of copper and gross-alpha radioactivity in this runoff would likely exceed TALs.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no additional corrective action is required for the Sites submitted herein for alternative compliance because the controls at the Sites have reduced the concentrations of the TAL-exceeding constituents to approximately TAL levels.

The Permittees propose to continue to inspect and maintain existing controls until the Sites are removed from the Individual Permit.

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency) 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas (September 30, 2010).

EPA (U.S. Environmental Protection Agency) 2013. “ProUCL Version 5.0.00 User Guide,” Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041, Office of Research and Development, Washington, D.C. (September 2013).

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LANL (Los Alamos National Laboratory) 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 (April 2013).

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

LASL (Los Alamos Scientific Laboratory) 1947. “New Control Building R-27 and Two Firing Points at 'R' Site Tech Maintenance Group,” Revision 1, Engineering Drawing A5-C37, Los Alamos, New Mexico (March 9, 1947).

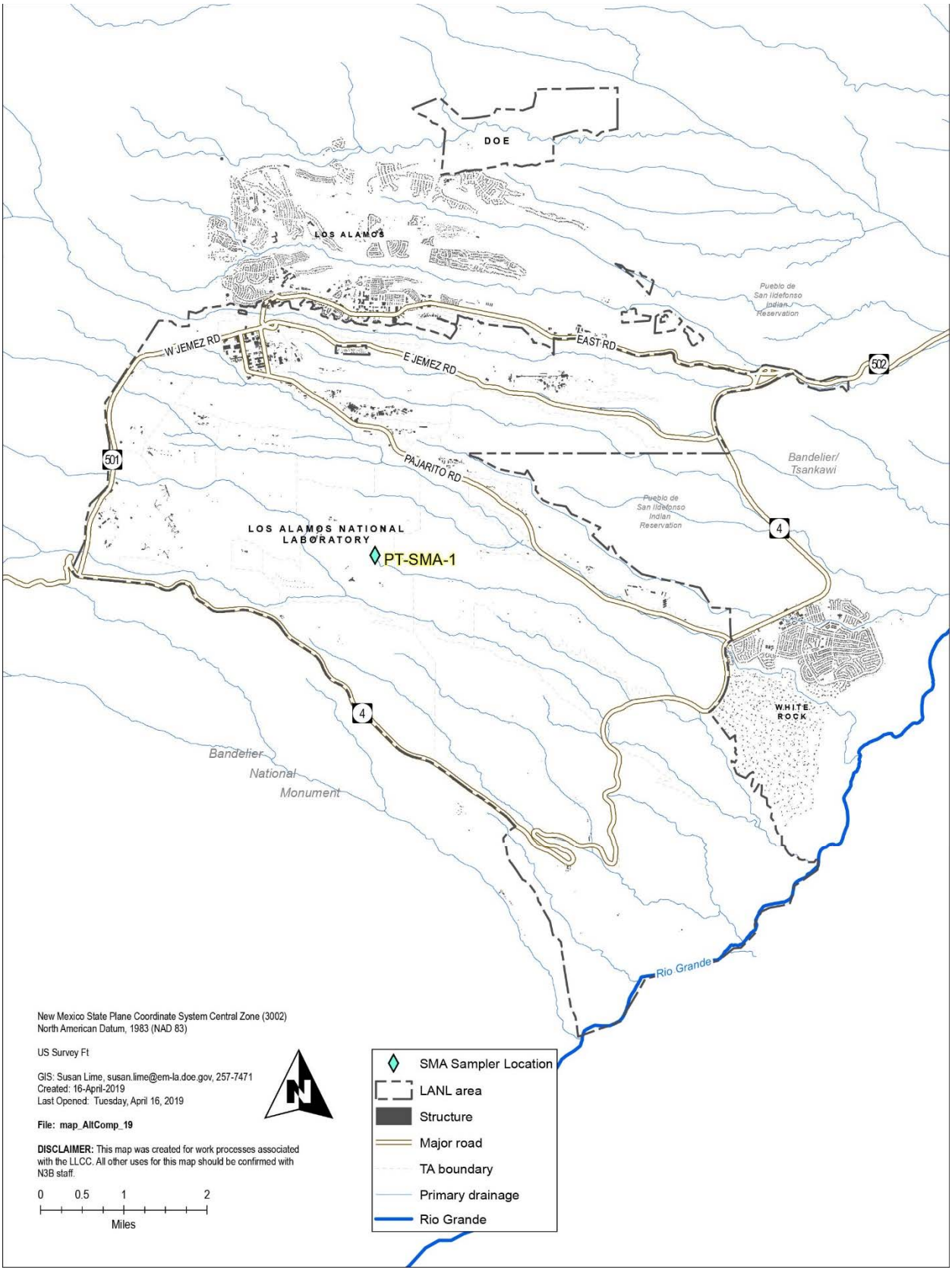
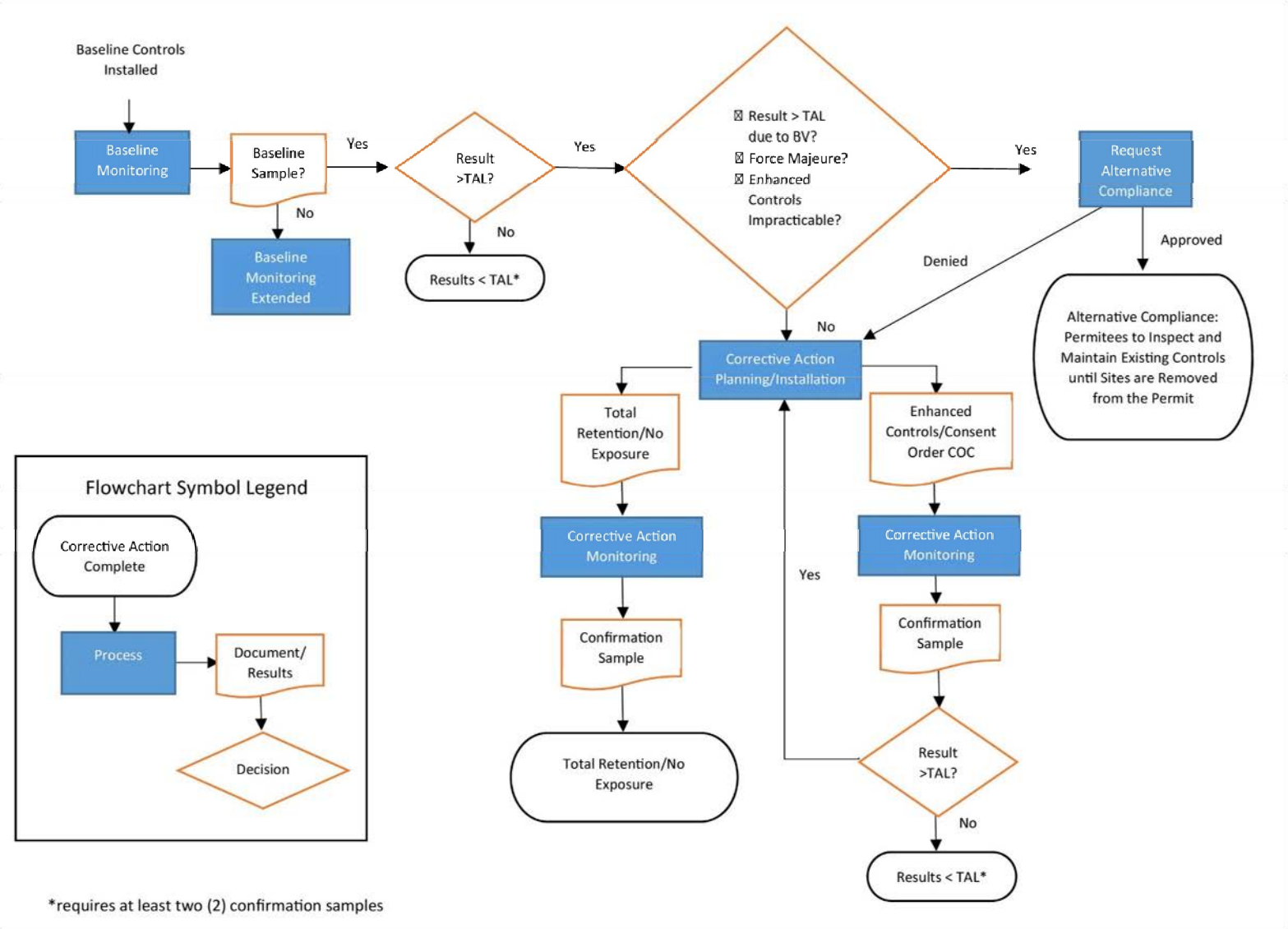


Figure 1.0-1 Location of the Laboratory



Notes: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

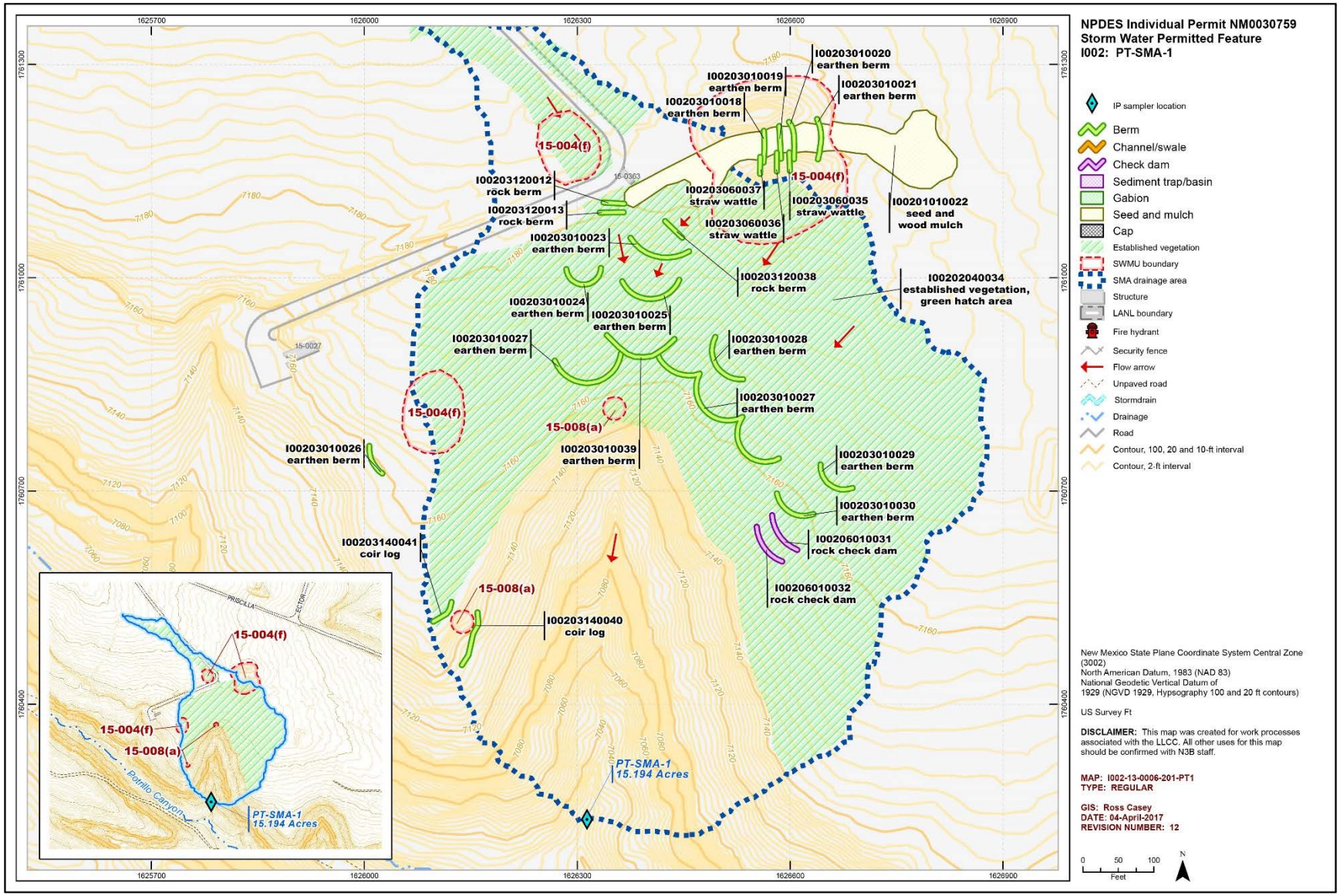
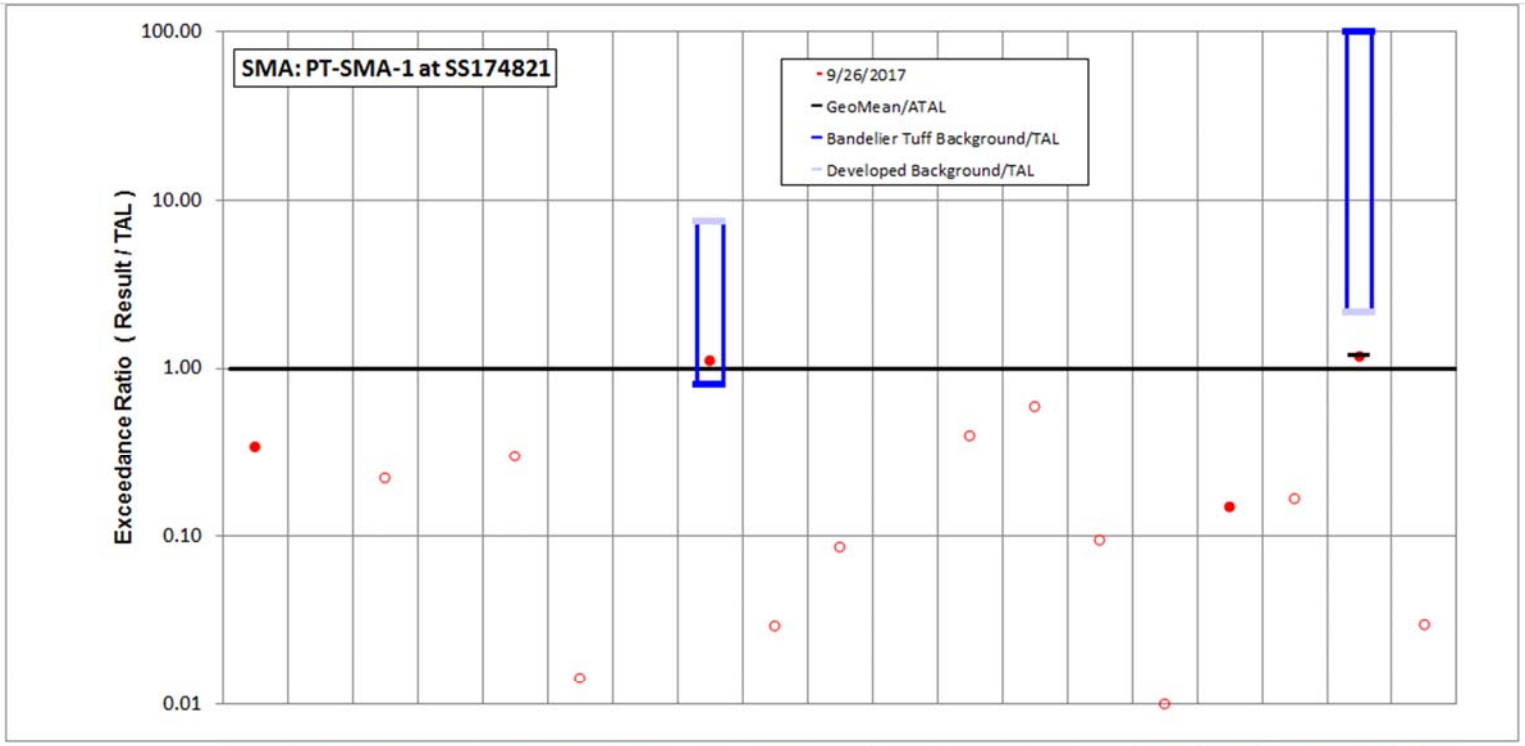


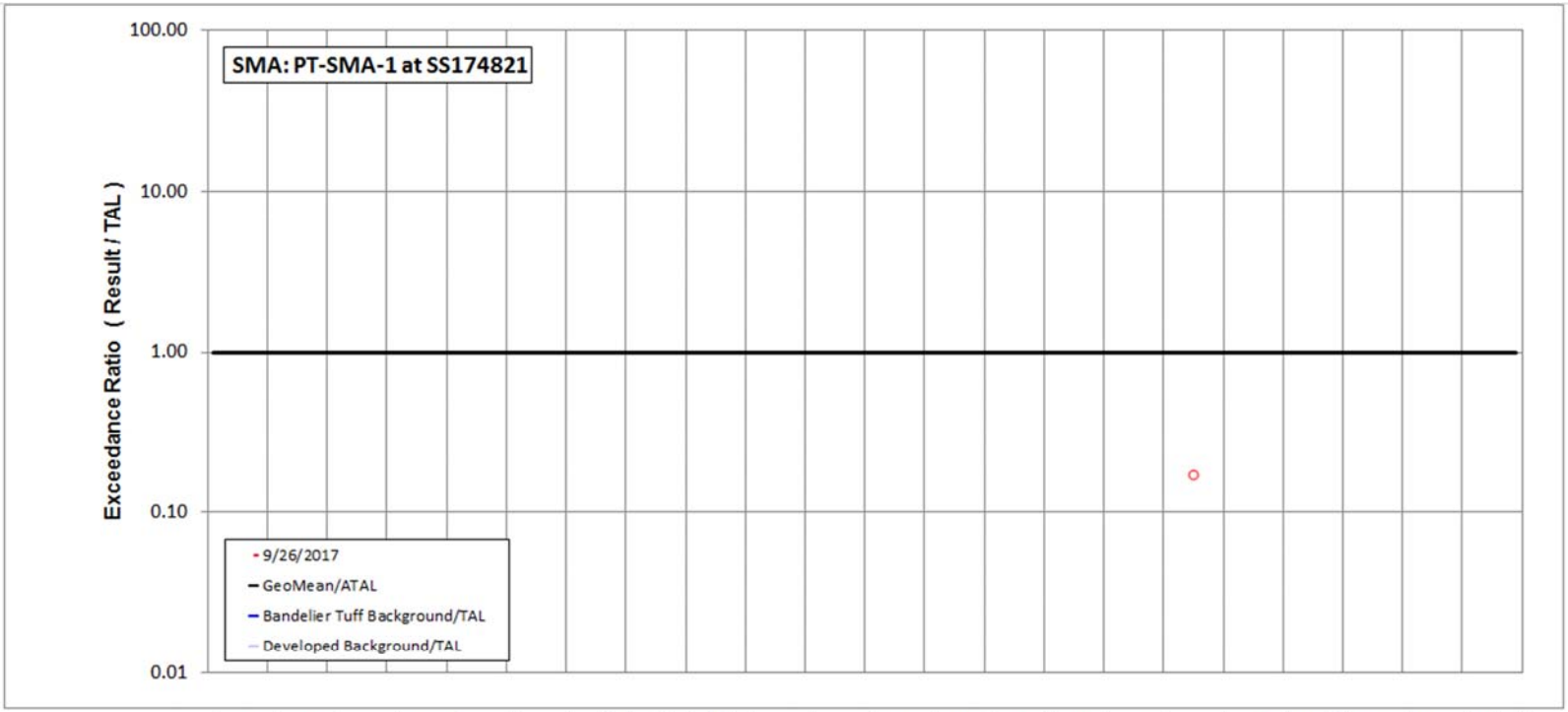
Figure 5.0-1 PT-SMA-1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/26/2017 result	260	3.31	*2*	22.1	*0.3*	*3*	1.59	**4.8**	*0.5*	*0.067*	0.85	*2*	*0.3*	*0.6*	*1*	6.26	*0.002*	**17.6**	*0.894*
result / TAL	0.35	0.0052	*0.22*	0.0044	*0.3*	*0.014*	0.0016	**1.1**	*0.029*	*0.087*	0.005	*0.4*	*0.6*	*0.095*	*0.01*	0.15	*0.17*	**1.2**	*0.03*

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 Inorganic analytical results summary plot for PT-SMA-1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/26/2017 result	-	*0.033*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.007*	*3.23*	*0.101*	-	-	-	*0.101*
result / TAL	-	*0.007*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	*0.17*	*5E-04*	-	-	-	*0.005*

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-2 2017 Organic analytical results summary plot for PT-SMA-1

Table 5.0-1
Active Control Measures at PT-SMA-1

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
I00201010022	Seed and wood mulch	No	No	No	Yes	CB[a]
I00202040034	Established vegetation	No	Yes	No	Yes	B[b]
I00203010018	Earthen berm	No	Yes	Yes	No	CB
I00203010019	Earthen berm	No	Yes	Yes	No	CB
I00203010020	Earthen berm	No	Yes	Yes	No	CB
I00203010021	Earthen berm	No	Yes	Yes	No	CB
I00203010023	Earthen berm	No	Yes	Yes	No	EC[c]
I00203010024	Earthen berm	No	Yes	Yes	No	EC
I00203010025	Earthen berm	No	Yes	Yes	No	EC
I00203010026	Earthen berm	No	Yes	Yes	No	EC
I00203010027	Earthen berm	No	Yes	Yes	No	EC
I00203010028	Earthen berm	No	Yes	Yes	No	EC
I00203010029	Earthen berm	No	Yes	Yes	No	EC
I00203010030	Earthen berm	No	Yes	Yes	No	EC
I00203010039	Earthen berm	No	Yes	Yes	No	EC
I00203010035	Straw wattle	No	Yes	Yes	No	B
I00203010036	Straw wattle	No	Yes	Yes	No	B
I00203010037	Straw wattle	No	Yes	Yes	No	B
I00203120012	Rock berm	Yes	No	Yes	No	CB
I00203120013	Rock berm	Yes	No	Yes	No	CB
I00203120038	Rock berm	Yes	No	Yes	No	EB
I00203140040	Coir log	No	Yes	Yes	No	EC
I00203140041	Coir log	No	Yes	Yes	No	EC
I00206010031	Rock check dam	No	Yes	Yes	No	EC
I00206010032	Rock check dam	No	Yes	Yes	No	EC

[a] CB = Certified baseline control measure.

[b] B = Additional baseline control measure.

[c] EC = Enhanced control measure.

Table 6.0-1
Summary of Storm Water Exceedances, PT-SMA-1

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
Copper	µg/L	1	4.8	n/a*	n/a	n/a	4.3	1	1.09
Gross alpha	pCi/L	1	17.6	15	72.8	1.17	n/a	n/a	n/a

*n/a = Not applicable.

Table 7.1-1
Storm Water Exceedances and UTLs, PT-SMA-1

TAL Exceedances (see scatter plots)	Exceeds Tuff Background/ TAL Storm Water Undeveloped Landscapes UTL	Exceeds Storm Water Developed Landscapes Background UTL
Copper (1.12x) – 4.8 µg/L, MTAL is 4.3 µg/L	(UTL: 3.43 µg/L[a]) ☒ Yes ☐ No	(UTL: 32.3 µg/L[b]) ☐ Yes ☒ No
Gross-Alpha activity (1.17x) – 17.6 pCi/L, ATAL is 15 pCi/L	(UTL: 1490 pCi/L[c]) ☐ Yes ☒ No	(UTL: 32.5 pCi/L[d]) ☐ Yes ☒ No

[a] LANL 2013, Table 3.

[b] LANL 2013 Table 13.

[c] LANL 2013, Table 4.

[d] LANL 2013 Table 14.

Table 7.1-2
Storm Water Data Comparison for Years 2011, 2014, and 2017

Analyte	Concentrations/ Activity in 2011	Concentrations/ Activity in 2014	Concentrations/ Activity in 2017
Aluminum	1380 µg/L	Detected below TAL	Detected below TAL
Copper	6.5 µg/L	45.5 µg/L and 21.4 µg/L	4.8 µg/L
Zinc	75.9 µg/L	Not detected and detected below TAL	Detected below TAL
Gross alpha	79.5 pCi/L	650 pCi/L and 4400 pCi/L	17.6 pCi/L

April 2019
EM2019-0104

Alternative Compliance Request for T-SMA-7

NPDES Permit No. NM0030759

N3B Los Alamos

Cover photo: 1000-yr flood event that occurred in September 2013.

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC
NPDES Permit No. NM0030759

Alternative Compliance Request for T-SMA-7

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."

Bruce Robinson, Water Program Director
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

4/11/2019
Date

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

4-22-2019
Date

EXECUTIVE SUMMARY

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the direction of the U.S. Department of Energy (DOE), has prepared this request for alternative compliance for the Individual Storm Water Permit pursuant to the requirements of the National Pollutant Discharge Elimination System Permit No. NM0030759 (hereafter, the Individual Permit or Permit). The Individual Permit authorizes the discharge of storm water associated with historical industrial activities at Los Alamos National Laboratory from specified solid waste management units and areas of concern, collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010.

This request for alternative compliance addresses site monitoring area (SMA) T-SMA-7, regulated under the Individual Permit. Alternative compliance is being requested because DOE and N3B (the Permittees) have determined that it will not be possible to certify completion of corrective action under Part I.E.2 of the Individual Permit. Completion of corrective action cannot be certified under any other means provided in the Individual Permit. The basis for this alternative compliance request for T-SMA-7 is the pollutant of concern (POC), gross alpha activity, is contributed by sources beyond the Permittees' control. Specifically, concentrations of the POC in the storm water discharge from T-SMA-7 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BCM	baseline control measure
CA	corrective action
CFR	Code of Federal Regulations
COC	certificate of completion
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EPA	Environmental Protection Agency (U.S.)
Individual Permit	National Pollutant Discharge Elimination System Permit No. NM0030759
IP	Individual Permit (NPDES Permit No. NM0030759)
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MQL	minimum quantification level
MTAL	maximum target action level
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit No. NM0030759
Permittees	U.S. Department of Energy and Newport News Nuclear BWXT-Los Alamos, LLC
POC	pollutant of concern
RCRA	Resource Conservation and Recovery Act
Site	AOC or SWMU identified in the Permit
SMA	site monitoring area
SWMU	solid waste management unit
TA	technical area
TAL	target action level
UTL	upper tolerance limit

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE). The work performed under the National Pollutant Discharge Elimination System (NPDES) Individual Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP) is managed by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) for the DOE Office of Environmental Management. DOE and N3B are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1.0-1). It is situated on the Pajarito Plateau, which is made up of a series of fingerlike mesas separated by deep west-to-east-oriented canyons, cut by predominantly ephemeral and intermittent streams.

On February 13, 2009, the U.S. Environmental Protection Agency (EPA), Region 6, issued NPDES Permit No. NM0030759 to DOE and Los Alamos National Security, LLC (LANS). Currently, the Permittees are N3B and DOE. The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). The Individual Permit regulates storm water discharges from certain solid waste management units (SWMUs) and areas of concern (AOCs) (collectively referred to as Sites). For purposes of implementing the Individual Permit, Sites are organized into site monitoring areas (SMAs).

SMA T-SMA-7 contains one SWMU, SWMU-04-003(b), and is located near a gravel road (Puye Road) leading into Mortandad Canyon. Confirmation monitoring samples collected in 2017 from T-SMA-7 showed gross alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to implement corrective action in accordance with Part I.E.2(a) through 2(d) or Part I.E.3 of the Individual Permit for this SMA.

Under the Individual Permit, the Permittees are required to perform corrective actions if storm water monitoring results at an SMA exceed TALs. The Permittees can place a Site into alternative compliance after they have installed measures to minimize pollutants in storm water discharges at that Site, as required by Part I.A of the Permit, but are unable to certify completion of corrective action for that Site under Sections E.2(a) through E.2(d). As described below, the Permittees have determined that the Site addressed in this request can achieve completion of corrective action only though the alternative compliance process described in Part I.E.3.

This alternative compliance request is organized as follows.

- Section 2.0, Regulatory Framework, summarizes the scope of the Individual Permit; the relationship between the Individual Permit and the June 2016 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED); and the associated corrective action processes.
- Section 3.0, Overview of Alternative Compliance Process, summarizes the requirements in Part I.E.3(b) of the Permit for making an alternative compliance request to EPA.
- Section 4.0, Site Description, summarizes the historical operations that led to the Site in T-SMA-7 being identified as a SWMU in the 1990 SWMU report (LANL 1990a, LANL 1990b), the current use of the Site, any Consent Order investigations and remedial actions conducted at the Site, and the current status of the Site under the Consent Order.
- Section 5.0, Description of Control Measures Installed within T-SMA-7, details the baseline control measures that were installed in T-SMA-7.

- Section 6.0, Storm Water Monitoring Results, describes the confirmation monitoring results and most recent TAL exceedances.
- Section 7.0, Basis for Alternative Compliance Request, summarizes the basis for the Permittees' conclusion that certification of completion of corrective action cannot be achieved under Part I.E.2(a) through 2(d) of the Permit.
- Section 8.0, Proposed Alternative Compliance Approach, describes the actions proposed by the Permittees to achieve completion of corrective action under Part I.E.3 of the Permit.

2.0 REGULATORY FRAMEWORK

The Individual Permit authorizes discharge of storm water associated with industrial activities from specified Sites. The Individual Permit treats historical releases at a Site as "significant materials" [as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(12)] that may potentially be released with "storm water discharge[s] associated with industrial activity" [as defined in 40 CFR 122.26(b)(14)]. Such discharges are considered to be point-source discharges, and the Individual Permit directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a drainage area within a subwatershed and may include more than one Site.

The Sites regulated under the Individual Permit are a subset of the SWMUs and AOCs that are being addressed under the Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in §3004(u) and §3008(h) of the Resource Conservation and Recovery Act (RCRA).

A SWMU is a discernible unit at which solid wastes may have been "routinely and systematically released," possibly resulting in a release of hazardous constituents. The Consent Order also regulates AOCs, areas where releases of hazardous constituents may potentially have occurred but which are not SWMUs. The process of identifying and investigating SWMUs and AOCs is iterative. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record of a possible historical release of hazardous wastes or hazardous constituents. The Consent Order requires initial investigations to run broad, conservative analytical scans, regardless of what the historical reviews indicate may have been released. As a result, all samples in the first phase of investigations under the Consent Order are typically analyzed for EPA TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, radionuclides, nitrate, and perchlorate.

As the investigations under the Consent Order proceed, some SWMUs and AOCs will be eligible for corrective action complete status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the investigations proceed until the nature and extent of contamination from the historical release have been defined in all relevant media, and it can be shown that the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigations of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continue concurrently with implementation of the Permit.

A Site that had met the definition of a SWMU or AOC was evaluated for inclusion in the Individual Permit based on the following criteria: (1) the SWMU/AOC potentially contained "significant material" (i.e., a release had potentially occurred and had not been cleaned up), (2) the significant material was exposed to storm water (e.g., not covered or limited to the subsurface), and (3) the significant material may have been released with storm water discharges to a receiving water. The selection of SWMUs and AOCs for inclusion in the Individual Permit was based on historical information and any storm water data available at the time the Permit application was submitted.

The Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants in storm water discharges from the Sites.

The Permit establishes TALs that are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. Depending on the pollutant of concern (POC), a TAL may be an average TAL (ATAL) or a maximum TAL (MTAL). Baseline confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more baseline confirmation monitoring results exceed a TAL, the Permittees must take corrective action. Depending on the type of corrective action implemented, corrective action confirmation monitoring may be needed to verify the effectiveness of the corrective action (e.g., enhanced controls). The Permittees must then certify completion of corrective action within the deadlines specified in the Permit. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from corrective action confirmation sampling show pollutant concentrations for all POCs at a Site to be at or below applicable TALs,
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site,
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA corrective action complete with or without controls status or a certificate of completion (COC) under the Consent Order.

Under certain circumstances, the Individual Permit allows the Permittees to submit a request to EPA to have a Site or Sites placed into alternative compliance. Part I.E.3, Alternative Compliance, addresses the criteria and requirements for making a request for an alternative compliance and the actions EPA will take in response to the request. This corrective action process is illustrated schematically in Figure 2.0-1.

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance after they have installed baseline control measures to minimize pollutants in storm water discharges but are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. Under the Individual Permit, the Permittees must have certified completion of corrective action (as defined in the Permit) on or before November 1, 2015, unless a confirmation sample could not be collected from a measurable storm event at an individual Site before the second year of the Permit (or before September 30, 2012) [see Part I.E.1(d)]. Part I.E.1(d) further provides that the compliance deadline for corrective action under Section E.4 is "extended for a one (1) year period following the first successful confirmation sampling event." Part I.E.3(b), in turn, provides that if the Permittees seek to place a Site into alternative compliance, they shall not be out of compliance with the applicable deadlines for achieving completion of corrective action under Section E.4, provided the request and supporting documentation are submitted to EPA on or at least 6 mo before the applicable deadlines.

If EPA grants the alternative compliance request in whole or in part, it will indicate completion of corrective action on a case-by-case basis, and EPA may require a new, individually tailored work plan for the Site or Sites as necessary.

If EPA denies the alternative compliance request, it will promptly notify the Permittees of the specifics of its decision and of the timeframe under which completion of corrective action must be completed under Part I.E.2(a) through I.E.2(d).

The first requirement that must be met to qualify for alternative compliance is that the Permittees must have "installed measures to minimize pollutants in storm water discharges as required by Part. I.A of the Permit at a Site or Sites…." Part I.A describes the nonnumeric technology-based effluent limitations required under the Individual Permit to minimize pollutants in storm water discharges. The erosion, sedimentation, and storm water run-on and runoff controls identified in Part I.A were installed as baseline control measures within the first 6 mo of the effective date of the Permit, and COCs were submitted to EPA. The other nonnumeric technology-based effluent limitations include employee training and the elimination of non–storm water discharges not authorized by an NPDES permit.

The second requirement is that the Permittees must demonstrate they will not be able to certify completion of corrective action under Part I.E.2(a) through I.E.2(d), individually or collectively. Part I.E.3 lists the following examples of conditions that could prevent the Permittees from achieving corrective action complete certification: force majeure events, background concentrations of POCs, site conditions that make installing further control measures impracticable, or POCs contributed by sources beyond the Permittees' control. This list provides examples of the types of conditions EPA will consider as the basis for an alternative compliance request; it is not an inclusive list.

The third requirement is that the Permittees must develop a detailed demonstration of how they reached the conclusion that they are unable to certify completion of corrective action under Part I.E.2(a) through (d), individually or collectively. This demonstration should include any underlying studies and technical information.

Once completed, the alternative compliance request and all supporting documentation must be submitted to EPA and made available for public review and comment for a period of 45 days.

The Permittees will publish a public notice of issuance of the alternative compliance request in the *Los Alamos Monitor, Taos News*, and the *Santa Fe New Mexican*.

This public notice will include the following:

- the name and address of the EPA office processing the alternative compliance request for which notice is being given,
- the name, address, and telephone number of a person from whom interested persons may obtain further information, and
- a description of where interested persons may secure hard copies of the alternative compliance request.

At the conclusion of the public comment period, the Permittees will prepare a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided in writing to each person who requests a copy, sent by either mail or email. The response will also be posted in the Individual Permit section of the public website.

The Permittees will then submit the alternative compliance request, along with the complete record of public comment and the Permittees' response to comments, to EPA Region 6 for a final determination on the request.

4.0 SITE DESCRIPTION

The 0.436-acre T-SMA-7 watershed, which includes the Site SWMU 04-003(b), is located at the eastern edge of Technical Area 52 (TA-52) (Figure 4.0-1). TA-52 also contains the former TA-04, known as Alpha Site, which is located on Puye Road. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site associated with the Manhattan Project. The firing site was used for small charge implosion studies using the electric method of wave determination. Maximum charges fired were 200 lb (LANL 1992, LANL 1994). In 1985, Alpha Site underwent decontamination and decommissioning (NUS Corporation 1990).

SWMU 04-003(b) is the former drainline and outfall from a former laboratory control building (04-3), located at former TA-04. The outfall discharged about 20 ft north of building 04-3 into Mortandad Canyon (LANL 2004). No radioactivity was detected in a 1953 survey (LANL 1990a, LANL 1990b). Building 04-03 was demolished and partially removed in 1956. In 1985, as part of the Los Alamos Site Characterization Program, the SWMU 04-003(b) drainline was removed. During a 1988 radiation survey, gross gamma activity was detected at approximately two times background (LANL 2004). The Site is located on a slope, in a vegetated area upgradient from Puye Road. Besides the gravel Puye Road, there is no other developed landscape near the Site. The 100% undeveloped landscape of T-SMA-7 consists of 0.352 acres of ponderosa and 0.084 acres of bare soil. The Site was investigated in 1995 and 2004. Based on human health and ecological risk screening assessments, no additional investigation or remediation activities are required at SWMU 04-003(b), so a request for corrective action complete without controls was submitted to NMED in August 2011 (LANL 2011). NMED issued a COC without controls on May 18, 2015 (NMED 2015).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN T-SMA-7

All active control measures are listed in Table 5.0-1, and their locations are shown on the project map (Figure 4.0-1).

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for T-SMA-7 is shown in Figure 4.0-1. Baseline confirmation samples were collected from T-SMA-7 on September 12, 2017. Analytical results from the samples yielded the following TAL exceedance:

- gross-alpha activity of 18.1 pCi/L (ATAL is 15 pCi/L)

The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a graph that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is available on the IP website at https://www.lanl.gov/environment/protection/compliance/individual -permit-stormwater/site-discharge-pollution-prevention-plan.php under the pull-down menu <Understanding Analytical Results Plots>.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the concentration of the TAL-exceeding POC for this SMA is less than the concentration in storm water discharge from natural background concentrations of undeveloped landscapes.

Part I.E.3(a) of the Individual Permit lists a number of factors that could prevent the Permittees from certifying the completion of corrective action under Parts I.E.2(a) through E.2(d), individually or collectively. These factors include, but are limited to, force majeure events, background concentrations of POCs, site conditions that make it impracticable to install further control measures, and POCs contributed by sources beyond the Permittees' control. The evaluation of these factors was divided into the following categories:

- Sources of pollutants
- Technical feasibility and practicability.

The underlying studies, technical information, engineering evaluations, and other factors related to how these two categories influence the feasibility of implementing corrective action options at Site 04-003(b), as described below.

7.1 Potential Sources of TAL Exceedances

Based upon a review of historical site use and soil sampling performed under the Consent Order, gross alpha is not associated with industrial materials historically managed at Site 04-003(b). The likely source of gross alpha is runoff from the undeveloped landscapes. The gross alpha activity in the SMA sample does not exceed the gross alpha activity in storm water runoff from undeveloped landscapes.

7.1.1 Runoff from Undeveloped Landscapes

Shallow bedrock at the Laboratory is predominately the Tshirege unit of the Bandelier Tuff (Qbt). Surface geology maps presented in the Hydrogeologic Site Atlas (LANL 2009 show that the surface geology of the western part of the Laboratory is primarily Tshirege unit 4 (Qbt 4) and the eastern portion is primarily Tshirege unit 3 (Qbt 3). Several alpha-emitting radionuclides (e.g., thorium and uranium isotopes) are naturally present in Bandelier Tuff. As a result, these naturally occurring constituents are present in the soils and sediments weathered from Bandelier Tuff and in the storm water runoff containing these soils and sediments. To determine the contribution of naturally occurring metals and radionuclides to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2012 in remote watersheds on the Pajarito Plateau and analyzed for metals and radioactivity, including gross alpha radioactivity. These results are summarized in the Laboratory publication entitled "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" (hereafter, the Background Metals Report) (LANL 2013). Sampling locations were selected to avoid any known contamination or developed areas and to provide reasonable estimates of concentrations of metals and gross alpha in storm water runoff from a variety of bedrock source areas and sediment textures. The predominant sediment in the storm water is composed of weathered Bandelier Tuff. Water-quality conditions measured at these remote watersheds reflect the concentrations of naturally occurring metals and radionuclides in storm water runoff that were derived from the Pajarito Plateau natural background.

In the Background Metals Report (LANL 2013), the 95% upper tolerance limit (UTL) was used to represent the upper limit of storm water background concentrations of a constituent. A UTL defines the

uppermost limit of the range of data that occurs within the specified percentage, so the 95% UTL is the largest value in 95% of the data collected. EPA provides methods for calculating the UTL using the ProUCL program (EPA 2013). When a single result is compared with background (as performed in evaluation of storm water data), the ProUCL technical guidance recommends that the concentrations of that result be compared with the UTL background concentration. The UTL for gross-alpha radioactivity calculated for storm water runoff from remote watersheds (undeveloped landscapes) containing primarily weathered Bandelier Tuff material is 1490 pCi (LANL 2013). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

As discussed above, for this Site, the gross alpha activity is less than the natural background value from undeveloped landscapes. Table 7.1-1 compares TAL-exceeding constituent(s) with background UTLs from undeveloped landscapes.

7.1.2 Site-Related Sources of Adjusted Gross Alpha Activity

Storm water samples collected at the SMA addressed by this request were analyzed for gross-alpha radioactivity, which is a measure of the alpha radioactivity associated with all alpha-emitting radionuclides detected in the sample. The TAL contained in the Individual Permit, however, is for adjusted gross-alpha radioactivity. Adjusted gross-alpha radioactivity does not include the alpha radioactivity associated with certain radionuclides that are excluded from regulation under the Clean Water Act because they are regulated by DOE under the Atomic Energy Act of 1954. Because the gross-alpha radioactivity of a sample will always be greater than the adjusted gross-alpha radioactivity, use of gross-alpha radioactivity for comparison with the TAL is conservative.

The New Mexico Water Quality Control Commission regulations (20.6.4 New Mexico Administrative Code) define adjusted gross-alpha radioactivity as “total radioactivity due to alpha particle emission as inferred from measurements on a dry sample, including radium-226, but excluding radon-222 and uranium. Also excluded are source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954.”

Significant industrial materials managed and potentially released at the Site addressed in this request may have included alpha-emitting radionuclides. Because of the nature of the activities conducted at the Laboratory, however, these radionuclides would all be source, special nuclear, and/or by-product material as defined by the Atomic Energy Act of 1954. Therefore, any contribution to gross-alpha radioactivity from these significant materials associated with industrial activities and then potentially released to storm water discharges at this Site could not contribute to adjusted gross-alpha radioactivity. There are, therefore, no sources of adjusted gross-alpha radioactivity associated with this Site.

7.2 Rationale for Alternative Compliance

As described in section 7.1, storm water runoff from the SMA addressed in this request contains non–Site-affected contributions from natural background (undeveloped landscapes). The activity of gross alpha detected in storm water runoff from T-SMA-7 is within the range of activities in runoff from undeveloped landscapes.

After reviewing the Site history and comparing the storm water sampling result with the natural background studies, the Permittees have concluded that the detected gross alpha exceedance is a result of nonpoint-source runoff from natural background.

This SMA receives runoff from undeveloped landscapes, and the gross-alpha activity is within the range expected for storm water runoff from undeveloped landscapes. In cases where the TAL for adjusted gross-alpha radioactivity is exceeded, the Site addressed in this alternative compliance request is not considered a source of adjusted gross-alpha radioactivity subject to regulation under the Individual Permit.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of the TAL-exceeding gross-alpha activity in storm water runoff that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe T-SMA-7 is not contributing to the gross-alpha activity TAL exceedance; instead, the gross-alpha activity exceedance is from undeveloped landscapes not affected by the Site. Therefore, mitigating Site-related storm water would not reduce the gross-alpha activity within the SMA. Additional details related to each of the corrective action approaches in Permit Sections E.2(a) through E.2(d) are provided below.

7.3 Technical Feasibility and Practicability

Because Site 04-003(b) is not the source of gross-alpha exceedance, the construction of enhanced controls, a cap, or other cover on exposed portions of the Site; or a total retention structure, will not affect the concentration of this constituent in storm water runoff from this Site.

8.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

The Permittees believe that no additional corrective action is required for the Site submitted herein for alternative compliance because the Site is not considered a source of the gross-alpha TAL exceedance. In conclusion, the primary source of adjusted gross-alpha radioactivity in the SMA is natural background. Furthermore, any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit.

The Permittees propose to continue to inspect and maintain existing controls until the Site is removed from the Individual Permit.

9.0 REFERENCES

EPA (U.S. Environmental Protection Agency) 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas (September 30, 2010).

EPA (U.S. Environmental Protection Agency) 2013. “ProUCL Version 5.0.00 User Guide,” Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041, Office of Research and Development, Washington, D.C. (September 2013).

LANL (Los Alamos National Laboratory) 1990a. “Solid Waste Management Units Report,” Vol. I of IV (TA-0 through TA-9), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico (November 1990).

LANL (Los Alamos National Laboratory) 1990b. “Solid Waste Management Units Report,” Vol. IV of IV (TA-51 through TA-74), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico (November 1990).

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

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LANL (Los Alamos National Laboratory) 2004. “Addendum to the 'Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate',” Los Alamos National Laboratory document LA-UR-04-1714, Los Alamos, New Mexico (March 2004).

LANL (Los Alamos National Laboratory) 2009. “2009 Hydrogeologic Site Atlas,” Los Alamos National Laboratory document LA-UR-09-3763, Los Alamos, New Mexico (June 2009).

LANL (Los Alamos National Laboratory) 2011. “Request for Certificates of Completion for Twenty-Seven Solid Waste Management Units and Ten Areas of Concern in the Middle Mortandad/Ten Site Aggregate Area,” Los Alamos National Laboratory letter (EP2011-0297) to J. Kieling (NMED-HWB) from M. Graham (LANL) and G. Rael (EM-LA), Los Alamos, New Mexico (August 31, 2011).

LANL (Los Alamos National Laboratory) 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 (April 2013).

NMED (New Mexico Environment Department) 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 (May 18, 2015).

NUS Corporation 1990. “Los Alamos Site Characterization Program Special Projects Report,” report prepared for Los Alamos National Laboratory, Los Alamos, New Mexico (June 30, 1990).

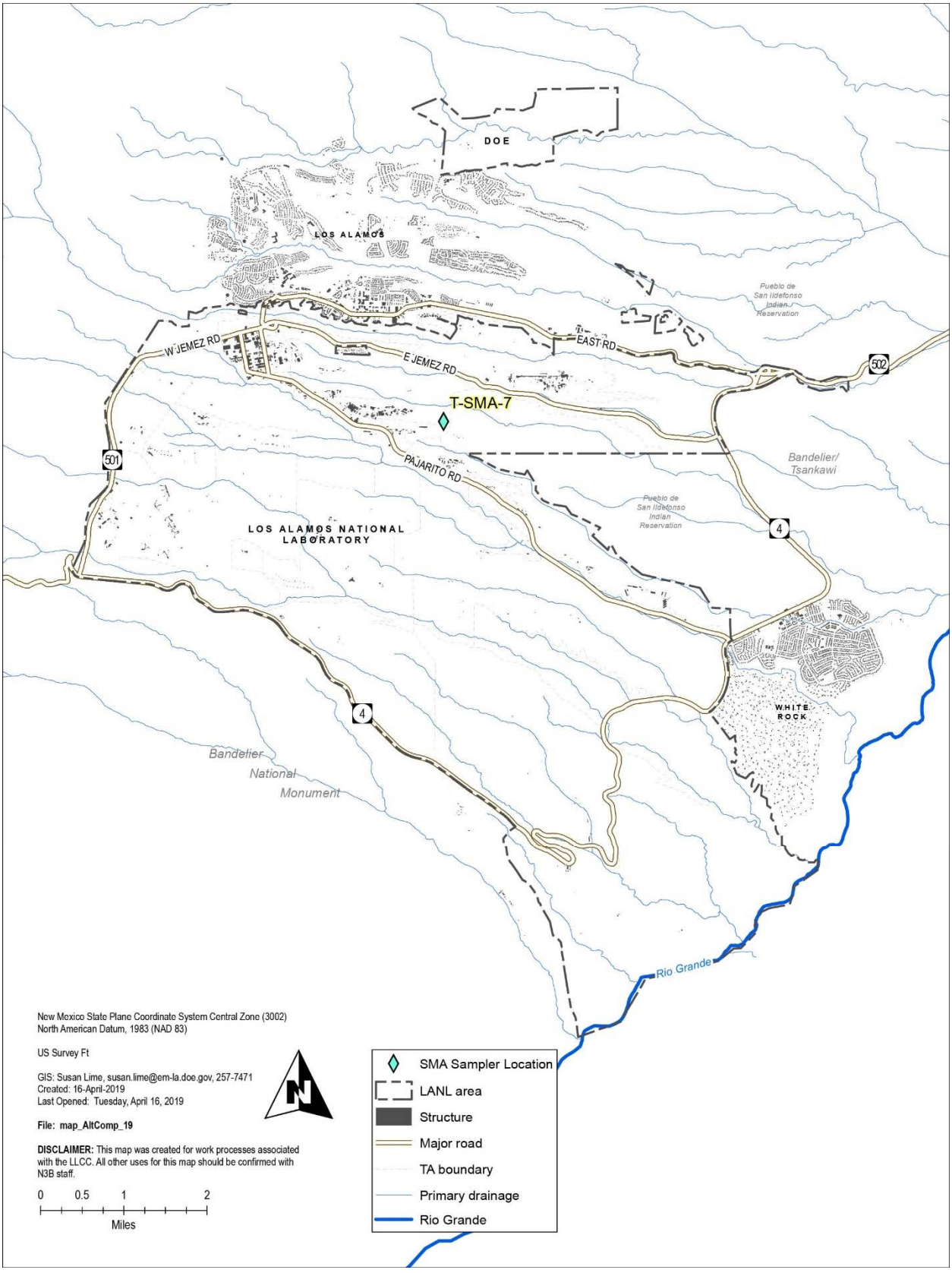
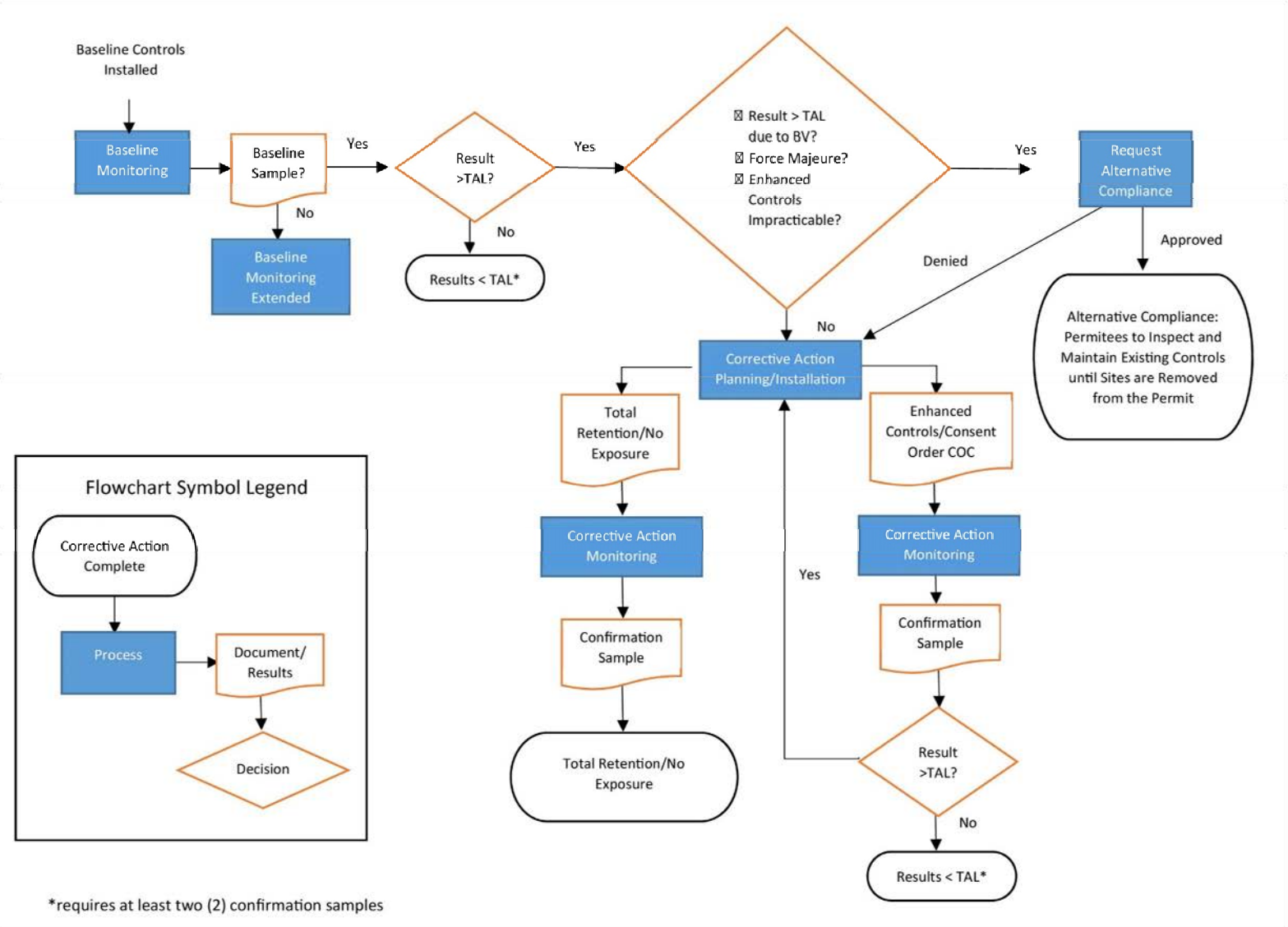


Figure 1.0-1 Location of the Laboratory



Notes: BCM = Baseline control measures, CA = Corrective action, COC = Certificate of completion, POC = Pollutants of concern, TAL = Target action level.

Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

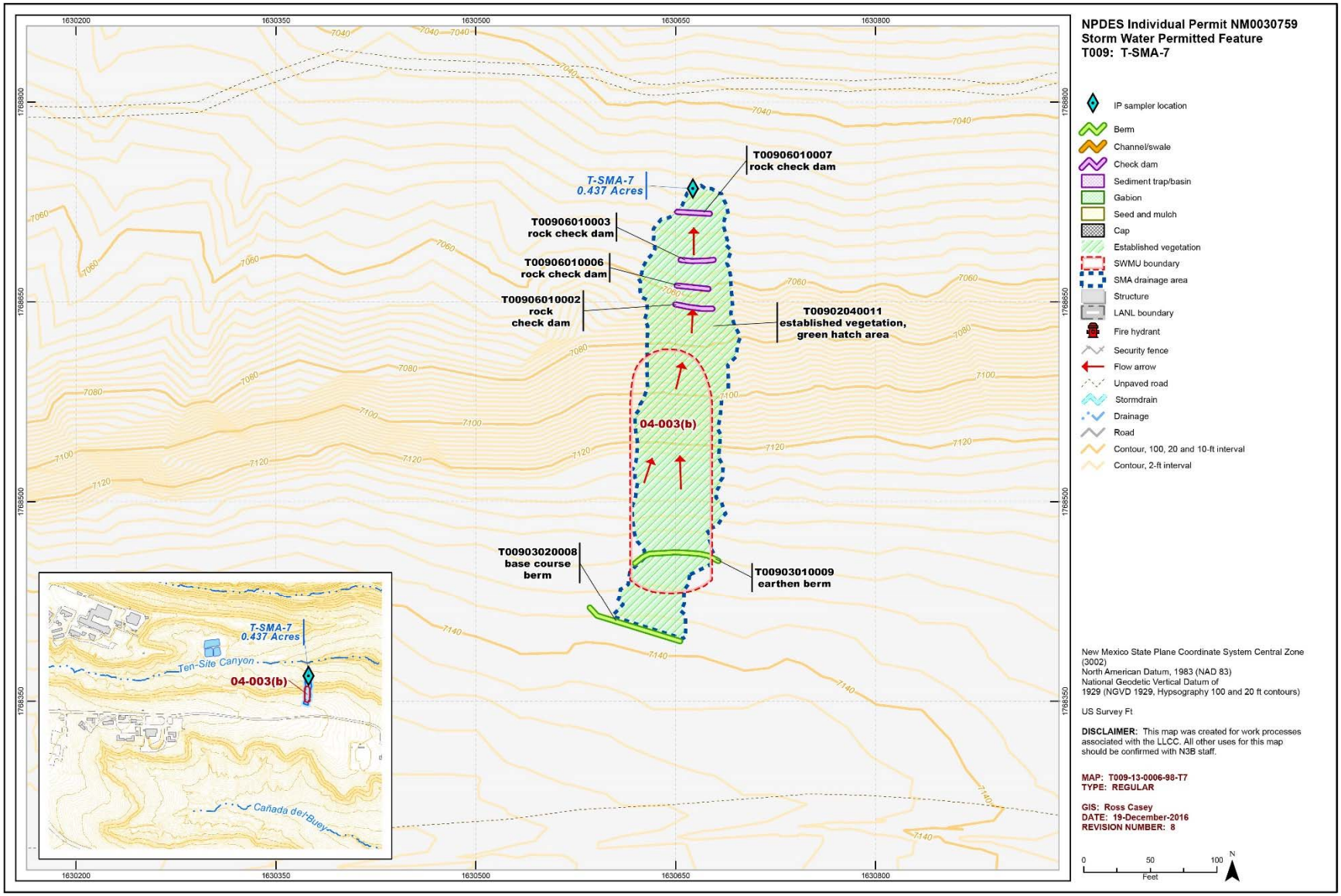
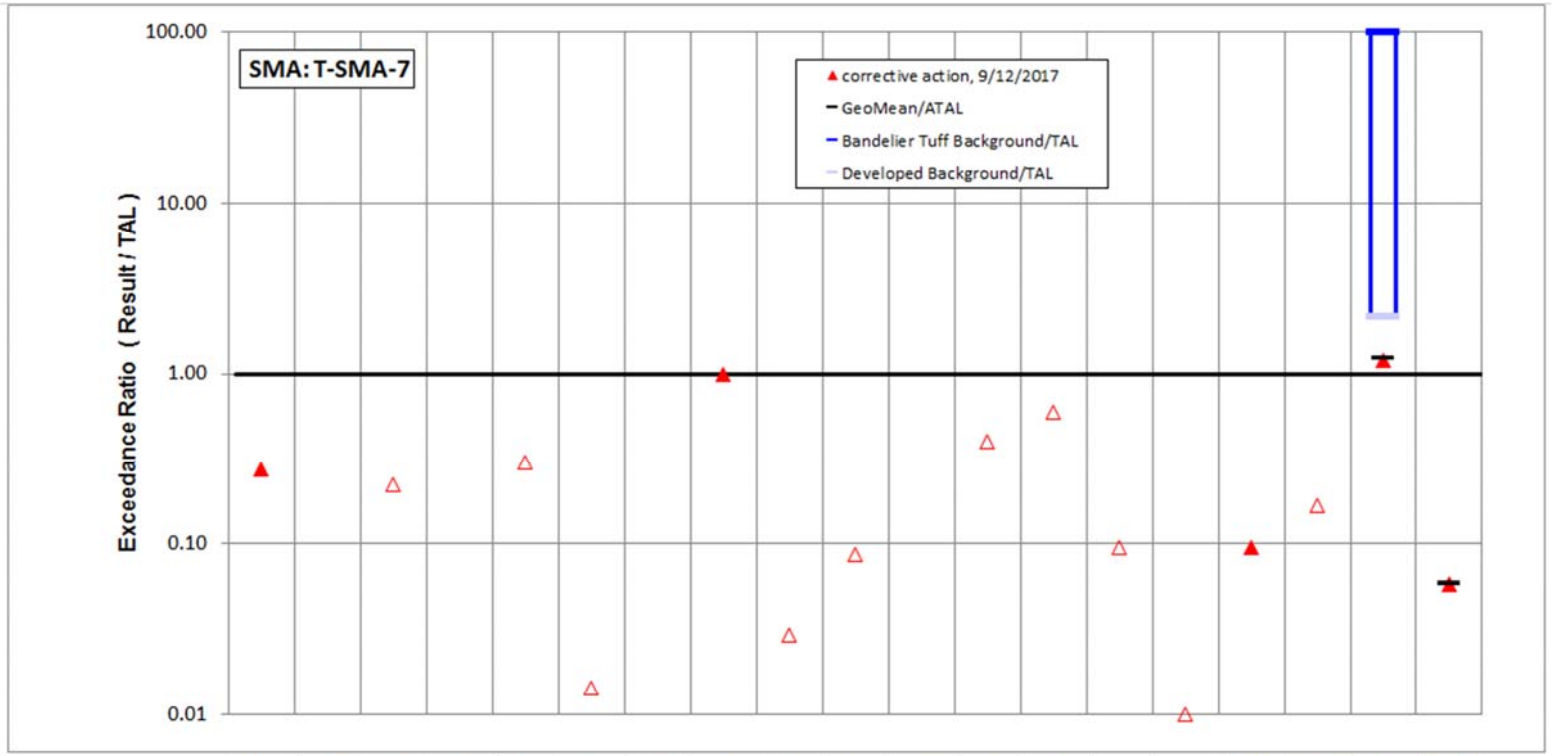


Figure 4.0-1 T-SMA-7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2017 result	207	*1*	*2*	*15*	*0.3*	*3*	*1*	4.24	*0.5*	*0.067*	0.784	*2*	*0.3*	*0.6*	*1*	4.02	*0.002*	**18.1**	1.75
result / TAL	0.28	*0.002*	*0.22*	*0.003*	*0.3*	*0.014*	*0.001*	0.99	*0.029*	*0.087*	0.0046	*0.4*	*0.6*	*0.095*	*0.01*	0.096	*0.17*	**1.2**	0.058

Bold font indicates result>TAL or MQL; italic font and hollow symbols indicate undetected results; "-" is used if no analytical results were available.

Figure 6.0-1 2017 inorganic analytical results summary plot for T-SMA-7

Table 5.0-1
Active Control Measures at T-SMA-7

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Sediment Control?	Erosion Control?	Control Status
T00902040011	Established vegetation	No	Yes	No	Yes	B[a]
T00903010009	Earthen berm	Yes	No	Yes	No	B
T00903020008	Base course berm	Yes	No	Yes	No	CB[b]
T00906010002	Rock check dam	No	Yes	Yes	No	CB
T00906010003	Rock check dam	No	Yes	Yes	No	CB
T00906010006	Rock check dam	No	Yes	Yes	No	CB
T00906010007	Rock check dam	No	Yes	Yes	No	CB

[a] B = Additional baseline control measure.

[b] CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, T-SMA-7

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
Gross Alpha	pCi/L	1	18.1	15	n/a*	1.21	n/a	n/a	n/a

*n/a = Not applicable.

Table 7.1-1
Storm Water Exceedances and UTL Comparison, T-SMA-7

TAL Exceedances (see scatter plots)	Exceeds Storm Water Undeveloped Landscapes Background UTL
Gross-alpha-activity (1.21×) – 18.1 pCi/L, ATAL is 15 pCi/L	(UTL: 1490 pCi/L*) ☐ Yes ☒ No

* LANL 2013, Table 4