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Date: April 19, 2022
Refer To: N3B-2022-0075

Carol Johnson
Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500 (6 ECD-WR)
Dallas, Texas 75270-2102

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

Dear Ms. Johnson:

Enclosed please find 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 two 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 two 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 posting the notice on the Alternative Compliance page of the Individual Permit public website for a public review and comment period of 45 days (<https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4>). The Permittees will prepare written responses to all relevant significant comments, which will also be posted on the Individual Permit 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 Emily Day at (505) 695-4243 (emily.day@em-la.doe.gov) or M. Lee Bishop at (702) 218-4460 (lee.bishop@em.doe.gov).

Sincerely,



Troy Thomson
Program Manager
Environmental Remediation
N3B-Los Alamos

Sincerely,

M Lee Bishop

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M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

Enclosure(s): One hard copy with electronic files:

1. Alternative Compliance Request for Solid Waste Management Unit 36-004(d) in PT-SMA-4.2 (EM2022-0139)
2. Alternative Compliance Request for Solid Waste Management Unit 16-031(a) in W-SMA-7.8 (EM2022-0140)

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Alternative Compliance Request for Solid Waste Management Unit 36-004(d) in PT-SMA-4.2

NPDES Permit No. NM0030759



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

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

CERTIFICATION

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

Alternative Compliance Request for Solid Waste Management Unit 36-004(d) in PT-SMA-4.2

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 gather and evaluate 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 there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."



Troy Thomson, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

April 1, 2022
Date

M Lee Bishop

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M. Lee Bishop, 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 Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System Storm Water Individual 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 (SWMUs) and areas of concern (AOCs), collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses SWMU 36-004(d) monitored at site monitoring area (SMA) PT-SMA-4.2, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA 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 SWMU 36-004(d) monitored at PT-SMA-4.2 is that 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 PT-SMA-4.2 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
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
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
SSC	suspended sediment concentration
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) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi² (Figure 1.0-1) and 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). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. 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).

PT-SMA-4.2 contains one Site, SWMU 36-004(d), and is located in Potrillo Canyon, which is a receiving water within the Water Canyon/Cañon de Valle watershed. Corrective action monitoring samples collected in 2018 and 2021 from PT-SMA-4.2 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of these TAL exceedances, the Permittees are required to initiate 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 when storm water monitoring results at an SMA exceed TALs. The Permittees may request to 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 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 PT-SMA-4.2 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 PT-SMA-4.2, details the baseline control measures that were installed in PT-SMA-4.2.

- 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 historical 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 watershed 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 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in Sections 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 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, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA “corrective action complete without controls/corrective action complete with controls” status or a certificate of completion under NMED’s 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 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 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

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, the agency 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 months of the effective date of the Permit, and certifications of completion of baseline control measures 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 make the alternative compliance request available to the public via the Individual Permit public website (<https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4>).

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 to the Individual Permit 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

PT-SMA-4.2 is a 1067-acre watershed consisting of 98% undeveloped area. PT-SMA-4.2 contains one Site, SWMU 36-004(d), and is located in Potrillo Canyon, which is a receiving water within the Water Canyon/Cañon de Valle watershed.

SWMU 36-004(d) consists of the active Lower Slobbovia Firing Site and the inactive Skunk Works Firing Site, located in Potrillo Canyon, and three former burn pits located on the mesa top above Potrillo Canyon at Technical Area 36 (TA-36). The Lower Slobbovia Firing Site consists of two active firing points and a control building (36-12). One of the firing points (structure 36-13) was constructed in 1950 and is located on top of an approximately 200-ft-diameter sand and dirt pad. The control building (36-12) was constructed into the side of the pad. The second firing point consisted of a wooden tower (structure 36-120) constructed in 1986 at the northwest end of a 1000-ft-long sled track for conducting drop tests. Shots fired at the Lower Slobbovia Firing Site primarily involved high explosives (HE). Less than 2% of the shots involved significant amounts of metal (e.g., depleted uranium, lead, copper, aluminum, and steel). The largest shot fired at Lower Slobbovia used 5000 to 6000 lb of HE. In addition, underground tests, buried to approximately 100 ft, were also conducted at this Site.

The Skunk Works Firing Site, located approximately 0.5 mi northwest of the Lower Slobbovia Firing Site, was used to conduct small-explosives experiments during the 1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not used at the Site. Structures at the Skunk Works Firing Site included a 5- × 5.5- × 5-ft belowgrade structure that previously served as a battery storage room and two buildings (36-44 and 36-45) that were moved to the Site from TA-15. All the structures have been removed. The Skunk Works firing pad was located next to building 36-45. A shallow depression, located approximately 100 ft farther up the canyon, was also used as a firing pad. The burn pits were used for burning and disposal of test debris before Material Disposal Area AA (SWMU 36-001) was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4000 ft west of the Lower Slobbovia control building (36-12). The largest pit is a bermed enclosure located north of Potrillo Road and is approximately 40 ft in diameter. Two smaller areas are located south of Potrillo Road. Debris was transported by truck from TA-36 firing sites to the pits, placed in the pits, and burned. The debris consisted of wood, nails, other metal fragments, plastics, and sand contaminated with barium, uranium, and HE.

Investigation of SWMU 36-004(d) is deferred per Section XI and Appendix A of the 2016 Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of all portions of the Site to determine if contaminants are migrating from the Site (LANL 2011). The migration of potential contaminants from SWMU 36-004(d) is limited to the drainages below SWMU 36-004(d) for most constituents and does not extend beyond Potrillo Canyon Reach PO-4 or Fence Canyon Reach F-3. All detected constituents in samples collected in drainages downgradient of SWMU 36-004(d) were below residential soil screening levels and screening action levels. Further Consent Order investigations are deferred until the firing site is no longer active.

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN PT-SMA-4.2

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 PT-SMA-4.2 is shown in Figure 5.0-1. Following the installation of baseline control measures, a baseline storm water sample was collected on July 2, 2014. Analytical results from this sample yielded TAL exceedances for gross-alpha activity and radium-226 and -228 activity (Figure 6.0-1). As a corrective action, enhanced control measures were installed at PT-SMA-4.2 (Table 5.0-1) and certified on October 28, 2015 (LANL 2015). Corrective action monitoring samples were collected on August 10, 2018, and August 22, 2021. Analytical results from the samples yielded the following TAL exceedances:

- gross-alpha activity of 84.5 and 46.1 pCi/L (ATAL is 15 pCi/L)

The gross-alpha geometric mean for the current monitoring stage is 62.4 pCi/L. The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from 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 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 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-4.2 are described below.

7.1 Potential Sources of TAL Exceedances

Although alpha emitters are associated with industrial materials historically managed at Site 36-004(d), the likely source of gross alpha is runoff from 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 constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha radioactivity. These results are summarized in the publication entitled “Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, Revision 1” (hereafter, the Background Report) (Windward 2020). 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.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = $[(\% \text{ impervious SMA area} \times 90\text{th percentile developed landscape BTV}) + (\% \text{ pervious SMA area} \times 90^{\text{th}} \text{ percentile undeveloped landscape BTV})]/100$. PT-SMA-4.2 consists of 98% pervious surfaces.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th percentile BTV for gross-alpha radioactivity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The 2018 gross-alpha result from PT-SMA-4.2 (84.5 pCi/L) had a paired SSC value of 1900 mg/L. The 2021 gross-alpha result from PT-SMA-4.2 (46.1 pCi/L) had a paired SSC value of 1200 mg/L. The SSC-normalized gross-alpha geometric mean is 41.3 pCi/g SSC, below the BTV of 57 pCi/g SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (98% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at PT-SMA-4.2 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 specified 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

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from the Site that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe PT-SMA-4.2 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 36-004(d) 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 propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

- EPA (U.S. Environmental Protection Agency), September 30, 2010. “Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759,” Region 6, Dallas, Texas. (EPA 2010)
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LANL (Los Alamos National Laboratory), November 2011. "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-6217, Los Alamos, New Mexico. (LANL 2011)

LANL (Los Alamos National Laboratory), October 30, 2015. "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine [9] Site Monitoring Areas, Los Alamos National Laboratory letter to P. Johnsey, EPA Region 6, Water Enforcement Branch (6EN) from D.E. Hintz (EM-LA) and A.M. Dorries (LANL), Los Alamos, New Mexico. (LANL 2015)

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington. (Windward 2020)

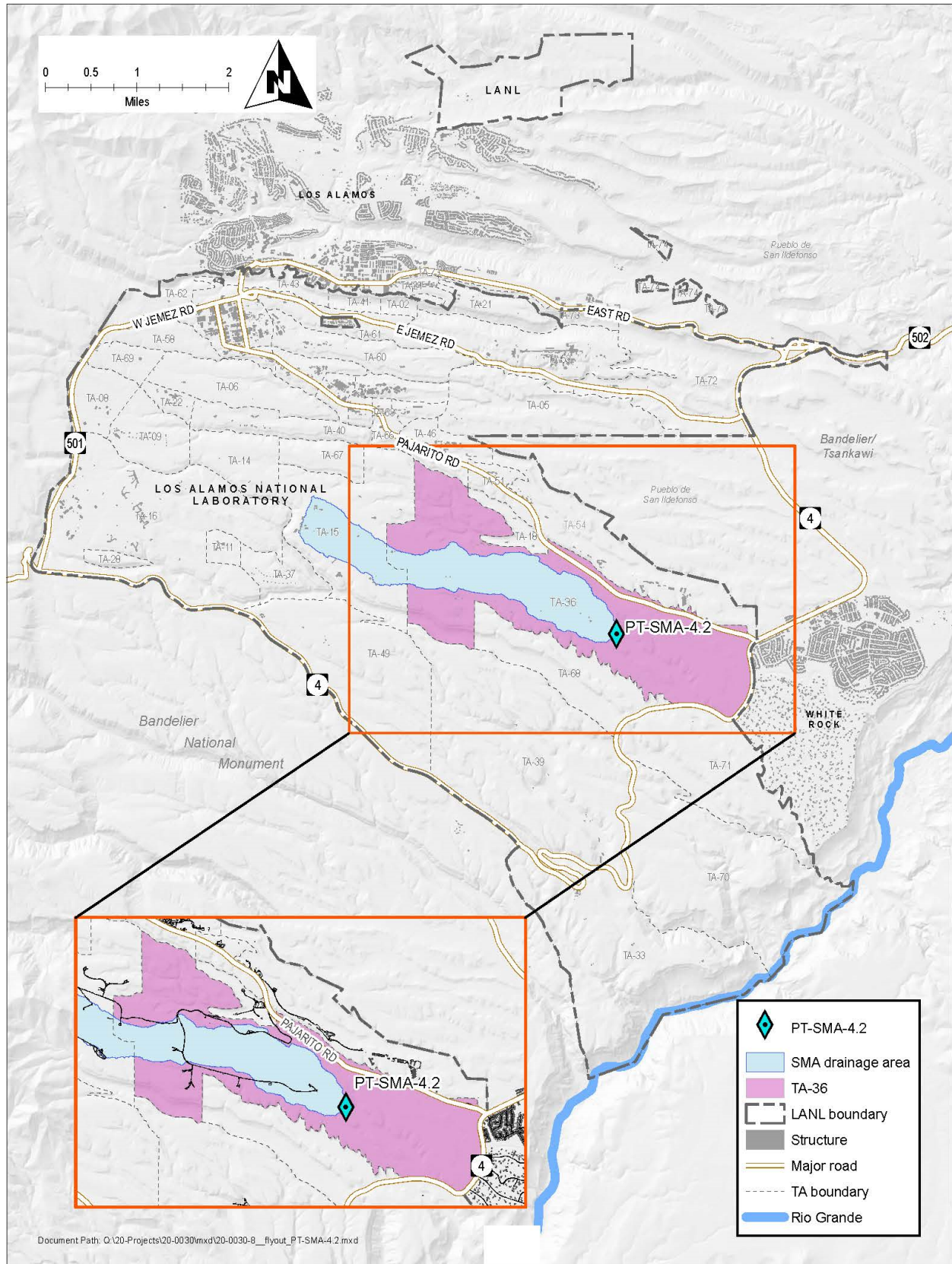


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

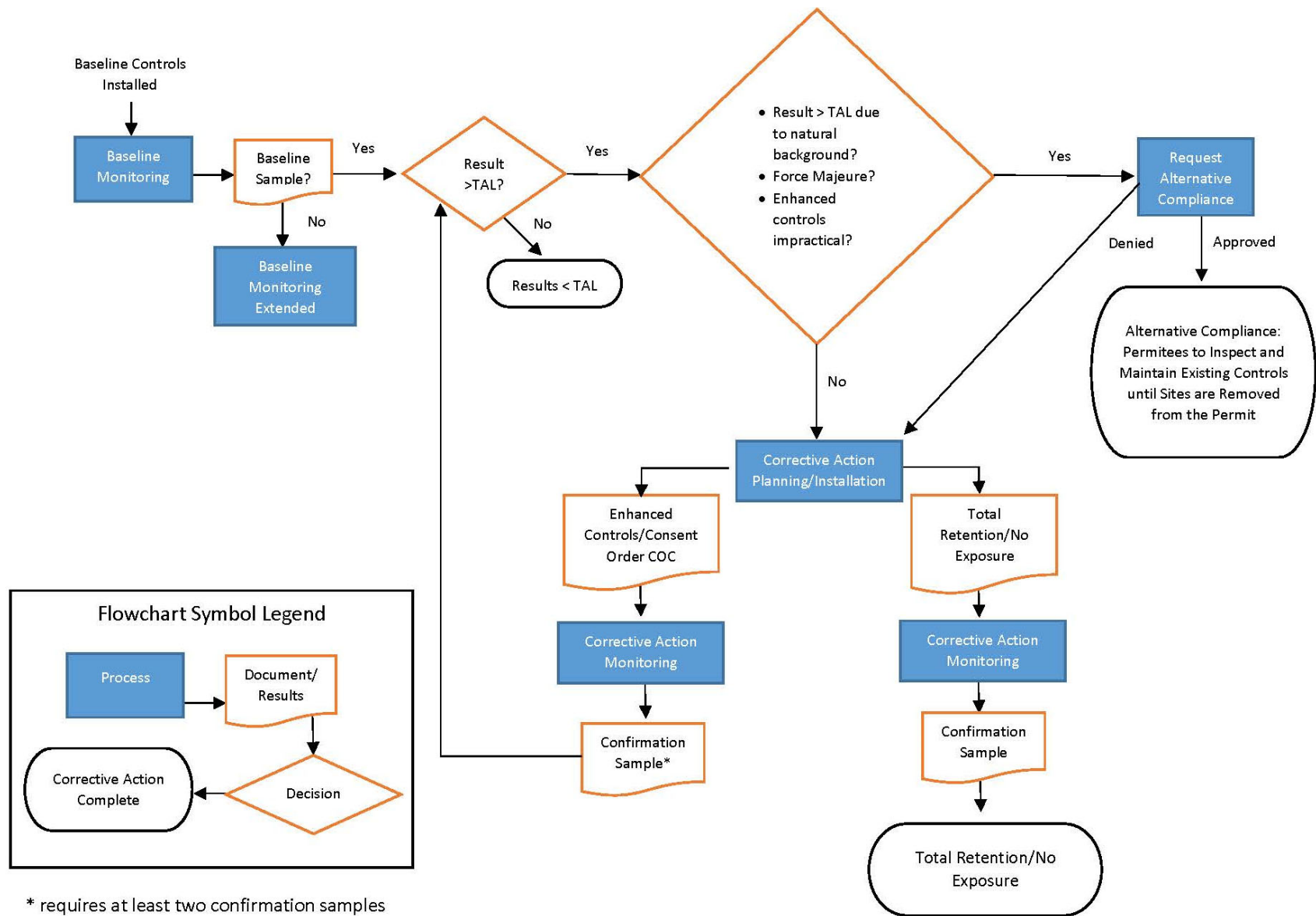


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

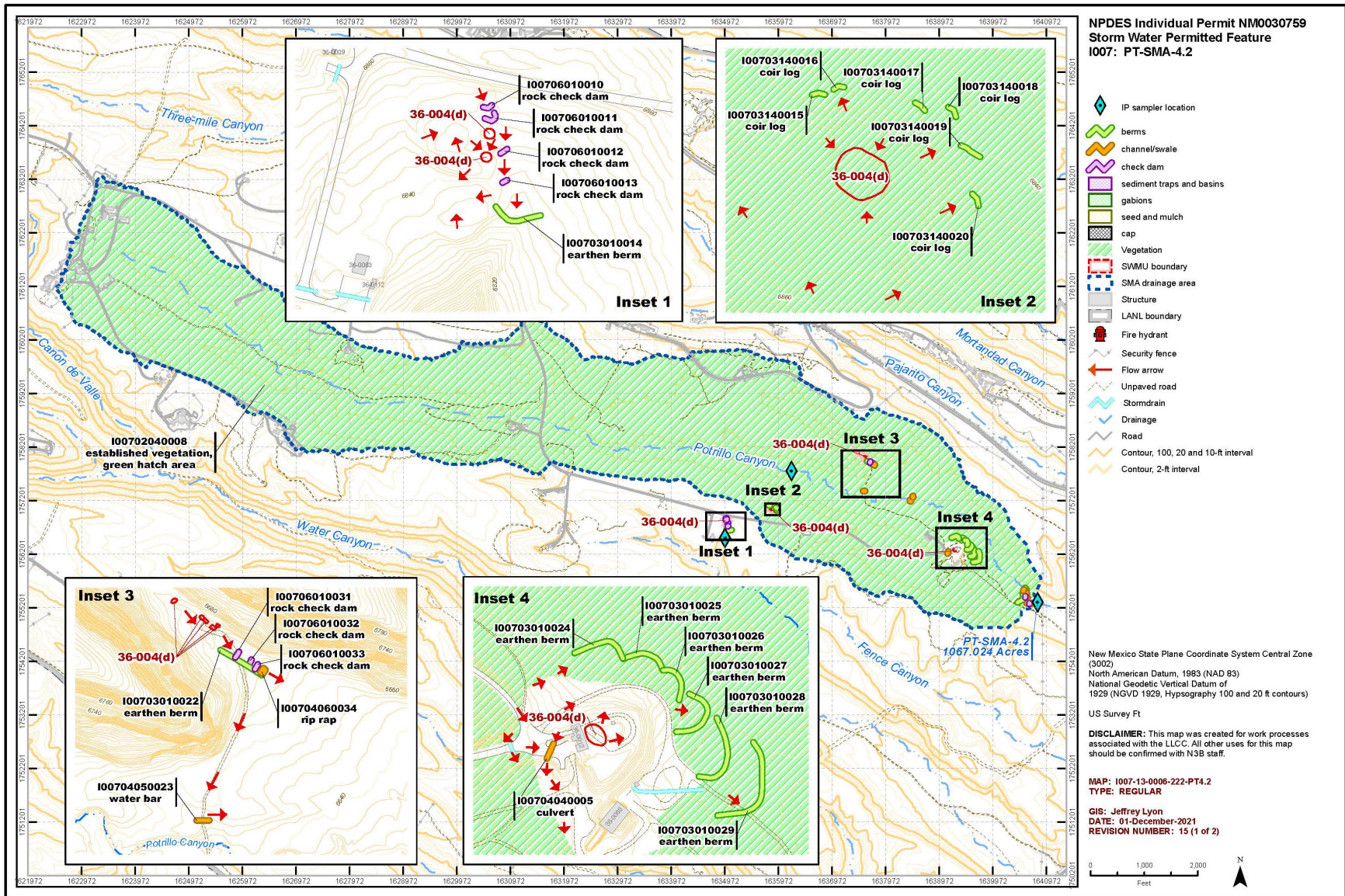
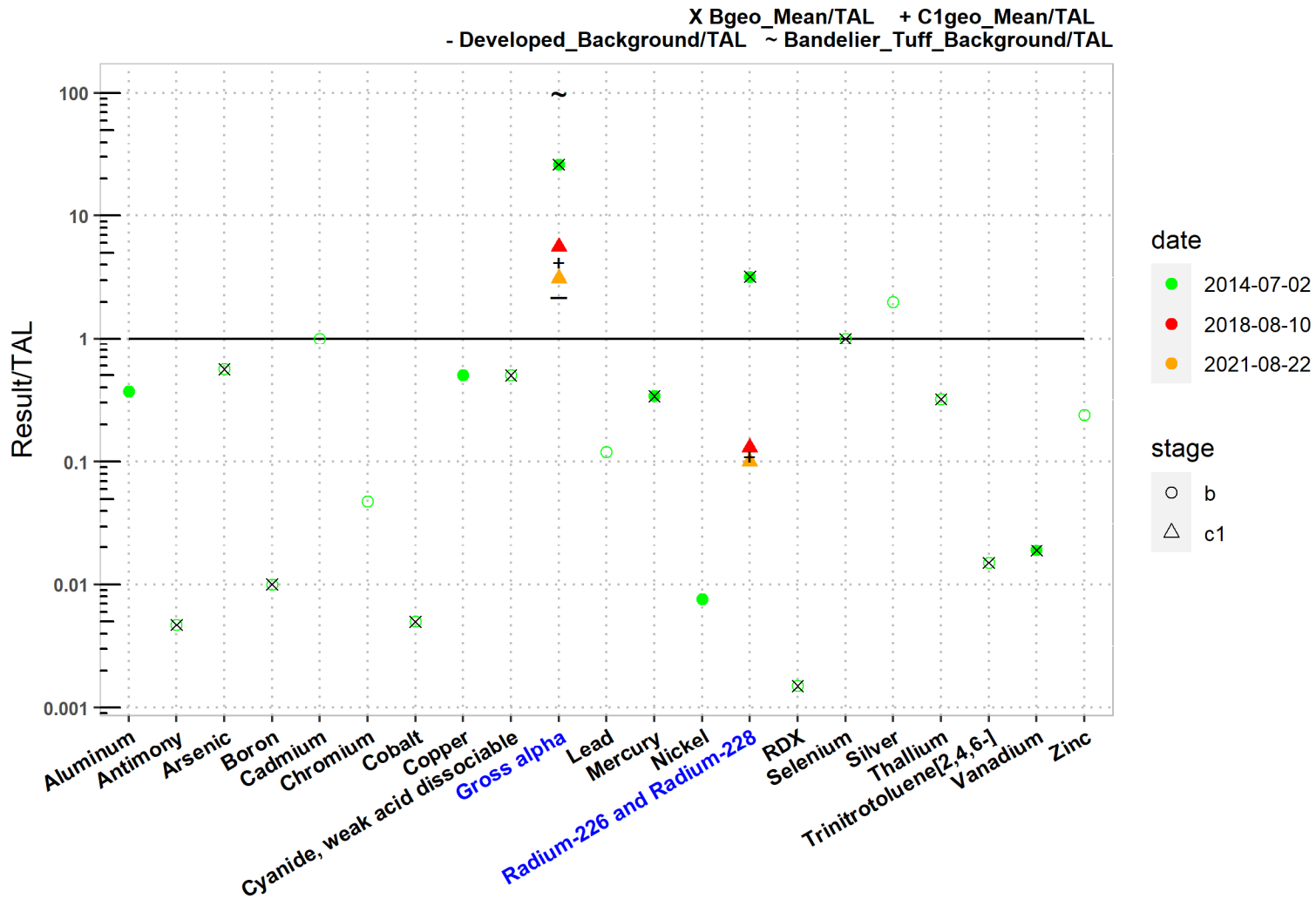


Figure 5.0-1 PT-SMA-4.2 location map



PT-SMA-4.2



Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 Analytical results summary plot and table for PT-SMA-4.2

PT-SMA-4.2

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.010	NA	NA	0.0050	NA	0.50	26	NA	0.34	NA	3.2	0.0015	1.0	NA	0.32	0.015	0.019	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.2	NA	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA
2014-07-02 d	0.37	NA	NA	NA	NA	NA	NA	0.50	NA	26	NA	0.34	0.0076	3.2	NA	NA	NA	NA	NA	0.019	NA
2014-07-02 nd	NA	0.0047	0.56	0.010	1.0	0.048	0.0050	NA	0.50	NA	0.12	NA	NA	NA	0.0015	1.0	2.0	0.32	0.015	NA	0.24
2018-08-10 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6	NA	NA	NA	0.13	NA	NA	NA	NA	NA	NA	NA
2018-08-10 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2021-08-22 d	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.1	NA	NA	NA	0.10	NA	NA	NA	NA	NA	NA	NA
2021-08-22 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 6.0-1 (continued)

Analytical results summary plot and table for PT-SMA-4.2

Table 5.0-1
Active Control Measures at PT-SMA-4.2

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status*
I00702040008	Established Vegetation	Yes	Yes	Yes	No	B
I00703010014	Earthen Berm	No	Yes	No	Yes	EC
I00703010022	Earthen Berm	No	No	Yes	No	EC
I00703010024	Earthen Berm	No	Yes	No	Yes	EC
I00703010025	Earthen Berm	No	Yes	No	Yes	EC
I00703010026	Earthen Berm	No	Yes	No	Yes	EC
I00703010027	Earthen Berm	No	Yes	No	Yes	EC
I00703010028	Earthen Berm	No	Yes	No	Yes	EC
I00703010029	Earthen Berm	No	Yes	No	Yes	EC
I00703010035	Earthen Berm	No	Yes	No	Yes	B
I00703010044	Earthen Berm	No	Yes	No	Yes	B
I00703140015	Coir Log	No	Yes	No	Yes	EC
I00703140016	Coir Log	No	Yes	No	Yes	EC
I00703140017	Coir Log	No	Yes	No	Yes	EC
I00703140018	Coir Log	No	Yes	No	Yes	EC
I00703140019	Coir Log	No	Yes	No	Yes	EC
I00703140020	Coir Log	No	Yes	No	Yes	EC
I00704040005	Culvert	Yes	No	Yes	No	CB
I00704050023	Water Bar	No	Yes	No	Yes	EC
I00704060034	Rip Rap	No	Yes	No	Yes	EC
I00704060036	Rip Rap	No	Yes	Yes	No	B
I00704060040	Rip Rap	No	Yes	Yes	No	B
I00704060041	Rip Rap	No	Yes	Yes	No	B
I00704060043	Rip Rap	No	Yes	Yes	No	B
I00704060045	Rip Rap	No	Yes	Yes	No	B
I00704060046	Rip Rap	No	Yes	Yes	No	B
I00704060048	Rip Rap	No	Yes	Yes	No	B
I00704060055	Rip Rap	No	Yes	Yes	No	B
I00704060057	Rip Rap	No	Yes	Yes	No	B
I00704080049	TRM-Lined Swale	No	Yes	Yes	No	B
I00704080050	TRM-Lined Swale	No	Yes	Yes	No	B
I00704080051	TRM-Lined Swale	No	Yes	Yes	No	B
I00706010010	Rock Check Dam	Yes	No	No	Yes	EC
I00706010011	Rock Check Dam	Yes	No	No	Yes	EC
I00706010012	Rock Check Dam	No	Yes	No	Yes	EC
I00706010013	Rock Check Dam	No	Yes	No	Yes	EC

Table 5.0-1 (continued)

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status*
I00706010031	Rock Check Dam	No	Yes	No	Yes	EC
I00706010032	Rock Check Dam	No	Yes	No	Yes	EC
I00706010033	Rock Check Dam	No	Yes	No	Yes	EC
I00706010039	Rock Check Dam	No	Yes	No	Yes	B
I00706010042	Rock Check Dam	No	Yes	No	Yes	B
I00706010047	Rock Check Dam	No	Yes	No	Yes	B
I00707010052	Gabion	No	Yes	Yes	No	B

*B = Additional baseline control measure. EC = Enhanced control measure. CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, PT-SMA-4.2

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX ^a	2014	Gross Alpha	pCi/L	1	393	15	n/a ^b	26.2	n/a	n/a	n/a
MEX	2014	Radium-226 and Radium-228	pCi/L	1	95.9	15	n/a	3.2	n/a	n/a	n/a
CAM ^c	2018	Gross Alpha	pCi/L	1	84.5	15	n/a	5.6	n/a	n/a	n/a
CAM	2021	Gross Alpha	pCi/L	1	46.1	15	n/a	3.1	n/a	n/a	n/a

^a MEX = Extended baseline monitoring.

^b n/a = Not applicable.

^c CAM = Corrective action monitoring.

Table 7.1-1
2018 and 2021 Storm Water Exceedances and BTV Comparison, PT-SMA-4.2

TAL Exceedance	Exceeds Storm Water Composite (98% Undeveloped) Background Threshold Value
<p>Gross alpha (4.2×) – geometric mean = 62.4 pCi/L (ATAL is 15 pCi/L)</p> <p>August 10, 2018 Gross alpha = 84.5 pCi/L SSC = 1900 mg/L SSC-normalized gross alpha = 44.5 pCi/g SSC</p> <p>August 22, 2021 Gross alpha = 46.1 pCi/L SSC = 1200 mg/L SSC-normalized gross alpha = 38.4 pCi/g SSC</p> <p>SSC normalized geometric mean = 41.3 pCi/g SSC</p>	<p>SSC-normalized BTV: 57.0 pCi/g SSC*</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>

*Windward 2020

Alternative Compliance Request for Solid Waste Management Unit 16-031(a) in W-SMA-7.8

NPDES Permit No. NM0030759



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

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

CERTIFICATION

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

Alternative Compliance Request for Solid Waste Management Unit 16-031(a) in W-SMA-7.8

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 gather and evaluate 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 there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."



Troy Thomson, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

April 1, 2022
Date

M Lee
Bishop

Digitally signed by M Lee
Bishop
Date: 2022.04.18
14:23:59 -06'00'

M. Lee Bishop, 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 Environmental Management Los Alamos Field Office (EM-LA), has prepared this request for alternative compliance pursuant to the requirements of the National Pollutant Discharge Elimination System Storm Water Individual 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 (SWMUs) and areas of concern (AOCs), collectively referred to as Sites. The Permit, incorporating the latest modifications, became effective on November 1, 2010, and is currently administratively continued.

This request for alternative compliance addresses SWMU 16-031(a) monitored at site monitoring area (SMA) W-SMA-7.8, regulated under the Individual Permit. Alternative compliance is being requested because EM-LA 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 SWMU 16-031(a) monitored at W-SMA-7.8 is that 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 W-SMA-7.8 are below storm water background concentrations.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ATAL	average target action level
BTV	background threshold value
CFR	Code of Federal Regulations
Consent Order	Compliance Order on Consent
DOE	Department of Energy (U.S.)
EM-LA	Environmental Management Los Alamos Field Office (DOE)
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
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
SSC	suspended sediment concentration
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	technical area
TAL	target action level
VCA	voluntary corrective action

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) and the DOE Environmental Management Los Alamos Field Office (EM-LA). N3B and EM-LA are, collectively, the Permittees. The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi² (Figure 1.0-1) and 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). The Individual Permit, incorporating the latest modifications, became effective on November 1, 2010 (EPA 2010). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B. 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).

W-SMA-7.8 contains one Site, SWMU 16-031(a), and is located in Water Canyon. Extended baseline monitoring samples collected in 2019 and 2021 from W-SMA-7.8 showed gross-alpha activity exceeding the applicable target action level (TAL). Because of this TAL exceedance, the Permittees are required to initiate 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 when storm water monitoring results at an SMA exceed TALs. The Permittees may request to 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 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 W-SMA-7.8 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 W-SMA-7.8, details the baseline control measures that were installed in W-SMA-7.8.

- 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 historical 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 watershed 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 2016 Consent Order issued by NMED. The Consent Order fulfills the corrective action requirements in Sections 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 TAL metals, total cyanide, volatile organic compounds, semivolatile organic compounds (SVOCs), 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" (e.g., 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, or
- Control measures that totally retain and prevent the discharge of storm water have been installed at the Site, or
- Control measures that totally eliminate exposure of pollutants to storm water have been installed at the Site, or
- The Site has achieved RCRA “corrective action complete without controls/corrective action complete with controls” status or a certificate of completion under NMED’s 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 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 months before the applicable deadlines. As of the writing of this request the Individual Permit was administratively continued.

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, the agency 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 months of the effective date of the Permit, and certifications of completion of baseline control measures 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 make the alternative compliance request available to the public via the Individual Permit public website (<https://ext.em-la.doe.gov/ips/Home/AlternativeCompliance?Length=4>).

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 to the Individual Permit 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

W-SMA-7.8 is a 0.78-acre watershed consisting of 100% undeveloped area. One Site is associated with W-SMA-7.8: SWMU 16-031(a).

SWMU 16-031(a) is a former outfall and drainline that served a former cooling tower (former structure 16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter vitrified-clay pipe that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium-nitrate grinding facility and metal-forming shop. The cooling tower received chilled water that was cycled through pumps and machinery in structure 16-372. The cooling water may have contained chromates, but there is no documentation confirming the use of chromates. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place.

Consent Order investigations have not yet begun at SWMU 16-031(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are available from the 1998 investigation, however only for metals, high explosives, and SVOCs, not for radionuclides (LANL 1998).

5.0 DESCRIPTION OF CONTROL MEASURES INSTALLED WITHIN W-SMA-7.8

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 W-SMA-7.8 is shown in Figure 5.0-1. An extended baseline confirmation sample was collected from W-SMA-7.8 on July 15, 2019, with no TAL exceedances. A second sample was collected on May 30, 2021. Analytical results from this sample yielded the following TAL exceedance:

- gross-alpha activity of 63.4 pCi/L (ATAL is 15 pCi/L)

The gross-alpha geometric mean for the current monitoring stage is 31 pCi/L. The TAL exceedance data are summarized in Table 6.0-1. Figure 6.0-1 is a plot that shows the results as a ratio of the TAL. A graphic explaining how to read the plots is presented in Appendix A.

7.0 BASIS FOR ALTERNATIVE COMPLIANCE REQUEST

The basis for this alternative compliance request is that the constituent exceeding TALs (gross alpha) is within the natural background range of concentrations expected for storm water runoff from 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 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 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 W-SMA-7.8 are described below.

7.1 Potential Sources of TAL Exceedances

The likely source of gross alpha is runoff from 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 constituents to runoff from natural background not affected by Site operations, storm water samples were collected from 2009 to 2018 in remote watersheds on the Pajarito Plateau and analyzed for POCs, including gross-alpha radioactivity. These results are summarized in the publication entitled “Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, Revision 1” (hereafter, the Background Report) (Windward 2020). 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.

The 2019 draft LANL NPDES Storm Water Individual Permit (NM0030759) (EPA 2019) states that for each POC the 90th percentile from the Background Report (Windward 2020) will be used as the background threshold value (BTV). To account for contributions from undeveloped (pervious) and developed (impervious) areas, a composite BTV is calculated as follows: 90th percentile composite BTV = $[(\% \text{ impervious SMA area} \times 90\text{th percentile developed landscape BTV}) + (\% \text{ pervious SMA area} \times 90\text{th percentile undeveloped landscape BTV})]/100$. W-SMA-7.8 consists of 100% pervious surfaces and is compared with the undeveloped BTV.

The results reported in the Background Report (Windward 2020) indicated that a statistically significant relationship existed between gross-alpha concentrations and suspended sediment concentrations (SSCs). Therefore, the gross-alpha BTV is SSC-normalized by dividing the analyte concentration by the paired SSC concentration. The SSC-normalized 90th percentile BTV for gross-alpha radioactivity for storm water runoff from undeveloped landscapes is 57 pCi/g SSC (Windward 2020). This value is considered to be the natural background concentration for undeveloped landscapes and applies to SMAs with undeveloped landscapes included in the Individual Permit because the underlying geology of the Laboratory and surrounding area is also Bandelier Tuff.

The 2019 gross-alpha result from W-SMA-7.8, (15 pCi/L) had a paired SSC value of 600 mg/L. The 2021 gross-alpha result from W-SMA-7.8 (63.4 pCi/L) had a paired SSC value of 800 mg/L. The geometric mean of these SSC-normalized gross-alpha results is 45 pCi/g SSC, below the BTV of 57 pCi/g

SSC. Table 7.1-1 compares the TAL-exceeding constituent with the composite BTV (100% undeveloped for this SMA).

7.1.2 Site-Related Sources of Adjusted Gross-Alpha Activity

Storm water samples collected at W-SMA-7.8 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 specified 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 are not known to 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

After comparing the storm water sampling results with the natural background studies, the Permittees have concluded that the gross-alpha exceedance is a result of nonpoint-source runoff from undeveloped landscapes. Any gross-alpha radionuclides contributed by the Site addressed in this request are exempt and are not regulated under the Individual Permit, as discussed in section 7.1.2. Furthermore, the 2019 draft Individual Permit (EPA 2019) does not include a TAL for gross alpha.

The compliance actions specified in Section E.2 of the Individual Permit are not likely to achieve levels of gross-alpha activity in storm water runoff from the Site that are different from the gross-alpha activity in storm water runoff from undeveloped landscapes. The Permittees believe W-SMA-7.8 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 16-031(a) 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 propose to continue to inspect and maintain existing controls until the Site is eligible for removal from the Individual Permit. Under the 2019 Draft Individual Permit (EPA 2019) this Site would be placed into long-term stewardship (EPA 2019).

9.0 REFERENCES

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

EPA (U.S. Environmental Protection Agency), November 19, 2019. DRAFT "Authorization to Discharge under the National Pollutant Discharge Elimination System, NPDES Permit No. NM 0030759," Region 6, Dallas, Texas. (EPA 2019)

LANL (Los Alamos National Laboratory), August 1998. "Remedial Action Focus Sampling and BMP Installations at TA-11 and TA-16," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 1998)

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

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

LANL (Los Alamos National Laboratory), October 30, 2015. "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine [9] Site Monitoring Areas," Los Alamos National Laboratory letter to P. Johnsey, EPA Region 6, Water Enforcement Branch (6EN) from D.E. Hintz (EM-LA) and A.M. Dorries (LANL), Los Alamos, New Mexico. (LANL 2015)

Windward (Windward Environmental, LLC), May 21, 2020. "Development of Background Threshold Values for Storm Water Runoff on the Pajarito Plateau, New Mexico, 2020 Revision," Seattle, Washington. (Windward 2020)

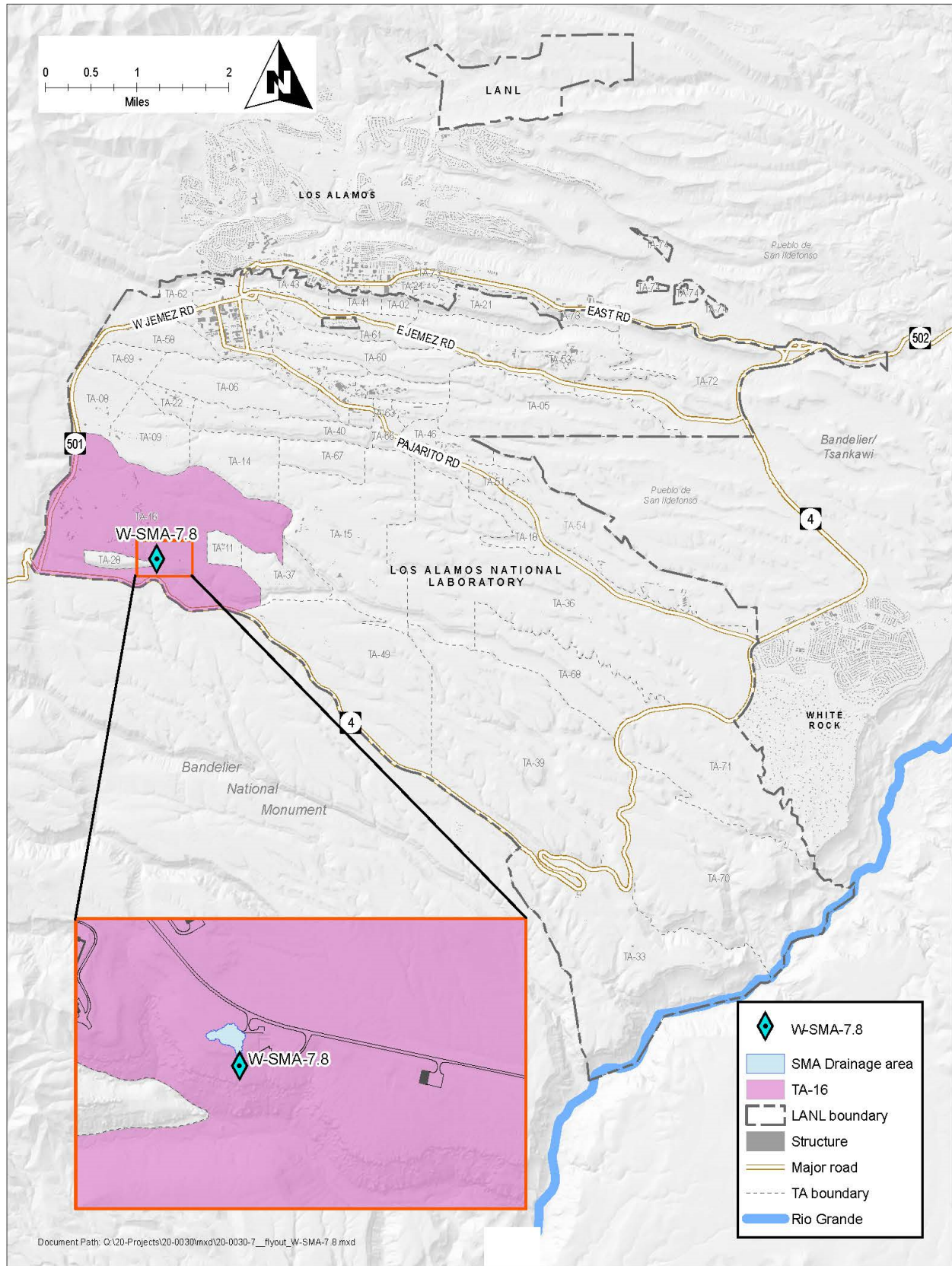


Figure 1.0-1 Location of the SMA with respect to the Laboratory and surrounding landholdings

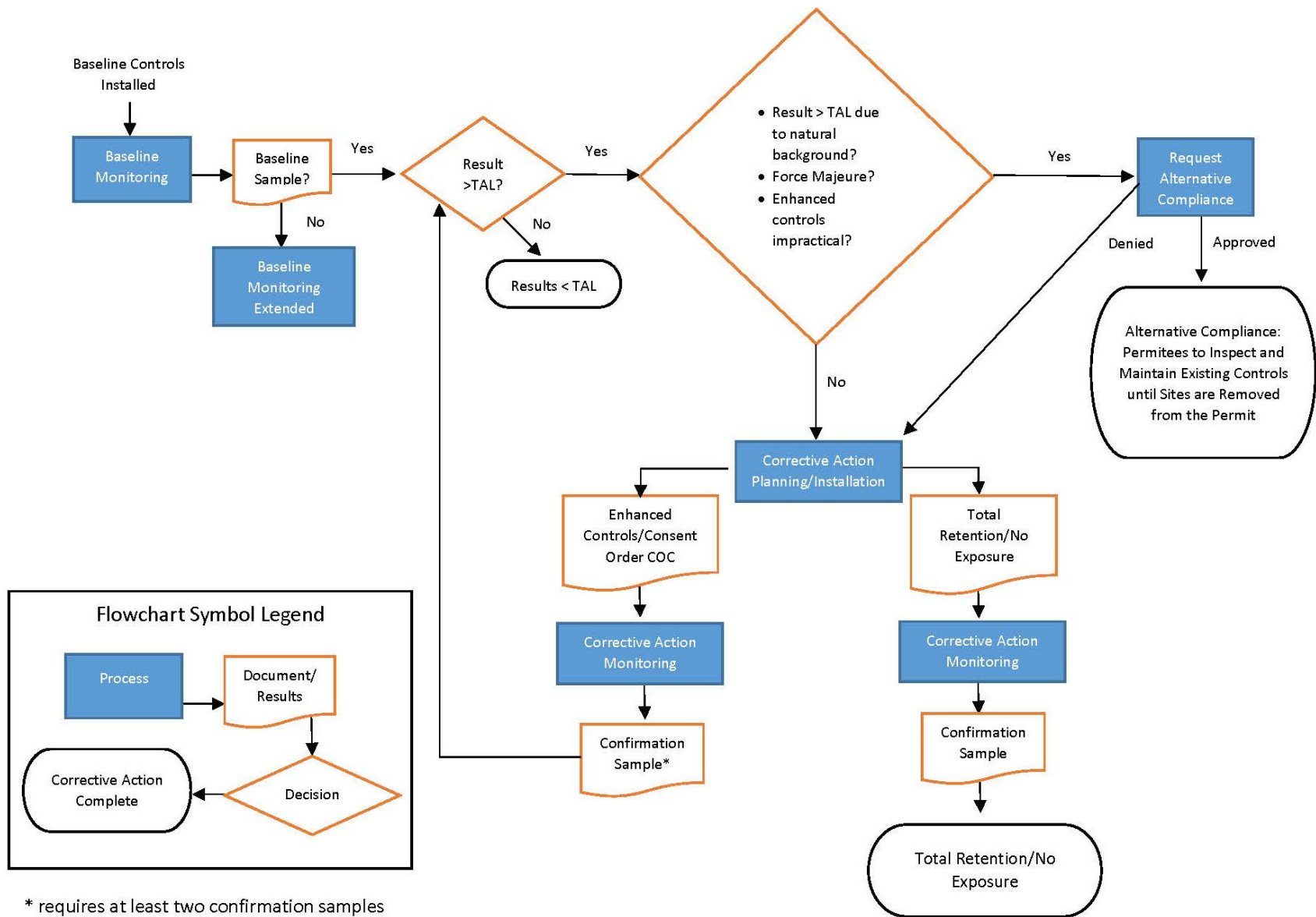


Figure 2.0-1 Flow chart of the corrective action process/alternative compliance

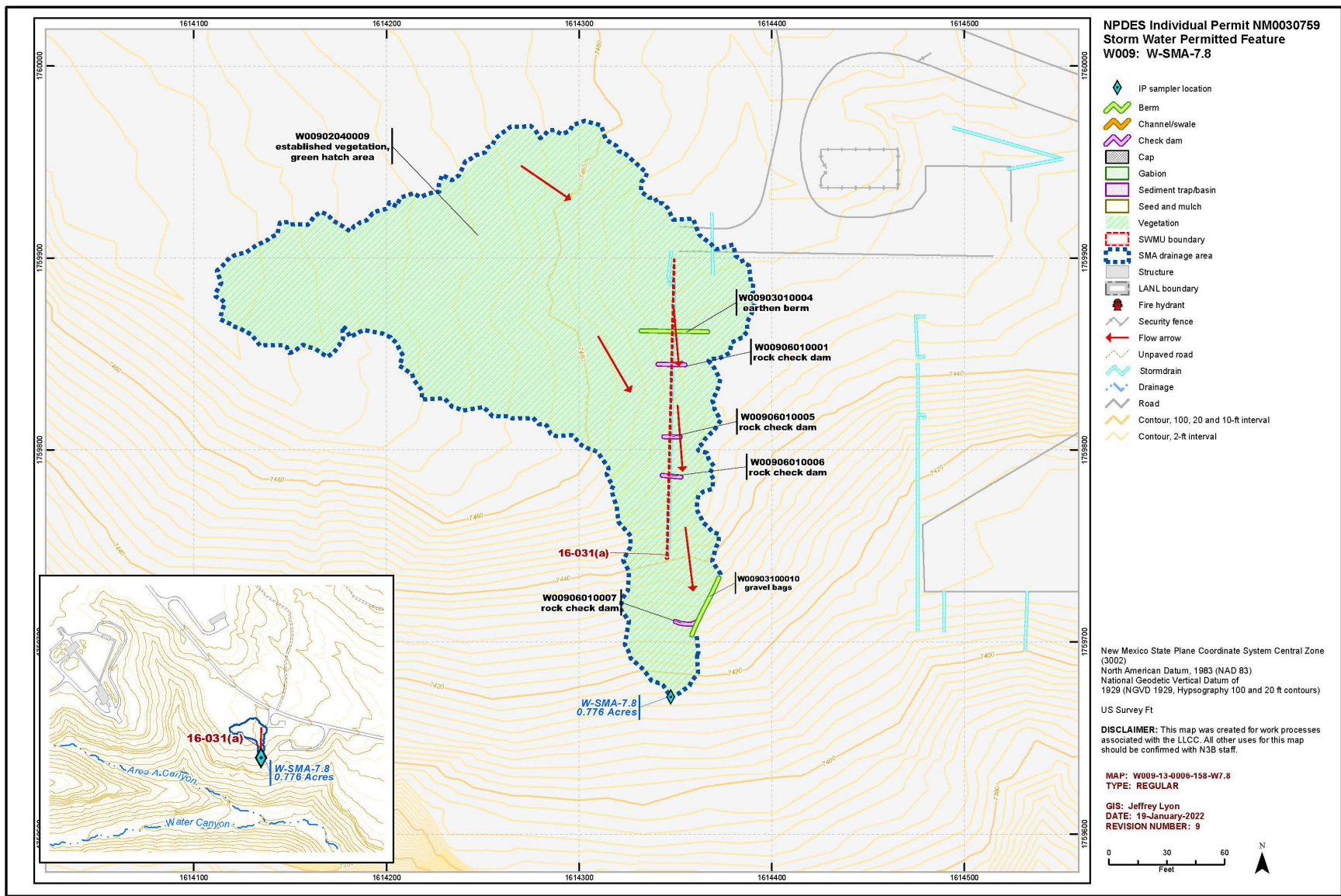
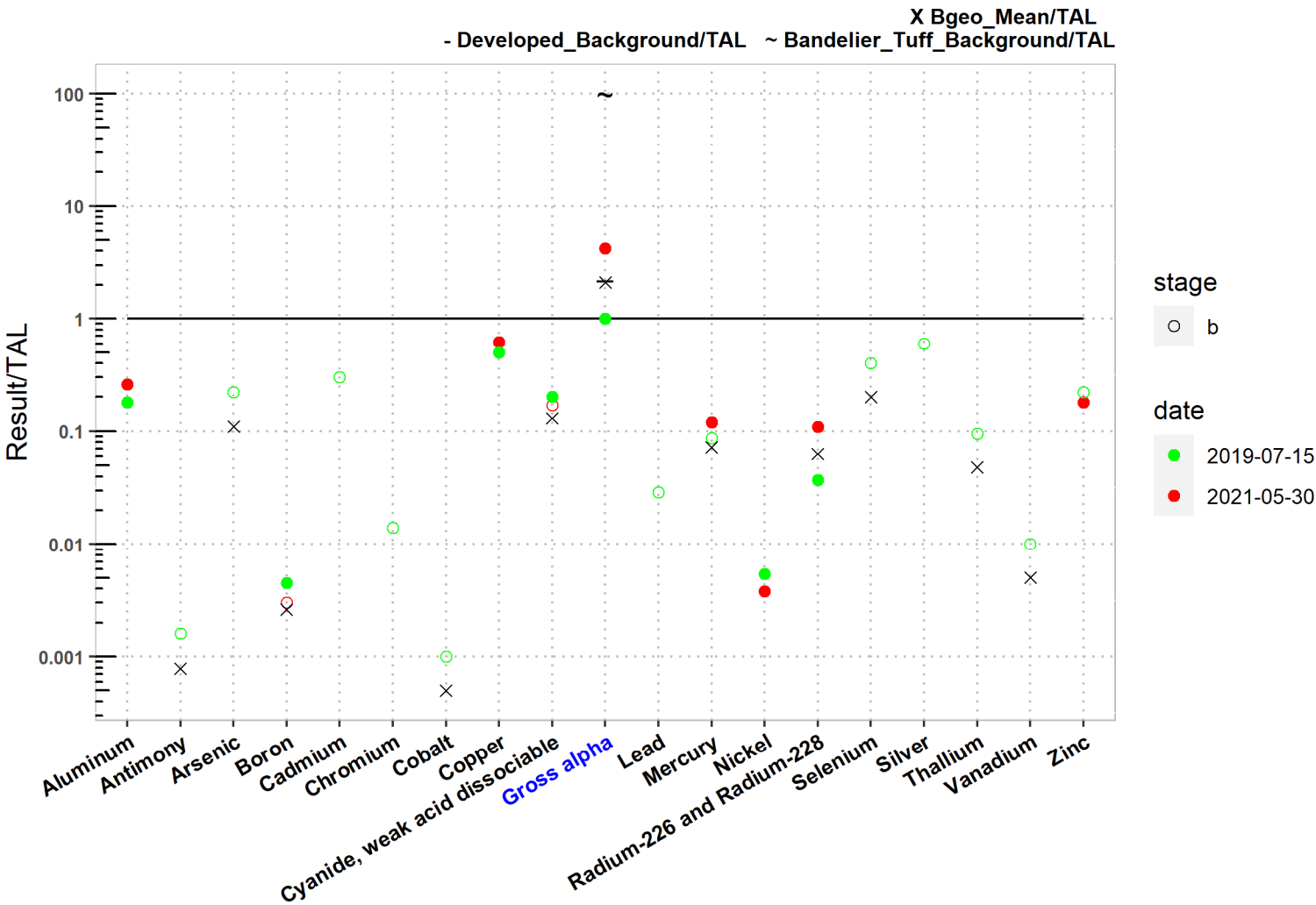


Figure 5.0-1 W-SMA-7.8 location map

W-SMA-7.8



Solid shapes: Detected Hollow shapes: Non-detected

Note: A graphic explaining how to read the plot and table is presented in Appendix A.

Figure 6.0-1 Analytical results summary plot and table for W-SMA-7.8

W-SMA-7.8																			
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
<i>MQL</i>	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
<i>unit</i>	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
<i>Bgeo_mean/ATAL</i>	NA	0.00078	0.11	0.0026	NA	NA	0.00050	NA	0.13	2.1	NA	0.072	NA	0.063	0.20	NA	0.048	0.0050	NA
<i>2019-07-15 d</i>	0.18	NA	NA	0.0045	NA	NA	NA	0.50	0.20	1.0	NA	NA	0.0054	0.037	NA	NA	NA	NA	NA
<i>2019-07-15 nd</i>	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	NA	NA	0.029	0.087	NA	NA	0.40	0.60	0.095	0.010	0.22
<i>2021-05-30 d</i>	0.26	NA	NA	NA	NA	NA	NA	0.62	NA	4.2	NA	0.12	0.0038	0.11	NA	NA	NA	NA	0.18
<i>2021-05-30 nd</i>	NA	0.0016	0.22	0.0030	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.40	0.60	0.095	0.010	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL

Figure 6.0-1 (continued)

Analytical results summary plot and table for W-SMA-7.8

Table 5.0-1
Active Control Measures at W-SMA-7.8

Control ID	Control Name	Storm Water Run-on Control?	Storm Water Runoff Control?	Erosion Control?	Sediment Control?	Control Status*
W00902040009	Established Vegetation	No	Yes	Yes	No	B
W00903010004	Earthen Berm	Yes	No	No	Yes	CB
W00903100010	Gravel Bags	No	Yes	No	Yes	B
W00906010001	Rock Check Dam	Yes	No	No	Yes	CB
W00906010005	Rock Check Dam	Yes	No	No	Yes	CB
W00906010006	Rock Check Dam	Yes	No	No	Yes	CB
W00906010007	Rock Check Dam	No	Yes	No	Yes	CB

*B = Additional baseline control measure. CB = Certified baseline control measure.

Table 6.0-1
Summary of Storm Water Exceedances, W-SMA-7.8

Monitoring Stage	Year	Analyte	Unit	Number of Detections	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ATAL Ratio	MTAL	Number of MTAL Exceedances	Max Detect/MTAL Ratio
MEX ^a	2021	Gross Alpha	pCi/L	1	63.4	15	31	2.1	n/a ^b	n/a	n/a

^a MEX = Extended baseline monitoring.

^b n/a = Not applicable.

**Table 7.1-1
2019 Storm Water Exceedances and BTV Comparison, W-SMA-7.8**

TAL Exceedance	Exceeds Storm Water Composite (100% Undeveloped) Background Threshold Value
<p>Gross alpha (2.1×) – geometric mean = 31 pCi/L (ATAL is 15 pCi/L)</p> <p>2021 Data Gross alpha = 63 pCi/L SSC = 800 mg/L SSC-normalized gross alpha = 79 pCi/g SSC</p> <p>2019 Data Gross alpha = 15 pCi/L SSC = 600 mg/L SSC-normalized gross alpha = 25 pCi/g SSC</p> <p>SSC normalized geometric mean = 45 pCi/g SSC</p>	<p>SSC-normalized BTV: 57 pCi/g SSC*</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>

*Windward 2020

Appendix A

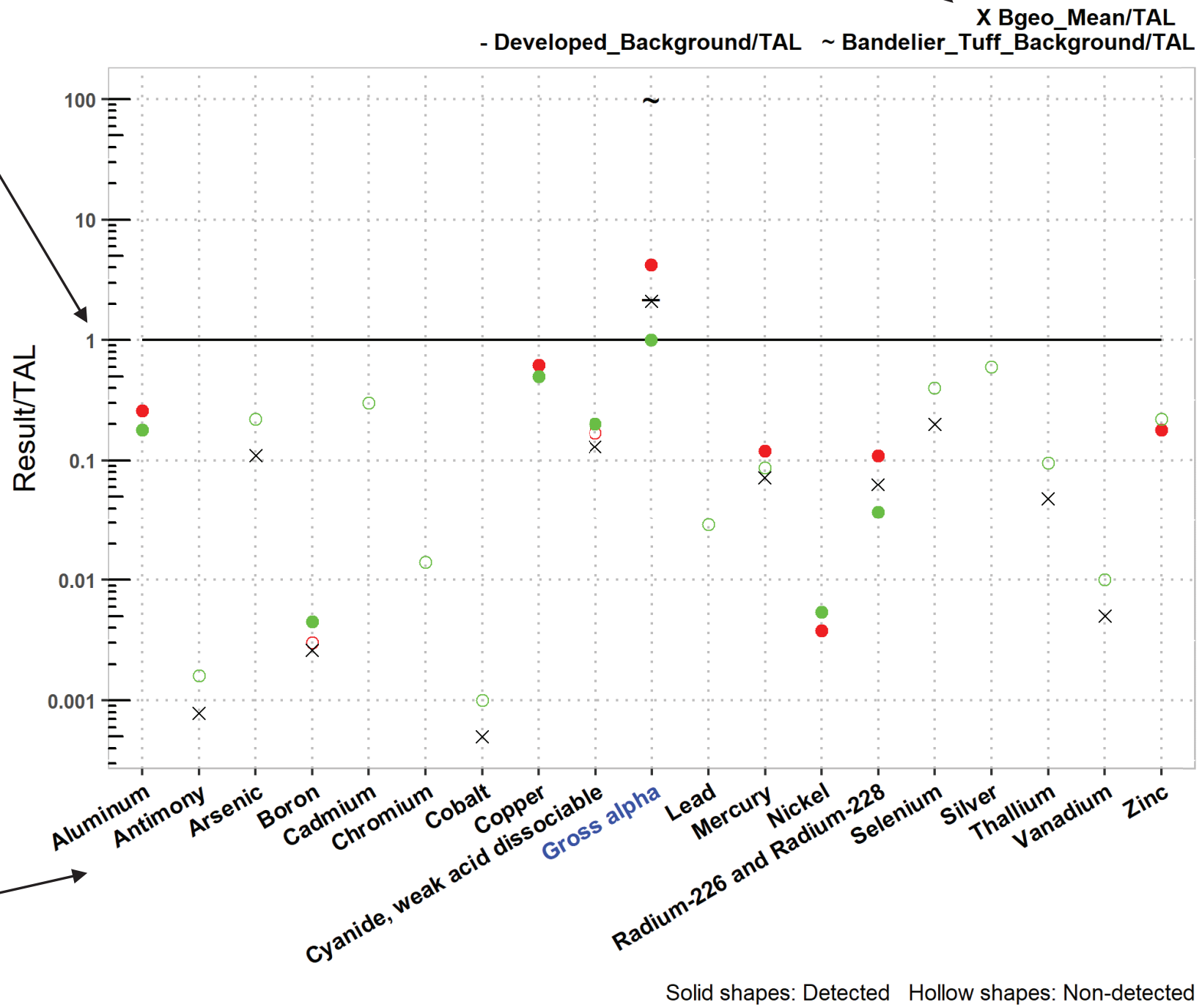
How to Read the Analytical Results Summary Plot and Table

W-SMA-7.8

The geometric mean (geo_Mean) of all results in a monitoring stage is calculated as described in Part II.D of the permit and plotted for analytes that are compared to an ATAL. The geometric mean divided by the TAL is plotted with an X, and the geometric mean divided by the Composite BTV is plotted with an *.

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

This axis displays the analyte list with validated analytical data available for all results in a monitoring stage at an SMA. This list is dynamic and will only include analytes relevant to data plotted for each SMA. Analytes with TAL exceedances are shown in blue font.



Monitoring Stage
b = extended baseline monitoring
c1 = corrective action

stage
○ b

date
● 2019-07-15
● 2021-05-30

Sample Collection Date

These rows present the MQL, ATAL, and MTAL values for each analyte as established in Part I.C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

This is the geometric mean of all baseline monitoring data and is compared to the ATAL

Analytical data for each sample date are displayed on two rows. The results are normalized to the TAL and shown here as an exceedance ratio. The top row is the ratio of detected (d) results, with exceedances in bold. The second row is the ratio of nondetected results (nd). NA indicates no analytical results.

W-SMA-7.8

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
→ MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
→ ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
→ MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	NA	0.00078	0.11	0.0026	NA	NA	0.00050	NA	0.13	2.1	NA	0.072	NA	0.063	0.20	NA	0.048	0.0050	NA
2019-07-15 d	0.18	NA	NA	0.0045	NA	NA	NA	0.50	0.20	1.0	NA	NA	0.0054	0.037	NA	NA	NA	NA	NA
2019-07-15 nd	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	NA	NA	0.029	0.087	NA	NA	0.40	0.60	0.095	0.010	0.22
2021-05-30 d	0.26	NA	NA	NA	NA	NA	NA	0.62	NA	4.2	NA	0.12	0.0038	0.11	NA	NA	NA	NA	0.18
2021-05-30 nd	NA	0.0016	0.22	0.0030	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.40	0.60	0.095	0.010	NA

Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL