Los Alamos National Laboratory's Response to Written Public Comments Submitted Regarding Request for Alternative Compliance for S-SMA-2 and S-SMA-0.25

Comment No.	Comment Date	Commenter Name	Comment Subject	Summary of Comment[1]	Response
1	6/11/2013 6/12/2013 6/13/2013 6/14/2013	Gary Brookrt Linda Carlson A. Chandler Kathleen Clark Abraham Cobb Douglass Conwell Barbara Durner Merlin Emrys Melissa Epple Kristina Fisher Glenda Fletcher Erik Fredrickson Andrew Gold Kay Greene Diana Hartel Jeannie Magill Dominique Mazeaud Gaia Mika Sheila O'Malley Joan Quinn Anne Salzman Stephen Schmidt Susan Selbin Sarah Sisk Bruce Stroud Simon Teolis Kristin Ulibarri Susan Verkamp Phyllis Wilcox	General	A number of commenters voiced concern regarding the alternative compliance proposals' general protection of water quality in Sandia Canyon and the Rio Grande; they recommend incorporating low-impact development (LID) and other green storm water practices across Los Alamos National Laboratory (the Laboratory).	See response to Comment 6.

[1] All comments submitted during the public comment period are included in Attachments 1 through 3 of this document.

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2	6/13/2013	Rachel Conn, Marian Naranjo, and Joni Arends for Communities for Clean Water (CCW)	Background Metals and PCB Reports	The commenters urge the Laboratory to use the resources and effort that went into drafting the background reports to improve water quality by targeting areas known to contribute to urban runoff and implementing best management practices (BMPs), thereby reducing pollutants at site monitoring area (SMA) points.	Comment noted.
3	6/13/2013	CCW	Background Metals Report	The commenters pose the following questions regarding data in the report: (1) What types and intensity of storms were monitored? (2) Did any rain event allow for sampling across all sites? (3) In what types of land use, soil, size, and imperviousness of each watershed were samples collected? They also state that the target action levels (TALs) under the National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (the Individual Permit or Permit) are numerically equal to the water-quality standards in the Rio Grande and receiving waters.	(1) Precipitation information will be included in future revisions of the Background Metals Report. (2) Generally, a rain event that allows for sampling across all sites is highly unlikely because of the localized nature of precipitation in and around the Laboratory. This information will be included in future revisions of the Background Metals Report. (3) Land use, soil type, size, and imperviousness of each watershed will be included in future revisions of the Background Metals Report. The TALs in the Individual Permit were the New Mexico Water Quality Control Commission (NMWQCC) standards in effect at the time the Permit was issued for Los Alamos streams, not the Rio Grande.
4	6/13/2013	CCW	Background Metals Report	The commenters express concern that the Background Metals Report had no exceedances in the Reference Area and Western Boundary and that no statistical analysis was performed to determine whether the mean and median concentrations for urban runoff were significantly higher than Reference Area and Western Boundary concentrations. The commenters were also concerned that the reports provided few conclusions about the data and that it was difficult to compare results across areas.	As summarized in section 7.1 of both alternative compliance requests, soil data collected pursuant to the March 2005 Compliance Order on Consent (Consent Order) demonstrates that Sites are not the source of the copper and zinc TAL exceedances. That is, copper and zinc are not “significant industrial materials” at these Sites. Once this key determination was made, the Permittees, collectively, the U.S. Department of Energy and Los Alamos National Security, LLC, performed a literature search to identify common sources of these metals in urban storm water (e.g., copper from brake pads and zinc from galvanized metals and motor oil). Copper and zinc concentrations are within the range of concentration for urban storm water found reported in the literature. The primary source of the gross-alpha exceedance is naturally occurring uranium. The Background Metals Report and site-specific run-on data were used in the alternative compliance requests to (1) support the conclusion that the sources of copper and zinc in storm water at S-SMA-0.25 and S-SMA-2.0 are not from the historical release of industrial materials at the Sites and (2) confirm that regional and site-specific data are consistent with the range of concentrations of these constituents in storm water in the literature. The intention of the Background Metals Report was to present a statistical summary, including upper tolerance limits (UTL), mean, median, maximum, minimum, and standard deviation, for each constituent within each of the three populations (see Tables 1, 2, 6, 7, 11, and 12 of the report). The results were binned, tested for outliers, and 95% UTL were calculated according to U.S. Environmental Protection Agency (EPA) methods[2]. UTLs are routinely used to develop background values (BVs), not mean or median values. Exceedances or standards are not discussed in the report. EPA guidance recommends that UTLs should be used to represent BVs. Mean and median values are typically not used to determine background concentrations. The UTL (BV) for zinc in the Reference Watershed is 109 µg/L, greater than the TAL of 42 µg/L; the UTL (BV) for zinc in Western Area storm water is 43.3 µg/L, essentially the same as the TAL (42 µg/L). For copper, the UTL (BV) is 3.43 µg/L in Reference Watershed storm water and 5.7 µg/L in Western Area storm water, below and above respectively of the TAL (4.3 µg/L). Statistical significance information will be included in the next revision of the Background Metals Report. See also responses to Comments 15 and 16.

[2] ProUCL Version 4.0 Technical Guidance, April 2007. Prepared by Anita Singh, Ph.D. and Ashok K. Singh, Ph.D. for Brian Schumacher. U.S. Environmental Protection Agency EPA/600/R-07/41.

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5	6/13/2013	CCW	Permit Requirements	The commenters underscore that SMA sampling locations are the point of compliance and stress that the Laboratory should do everything possible to reduce TALs at the SMAs. The commenters point out that the Individual Permit requires a formal process with a public comment period for relocating the SMA sampling locations.	The Individual Permit regulates storm water discharges associated with industrial activities from specified Sites. The Individual Permit treats the potential historical releases at a Site as an "industrial activity" that creates a "point-source discharge" and directs the Permittees to monitor storm water discharges from Sites at specified sampling points known as SMAs. An SMA is a single drainage area within a subwatershed and typically includes more than one Site. Storm water from a Site may drain to multiple subwatersheds and may be associated with multiple SMAs. The alternative compliance process in Part I.E.3 of the Individual Permit allows the Permittees to evaluate the representativeness of the SMA as the monitoring point for the Sites within it. Part I.E.3(a) lists a number of factors that could support the Permittees' claim that they are unable to certify completion of corrective action under Parts I.E.2(a) through E.2(b) including, but not limited to, background concentrations of pollutants of concern and pollutants of concern contributed by sources beyond the Permittees' control. Pollutants of concern contributed by sources excluded from the Individual Permit (i.e., storm water discharges associated with current conventional industrial activities at Technical Area 03 [TA-03] under the Laboratory's NPDES Multi-Sector General Permit [MSGP] No. NMR05GB21) or from other non-Site-related sources (i.e., urban runoff) are also factors that may be used to support an alternative compliance request. With the exception of the residual polychlorinated biphenyls (PCBs) at Site 03-056(c) and the possible contribution from 03-045(b), the pollutants of concern that exceeded TALs at S-SMA-0.25 and S-SMA-2 are not from the Sites regulated under the Individual Permit. That is, in addition to storm water from the Site(s), the SMA sample results primarily represent storm water from additional upstream contributing areas and are not directly representative of storm water runoff from the individual Sites. Therefore, additional corrective actions at the Sites would not achieve TALs. The alternative compliance requests did not, however, propose to relocate the SMAs. The alternative compliance request provision did provide an opportunity for public comment.
6	6/13/2013	CCW	Permit Requirements	The commenters state that the urban landscape at the Laboratory contributes pollutants, as demonstrated in the background studies, and that pollutant concentrations at the SMA are therefore not "beyond the Permittees' control."	The Permittees are not alleging that the non-Site-related sources are beyond the Permittees' control, only that in addition to the Individual Permit, other mechanisms are in place that help reduce constituents in urban runoff. The Permittees requests for alternative compliance are based on two factors: (1) the Sites are not the source of the TAL exceedances [with the exception of PCBs from Site 03-056(c) and the possible contribution from 03-045(b)] and (2) the pollutants of concern are from sources excluded from the Individual Permit or from other non-Site-related sources. Therefore, none of the corrective action options in Parts I.E.2(a) through E.2(b) will allow the Permittees to achieve TALs. Although the Individual Permit does not regulate storm water discharges associated with current conventional industrial activities or urban runoff that is not impacted by historical releases of significant industrial materials from a Site, the Laboratory has several programs in place to manage urban runoff at TA-03. These programs, which include implementation of green infrastructure (GI)/LID are described below. Storm water discharges associated with current conventional industrial activities at TA-03 are subject to the Laboratory's NPDES MSGP issued by EPA. The industrial sectors covered under the MSGP that apply to TA-03 are Sector AA, fabricated metal products, and Sector O, steam electric-generating facilities. Pursuant to the MSGP, the Laboratory has site-specific storm water pollution prevention plans (SWPPPs) and performs benchmark storm water monitoring for the two relevant industrial sectors within TA-03. The SWPPP is a written assessment of potential sources of pollutants in storm water runoff and the control measures that are implemented at each site to minimize the discharge of these pollutants in runoff. These control measures include site-specific BMPs, maintenance plans, inspections, employee training, and reporting. Storm water discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb one or more acres, or smaller sites that are part of a larger common plan of development or sale, are regulated by EPA under the NPDES Construction General Permit (CGP). The CGP also authorizes storm water discharges from any other construction activity designated by EPA where EPA makes that designation based on the potential for contribution to an excursion of a water-quality standard or for significant contribution of pollutants to waters of the United States. Soil-disturbing activities at the Laboratory that meet these criteria are covered under the CGP and comply with CGP requirements. Storm water control measures used during construction projects subject to the CGP include the following. *Erosion and sediment controls*. Erosion controls provide the first line of defense in preventing off-site sedimentation and are designed to prevent erosion through protection and preservation of soil. Sediment controls are designed to remove sediment from runoff before it is discharged from the site.

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6 (cont.)					*Storm water management measures*. Storm water management measures include, but are not limited to, on-site infiltration of runoff, flow attenuation by vegetation or natural depressions, outfall velocity dissipation devices, storm water retention basins and artificial wetlands, and storm water detention structures. *Housekeeping BMPs*. Construction BMPs are designed to keep pollutants associated with construction projects such as oil; grease; paints; gasoline; concrete truck chute washdown; raw materials used in the manufacture of concrete (sand, aggregate, and cement); litter; and debris. Because the Laboratory is a federal facility, any development or redevelopment project with a footprint that exceeds 5000 ft^2 is subject to Section 438 of the Energy Independence and Security Act of 2007. Projects subject to Section 438 must be developed/redeveloped in a manner that maintains or restores storm water runoff to the maximum extent technically feasible by the use of GI/LID. Section 438 does not, however, require retrofitting unless it is associated with development.
7	6/13/2013 6/14/2013	CCW, Bruce Yurdin, Surface Water Quality Bureau, New Mexico Environment Department (NMED)	Data clarity and Table 5 of both reports	The commenters express concern with inconsistencies in referring to data sources (e.g., whether run-on data vs. background data were used, if an aggregate statistical quantity was compared with runoff from solid waste management units [SWMUs]). They also commented that the following terms are unclear: background, reference, and run-on. In addition, they seek further explanation regarding higher concentrations of pollutants detected downstream of the SMA monitoring point and the Laboratory's documentation of why these detections are not from historical use of pollutants at the SWMU.	Pollutant sources from the Sites in S-SMA-0.25 and S-SMA-2 are fully evaluated in the Supplemental Investigation Report for the Upper Sandia Canyon Aggregate Area that was submitted to the NMED Hazardous Waste Bureau (HWB) on August 27, 2013. The Permittees will provide a draft copy of the next revision of the Background Metals Report to the NMED Oversight Bureau and Surface Water Quality Bureau for review and comment. See also response to Comment 4.
8	6/13/2013	CCW	Statistical Methods	The commenters state that the use of 95% confidence interval for background concentrations from the Background Metals Report should not be compared with SMA concentrations, which are a different statistical population.	The specific SMA run-on results are included in the population used to calculate the UTL value for urban developed landscapes. The 95% value represents a range of results where 95% of the data are less than the value of the UTL. This approach is suggested by EPA to determine a BV and is routinely used throughout the nation[3]. Additional data will be collected and statistically analyzed in 2013 and compared with the 2012 data, at which time comments and suggestions will be incorporated when defining populations of data.
9	6/13/2013	CCW	Alternative Treatments	The commenters propose that the Laboratory evaluate additional alternative BMPs or consider modifications to the treatment strategies presented in Table 7 of the Laboratory's alternative compliance requests and implement, monitor, and adapt such designs across the Laboratory. They state the need for implementing retrofits and gathering on-site knowledge of what does and does not work at the site.	See response to Comment 6.
10	6/13/2013	CCW	Monitoring	The commenters note that neither monitoring plans to determine effectiveness of the alternative compliance approaches nor maintenance plans were presented in the alternative compliance request. They recommend that monitoring of BMP effectiveness (especially LID practices) for pollutant removal and application for design adaptations and wider implementation should be included in any final work plans along with maintenance of control measures.	Although monitoring and maintenance are expected to be key components of any controls, monitoring and maintenance plans were not included in the alternative compliance request because EPA must first determine the appropriate controls for the Sites. Part I.E.3(d) states that if EPA grants the Permittees' alternative compliance request, in whole or in part, EPA will issue a new individually tailored work plan for one or more of the Sites. This work plan may adopt the Permittees recommendations and/or may include other specific control measure enhancements and mitigation measures as well as appropriate monitoring and maintenance plans as deemed necessary by EPA.

[3] ProUCL Version 4.0 Technical Guidance, April 2007. Prepared by Anita Singh, Ph.D. and Ashok K. Singh, Ph.D. for Brian Schumacher. U.S. Environmental Protection Agency EPA/600/R-07/41.

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11	6/13/2013	CCW	S-SMA-0.25: Table 5; S-SMA-2: Table 5	The commenters request all data for the SMA and run-on samples to be provided in an appendix and request clarification on how three run-on samples were collected in 2012, yet only two samples were collected at S-SMA-0.25 over the entire monitoring period; the comment also applies to S-SMA-2.	All data are already available to the public in the EIM database through Intellus New Mexico and therefore will not be included in an appendix. All the data used in the Background Metals Report are included in the report. Additional samples were collected during the period the Background Metals Report was being written. These results will be incorporated into the next revision of the report. A prime objective of the installed controls is to divert or retain run-on at the Sites. Lower-frequency storms will often produce run on without producing concurrent runoff from the Sites. It is therefore not uncommon to collect run-on samples and not collect paired runoff (i.e., SMA) samples.
12	6/13/2013	CCW	S-SMA-2: Multi-Sector General Permit, p. 2	The commenters ask why the monitored constituents at the TA-03 Building 34 Metal Shop were reduced only to zinc.	At the outfall corresponding to the TA-03 Building 34 Metal Shop (TA-03-34), monitoring for the benchmark constituents of aluminum, iron, nitrate, and nitrite nitrogen under the 2008 MSGP were discontinued in accordance with the MSGP. On April 12, 2012, TA-03-34 met the condition of no exposure, as identified in Appendix K of the 2008 MSGP, after all materials previously stored outside had been removed, thereby preventing exposure of industrial activities or materials (from the industrial facility or site) to precipitation. By meeting this condition of no exposure, TA-03-34 is excluded from NPDES storm water permitting and thereby was not required to monitor for benchmark constituents as long as the current no exposure condition is retained.
13	6/13/2013	CCW	S-SMA-2: Permitted Outfalls, p. 9	The commenters maintain that Sites 03-045(b) and 03-045(c) should not be removed from the Individual Permit and provide the following justification: • The SWMU boundaries for 03-045(b) and 03-045(c) consist of the pipe and the drainage below the outfall pipe; • The Site Discharge Pollution Prevention Plan lists “organic chemicals, metals, and radionuclides” as potential contaminants historically handled at the site; and • Site 03-045(c) is not monitored for PCBs under the NPDES outfall permit. It is a high priority site under the Individual Permit and should be monitored for PCBs.	The Permittees have revised the alternative compliance request for S-SMA-2 to include Sites 03-045(b) and 03-045(c) in the request (Attachment 4). Two copies are provided: one in red-line strike out (on CD only) and one with the changes accepted (Attachment 4). The revised document was also included with the response to comments submitted to commenters and posted in the Individual Permit section of the Laboratory’s public website. As stated in the response to Comment 10, it is likely that EPA will include appropriate monitoring plans in an individually tailored work plan if the EPA grants the Permittees’ alternative compliance request.
14	6/13/2013	CCW	S-SMA-0.25: Statistical method, p. 15	The commenters question why the UTL was used for comparison instead of collecting enough samples from the SMA to compute a UTL and compare those with background UTLs.	To minimize uncertainty, EPA methodology suggests a minimum of 10 detected sample results to calculate a UTL. A minimum of 7 sample results was assumed for the background metals calculations with less, but still acceptable, uncertainty. In most cases, the number of detected sample results is insufficient to calculate a site-specific UTL. For example, only 3 run-on samples were collected at S-SMA-0.25, well below the number suggested by EPA methodology. However, 8 run-on samples were collected at S-SMA-2, allowing calculation of UTLs with acceptable uncertainty. The number of detected results at S-SMA-2 is a rare case: only 3 run-on monitoring locations have more than 4 sample results. Therefore, the Permittees grouped all the results to determine a single UTL representative of run-on within a defined population.
15	6/13/2013	CCW	S-SMA-0.25: Copper, p. 15	The commenters expressed concern with the statement that copper concentrations were greater than the TAL (4.3 µg/L) in run-on samples (4.05 µg/L to 6.75 µg/L) when the concentrations found at the SMA were higher than run-on samples (9.7 µg/L to 10.9 µg/L).	The apparent inconsistency in copper concentrations is most likely because the storm water samples were collected from different storms of differing intensities and durations. In addition, the time between precipitation events, when copper deposition from urban sources (e.g., brake pads) occurs and accumulates, was different for each storm event. These variables cannot be controlled and account for the wide range of concentrations in storm water. This is one reason the Background Metals Report uses a single UTL representative of a landscape type for run-on copper concentrations. Given the variability in sampling conditions, it is challenging to discern what portion of copper concentrations detected at the SMA were a result of distinct contributions from a regulated Site-specific source as opposed to the predominant portion resulting from urban sources. The detection of copper greater than the TAL in run-on samples does, however, help support the conclusion that engineered controls at the Site would not be effective in achieving TALs.

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16	6/13/2013	CCW	S-SMA-0.25: Zinc, pg. 16	The commenters expressed concern with the statement that zinc concentrations from run-on were greater than the TALs. The commenters do not believe the data demonstrate this: the site run-on data parallel to the site ranges from 21.8 µg/L to 60.1 µg/L, and site results range from 52.9 µg/L to 74.4 µg/L.	The apparent inconsistency in zinc concentrations is most likely because the storm water samples were collected from different storms of differing intensities and durations. In addition, the time between precipitation events, when zinc deposition from urban sources (e.g. galvanized metals and motor oil) occurs and accumulates, was different for each storm event. These variables cannot be controlled and account for a wide range of concentrations in storm water. This is one of the reasons the Background Metals Report uses a single UTL representative of a landscape type for run-on zinc concentrations. Given the variability in sample conditions, it is challenging to discern what portion of zinc concentrations found at the SMA were a result of distinct contributions from a regulated, Site-specific source as opposed to the predominant portion resulting from urban sources. The detection of zinc greater than the TAL in run-on samples does, however, help support the conclusion that engineered controls at the Site would not be effective in achieving TALs.
17	6/13/2013	CCW	S-SMA-2: PCBs, p. 21	The commenters recommend revising following statement because all sources of PCBs are anthropogenic: “anthropogenic sources of PCBs are listed below.”	The Permittees agree that all PCBs are anthropogenic. The intent of this language was to distinguish Site-related PCBs from urban, non-Site related PCBs.
18	6/13/2013	CCW	Corrective Actions S-SMA-0.25: Section 8.0; S-SMA-2: Section 8.0.	The commenters expressed concern with the following corrective action issues: Not enough exploration of upland BMP implementation and concern with the validity of unsubstantiated objections made in the alternative compliance request to LID implementation because of utility conflicts and to large amount of maintenance, Remaining high risk of bypassed flow at S-SMA-2 scouring sediment and increasing pollutant loading from high runoff volumes. They requested that a bypass option be considered only in conjunction with upland treatments.	**S-SMA-0.25**: Since the alternative compliance request was submitted to EPA, the Laboratory has worked to resolve utility conflicts; utility locations have been incorporated into the design of two LID-enhanced controls that are being constructed this fall under the Individual Permit. In addition to the projects proposed under the alternative compliance request, Individual Permit staff are working with the Laboratory’s Utilities and Infrastructure’s Sustainability Program on potential sustainable landscape project in front of and on the roof of the Otowi Building that incorporate LID concepts. In total, these consist of a • Rip-rap channel and bioretention basin and • Bioretention garden. **S-SMA-2.0** Upland BMP implementation in S-SMA-2.0 has been explored by the Laboratory staff and external consultants. The Laboratory has studied the 50-acre watershed and used the results from an EPA Storm Water Management Model to design the conveyance system described below. Additionally, enhanced controls were installed this summer and certified by DOE and Laboratory managers. The Laboratory has designed a conveyance system that will divert storm water from the parking lot above Site 03-056(c) so the runoff does not come in contact with the SWMU and will allow storm water to be received into the channel at a low velocity. Furthermore, the following design considerations were taken into account to minimize the potential for scouring beneath the outlet: • HDPE was chosen as the pipe material because of the excellent wearing characteristics when subjected to scour by the storm water flows. • The end of the pipe will be located about 2 ft above and 10 ft away from the normal flow line of the stream and out of the seasonal high-water level. • The energy of the water will be dissipated on a concrete splash pad placed over an existing bedrock nose. The approximately 120-ft^2 splash pad will contain 6- to 12-in.-diameter rocks placed to roughen the surface, slow the water, and protect the soft bedrock from erosion. Any design changes made before construction will ensure the potential for scouring is minimized.

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19	6/13/2013	CCW	Corrective Actions S-SMA-0.25: Section 8.0; S-SMA-2: Section 8.0.	The commenters ask that the Permittees consider the removal of pollutants as a corrective action to achieve no exposure under Section E.2(c) of the Individual Permit, especially for SWMU 03-056(c) in S-SMA-2.	As detailed in section 4.1 of the alternative compliance request for S-SMA-2.0, two removal actions have been performed at SWMU 03-056(c) to remediate historical PCB contamination. The second removal action led NMED to issue a certificate of completion with controls on February 18, 2011, for SWMU 03-056(c). In its certificate, NMED stated the nature and extent of contamination were defined, confirmatory sample results indicated the Site met the EPA's PCB cleanup criterion, and the Site poses no potential unacceptable human health and ecological risks from PCBs or volatile organic compounds. Although residual PCBs are being mobilized by storm water moving over the remediated Site, no further removal is feasible at this Site. With the exception of residual PCBs at SWMU 03-056(c) and the possible contribution from SWMU 03-045(b), the Sites in S-SMA-0.25 and S-SMA-2.0 are not the sources of the copper, zinc, PCB, or gross-alpha TAL exceedances. Because the concentrations of these constituents in soil are below background and/or residential screening levels, there are no significant industrial materials to remove or remediate.
20	6/13/2013	CCW	Corrective Actions S-SMA-0.25: Section 8.0; S-SMA-2: Section 8.0.	The commenters expressed relief that the total retention option is not being pursued by the Laboratory yet express concern over the use of the channel as a control measure.	The grade-control structure that installed in the Sandia Canyon wetland is not a control measure under the Individual Permit. As stated on page 34 of the Alternative Compliance Request for S-SMA-2.0, NMED required the Laboratory to build the grade-control structure under the March 2005 Compliance Order on Consent.
21	6/13/2013	CCW	Proposed Alternative Compliance S-SMA-0.25: Section 9.0; S-SMA-2: Section 9.	The commenters encourage the Laboratory to look for opportunities to implement LID in S-SMA-2 and additional opportunities beyond the current proposal at S-SMA-0.25. The commenters provided recommendations in Attachment 1 to their comments, which are included as part of this record.	See response to Comment 6.
22	6/13/2013	CCW	General	The commenters recommend that the alternative compliance approach include a requirement to treat a certain percentage (25%) of impervious surfaces every year.	Comment noted.
23	6/13/2013	CCW	General	The commenters recommend that the Laboratory include the goal to meet TALs in future documents and work plans.	Comment noted.
24	6/13/2013	CCW	General	The commenters recommend that in future permit negotiations, the Permittees focus on management of runoff within each SMA and "guidance and requirements that consider targets for treating untreated impervious areas, recommend practice types, recommend design standards, define maintenance requirements, require monitoring, and more."	Comment noted.
25	6/14/2013	Bruce Yurdin, Surface Water Quality Bureau, NMED	Statistical Methods	The commenter is concerned with the use of an aggregate statistical quantity from the Background Metals Report or "generalized urban and legacy anthropogenic concentration" as an appropriate comparison to pollutants in runoff from SWMUs or areas of concern (AOCs). The commenter suggests using monitoring concentrations directly upgradient or upstream as an alternative comparison.	As discussed in the responses to Comments 15 and 16, the chemical composition of storm water is highly variable and depends on a number of variables, including intensity and duration of a storm, time of dry deposition across the landscape, and the position in the hydrograph from which the samples are collected. The Background Metals Report segregates discrete populations of results to represent different landscapes according to land use, development, and geologic media. When the data are binned, the breadth of the results represents concentrations in a scenario where 95% of the concentrations are represented. As noted in the response to Comment 11, because of the controls installed at Sites, it is not always possible to collect concurrent run-on and runoff samples for direct comparison.
26	6/13/2013	CCW	General	The commenters state that if alternative compliance is granted, widespread use of GI/LID practices to control post-construction runoff in the wider SMA area (S-SMA-2 and S-SMA-.25) should be implemented. More controls should be required at each SMA under the final alternative compliance work plans.	See response to Comment 6.
27	6/13/2013	CCW	General	The commenters assert that if alternative compliance is granted by EPA for these SMAs, the approvals should be accompanied with widespread implementation of post-construction runoff controls such as have been suggested previously to the Laboratory by CCW. The commenters provided recommendations in Attachment 1, which are included as part of this record.	See response to Comment 6.

Attachment 1

Public Comments provided by Communities for Clean Water

Communities For Clean Water

June 14, 2013

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Re: Alternative Compliance at S-SMA-2 and S-SMA-.25

Dear Ms. Jones,

Please accept the following comments on behalf of Communities for Clean Water (CCW) on the Alternative Compliance Requests for S-SMA-2 and S-SMA-.25.

I. Introduction

Communities for Clean Water, a network of community groups working together since 2005 to address water contamination at Los Alamos National Laboratory (LANL), would like to thank LANL for working collaboratively with us over the past several years in seeking solutions to cleanup stormwater pollution. We believe that we have developed a productive working relationship and we hope that we can continue to work together both for the remainder of the current permit and into the future to address water protection and restoration.

CCW, with help from our consultants Biohabitats Inc., has been actively advocating for a holistic approach to stormwater management at LANL for several years now. We are encouraged that LANL has adopted a couple of our suggestions – specifically the construction of a biorention basin and a biorentention garden - in the request for S-SMA-.25 and would like to formally support that component of the request. While we are pleased that these two Low Impact Development (LID) management measures have been incorporated into the request for S-SMA-.25, we do not believe that these two measures alone are adequate. We also have some serious concerns with the proposed alternative compliance approach at S-SMA-2. Specific concerns and suggestions are outlined in our comments below. Generally we believe that substantially more can be done at each SMA to reduce contaminant levels in the runoff. The limited actions proposed in the requests are not adequate to protect water quality and meet Clean Water Act requirements.

LANL has a unique opportunity to be a leader in developing and testing LID stormwater management measures that are effective in the challenging climate of the arid southwest. The Individual Stormwater Permit and the associated alternative compliance requests provide a strong regulatory structure for developing this leadership. We urge both LANL and Environmental Protection Agency (EPA) to rise to the challenge.

II. Background Metals and PCB Reports

A. General Comments

The two reports attached to the alternative compliance requests "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" and " Polychlorinated Biphenyls in Precipitation and Stormwater within the Upper Rio Grande Watershed" present data showing that urban runoff concentrations at LANL frequently exceed target action levels (TALs) for metals and PCBs. As a result, the argument put forward by LANL is that it will not be possible to meet TALs at S-SMA-2 and S-SMA-.25. CCW has a different perspective on these reports. CCW contends that these extensive reports provide very useful information that could be used by LANL to drastically reduce pollutants at Site Monitoring Area (SMA) monitoring locations, again the official points of compliance in the permit, by targeting areas that have been shown to contribute to the urban runoff problem. These reports can help prioritize where to install stormwater management measures to control runoff throughout the urbanized areas at LANL. TALs can potentially be met with enough implementation of BMPs throughout the SMA. CCW urges LANL to capitalize on the extensive resources and effort that went into drafting these reports to work for positive on the ground change in water quality.

B. Background Metals Report

This report contains large amounts of data that have been collected at numerous locations on the laboratory site as well as areas north (Reference Sites) and west (Western Boundary sites). These data lead to the following questions.

- Rainfall data – what types of storms were monitored (e.g., intensities) and were any samples collected during the same storms across all sampling sites? It appears that there is little overlap between urban, reference, and western areas based on Figures 4, 5, and 6.
- The land use, soil type, size, and imperviousness of each watershed sampled as a background or reference should be presented
- TALs in the permit are the water quality standards in the Rio Grande and receiving waters. The report should state this.

In addition, the metals report offers few conclusions about the data and results in difficulty comparing results across areas (i.e., presenting Reference and Western Boundary with Urban Runoff data in same table), but some that were noticed include:

- TALs are for dissolved metals. Urban runoff pollutants that exceeded TALs (mean and median) are copper and zinc. Reference Area and Western Boundary have no exceedances (mean and median).
- Concentrations for typical urban runoff metals (e.g., chromium, copper, nickel, and zinc) were all higher in mean and median than Reference Area and Western Boundary. No analysis was done to determine if the difference is statistically significant.

III. Permit Requirements

A. SMA Approach

The permit very clearly identifies SMA sampling locations as the points of compliance in the permit. LANL actively advocated for the SMA approach in the current permit, assuring CCW and EPA that representative monitoring was feasible at the SMA level. The permit states " SMA locations are based on reasonable site accessibility for sampling purposes and the Permittees' best judgment to ensure that samples taken at a particular point will be representative of discharges from Sites in the drainage area" (Part 1.D.2.). Therefore as the representative monitoring locations SMAs are the points of compliance and LANL should be doing everything possible to reduce TALs at those locations.

If alternative compliance is granted by EPA for these SMAs, the approvals should be accompanied with widespread implementation of post construction runoff controls such as have been suggested previously to LANL staff by CCW. LANL has already started down this path with the two LID controls focused on urban runoff at S-SMA-.25 as proposed in the alternative compliance request for that site. This approach should be developed further and many more controls should be required at each SMA under the final alternative compliance work plans.

There are very clear requirements, as outlined in the permit, for relocating the sampling locations, such as, "The permit may be modified, in accordance with the provisions of 40 CFR 122.62, to relocate a SMA based on a determination that the SMA is no longer representative of the drainage area for a Site or Sites…" Provisions at 40 CFR 122.62 require that any permit modification, such as changing a representative monitoring location, must include a formal process with a public comment period.

B. Section.E.3

Section E.3 of the permit states that if Permittees are unable to certify Completion of Corrective action under the sections E.2.(a) through E.2.(d) of the permit due to "force majeure events, background concentrations of pollutants of concern, site conditions that make it impracticable to install further control measures, or pollutants of concern beyond the Permittees control." The two background studies mentioned above outline pollutant concentrations that are contributed from the urban landscape at LANL, this urban landscape on LANL property is clearly within the permittees control and efforts to control these pollutants should be made.

IV. Alternative Compliance Requests

A. General Observations

The requests contain a lot of information and confusing terminology with limited definitions and clear distinctions. As an example, there are data references to Background, Reference, and Run-on, all of which can be confusing to follow. In some cases, these references appear to relate to the Background Metals Report. Related to this, it is confusing that the background data from the metals report was used as a comparison to the TALs at some points of the reports instead of run-on samples. The run-on samples are site specific and a better representation of runoff concentrations prior to runoff from the SWMU combining and being monitored at the outlet of the SMA. (See Table 5 in both reports).

We agree that the run-on from urban development has higher concentrations of copper than the western boundary and reference areas presented in the Background Metals Report. However, the conclusion that the concentrations measured at the SMA monitoring location are not influenced by the historical use at the solid waste management units (SWMUs) is not fully supported by the data. In fact, the concentrations at the downstream SMA monitoring point <u>are higher</u> than that of the run-on in many cases (e.g., SMA-0.25), which suggests there is an even higher concentration being contributed from another area, which could be the SWMU. We agree that urban runoff values within the SMAs are consistent with other urban runoff data and that there may not be a significant difference between the Site and the urban area runoff (often referred to as run-on). That said, the monitoring set up is not developed so that one can say that the SWMU is *not* contributing a higher concentration of certain pollutants. Inspection of the TAL exceedances seem to support that SWMUs are in fact contributing to higher concentrations, particularly at SMA-0.25.

It appears as though the 95% confidence interval for the background concentrations (taken from the Background Metals Report) is being compared to the SMA concentrations. This doesn't seem justifiable since these are two different statistical populations – the background data is not being developed based on site-specific data.

Several alternative treatment strategies have been identified (by Biohabitats, Inc. for CCW and communicated to LANL at technical meetings and written reports) throughout S-SMA-0.25 (see attachment 1), but many are being rejected (Table 7) for a range of reasons. For every objection, we could enter into more detailed discussion on feasible alternatives or modifications. There are numerous locations to implement retrofits and develop an on-site knowledge base of what works well and what doesn't. To our knowledge, there are no advanced stormwater treatment BMPs on the LANL campus from which to derive conclusions. We view this as a great opportunity to implement, monitor practice performance, and adapt designs so these applications can successfully be applied to clean up laboratory runoff. While potential BMP locations were not previously provided for S-SMA-2, this SMA contains a similar range of

opportunities. We have provided some potential BMPs and BMP locations for S-SMA-2 in attachments 2 and 3.

The requests do not outline any monitoring plans to determine the effectiveness of the alternative compliance approaches. Any approach ultimately included in the alternative compliance workplans for these SMAs must include monitoring.

B. Specific Comments

- Table 5 (both requests):
    - All data for the SMA and run-on samples should be provided, (as an appendix similar to Background Metals Report)
    - How are three run-on samples collected in 2012, yet only two samples were collected at S-SMA-0.25 over the entire monitoring period? Similarly for S-SMA-2?

- Page 2 - MSGP Monitoring Requirements (S-SMA-2 request)
    - The statement that "Under the MSGP, the Laboratory successfully reduced the monitored constituents for the TA-03 building 34 metal shop (Sector AA) from aluminum, iron, nitrate, nitrite nitrogen, and zinc to only zinc." (page 2)" is made. The proposal should include more specifics about how the reduction was accomplished. Were these contaminants cleaned up or were sampling requirements just dropped? If so why were they dropped?

- Page 9 - Sites 03-045(b) and 045(c) (S-SMA-2 request)
    - LANL is requesting that these two Sites be removed from the Individual Permit because they are active permitted NPDES outfalls. The SWMU boundary is the drainage below the outfall pipe, not the pipe itself. NPDES permits require sampling at the end of the pipe and not in the receiving channel and therefore NPDES permit limits won't apply to contaminants already found in the channel (which again is the SWMU).
    - The Stormwater Pollution Prevention Plan (SWPPP) lists "organic chemicals, metals, and radionuclides" as potential contaminants historically handled at the site (2012 Update to the SWPPP – EP2013-0041), indicating that there is a historic source of contaminants at the site.
    - Why is 03-045 monitored for PCBs and 03-045(c) isn't under the NPDES permit? Under the Individual Permit (IP) both sites are listed as high priority PCB sites so even if NPDES coverage was adequate for monitoring and controlling discharges from the SWMUs, the sampling requirements in the NPDES permit are not comprehensive enough to cover PCB concerns at 03-045(c).
    - CCW maintains that these sites should not be removed from the permit.

- Page 15 – Stats Description (S-SMA-0.25 request)

- Why was the UTL used for comparison? No justification is provided in the narrative. It is more appropriate to collect enough samples from the SMAs to compute UTLs and compare those with Western Boundary, Reference Area, and Urban runoff UTLs. Shouldn't the treatment within the SWMU and/or SMA strive to meet the concentrations seen in the Western Boundary and Reference Area?

- Page 15 – Copper – (S-SMA-.25 request)
  - The request states "Site-specific storm water run-on samples collected within the SMA, but parallel to the Sites, contained copper at concentration ranging from 4.05 µg/L to 6.75 µg/L, greater than the TAL of 4.3 µg/L in two of three samples. These data strongly indicate the copper is associated with storm water run-on from urban development, not with the historical use of industrial materials at the Sites." Yet the concentrations found at the S-SMA-.25 (9.7-10.9 ug/L) were substantially higher than the run-on samples, seemingly indicating that the sites are a source of copper.

- Page 16- Zinc (S-SMA-.25 request)
  - Run-on samples collected within the SMA, but parallel to the Sites, contained zinc at concentrations ranging from 21.8 µg/L to 60.1 µg/L. The results at the site ranged from 52.9 to 74.4 ug/L, which is higher than the parallel run-on site indicating that the permitted site is a source of zinc.

- Page 21 – Sources of PCBs (S-SMA-2 request)
  - The request states that the "anthropogenic sources of PCBs are listed below". ALL sources of PCBs are anthropogenic. This terminology should be changed in the final alternative compliance request.

- Corrective Actions (Section 8.0 in both requests)
  - Upland BMP implementation is not fully explored within S-SMA-0.25 or S-SMA-2. Objections due to "a large amount of maintenance" or infeasible due to utility conflicts are not substantiated. Many opportunities exist in both SMAs. No opportunities were explored or pursued in S-SMA-2.
  - Section 8.2 (both requests) outlines a total retention option that involves using the land bridge, located in the Sandia Canyon channel itself, to create a massive retention pond as a potential control measure. CCW is relieved that this option is not being pursued by LANL as a viable option. CCW is concerned about using the channel of a water of the United States as a control measure. This approach would not meet CWA requirements.
  - Bypassing flows in S-SMA-2 has good intent, but there is still the high risk that bypassed flow could carry substantial energy that could scour sediment that contains PCBs, and thus in fact increasing pollutant loading in the receiving stream. This is the same point made by the LANL in the context of covering the

SWMU with shotcrete or a comparable material. A bypass option should be considered in conjunction with upland options that can reduce runoff volumes.

- Sections E.2.(a) through E.2.(d) of the permit outline completion of corrective action options. E.2.(c) outlines a corrective action option of totally eliminating exposure of pollutants to stormwater. A method of totally eliminating exposure of pollutants to stormwater would be removal of pollutants from the site. CCW had advocated for a separate removal of pollutants corrective action option during the drafting of the permit and we were assured by LANL and EPA that E.2(c) would cover this option. Unfortunately the removal of pollutants from the site was not considered in either request (Sections 8.3 of each request). The removal of pollutants may especially be applicable at site 03-056(c) in S-SMA-2 but should be considered at all sites in each request.

- Proposed Alternative Compliance (Section 9.0 in both requests)
  - LANL is proposing to construct two LID practices in S-SMA-0.25, which is a good start. This seems to acknowledge that there is benefit to implementing upland BMPs and monitoring the effectiveness of such practices. We encourage LANL to continue to look for additional implementation locations within S-SMA-0.25 as well as S-SMA-2. To suggest that there are no opportunities in S-SMA-2 (the report does not present any) indicates that full consideration of options and their effectiveness has not occurred. It may be possible to meet the TALs with sufficient coverage in both SMAs.

C. Recommendations

- Urban run-on areas warrant treatment in the same manner as the SWMUs, and that TALs can potentially be met with enough implementation of BMPs throughout the SMA. If alternative compliance were granted, it should be accompanied with widespread implementation of post construction runoff controls such as have been suggested previously to LANL staff. Several opportunities exist for implementation. Several suggestions, which should not be considered an exhaustive list, have been provided in attachments 1-3. CCW is willing to work with LANL to continue to develop plans for LID practices and controls at both SMAs.
- With implementation of LID practices, an effort should be made to monitor their pollutant removal effectiveness and apply that information for design adaptations and wider implementation. This could provide LANL to use its scientific and technical expertise to become a leader in developing effective LID practices in the arid southwest.
- Monitoring to determine the effectiveness of the final alternative compliance approach must be a part of any alternative compliance workplan no matter what type of alternative compliance approach implemented.
- Maintenance of control measures should be required in any final Alternative Compliance workplan.
- An alternative compliance approach for these two urban SMAs that sets a percentage of required treatment of impervious surface (such as treatment of 25% of impervious

surface every year) should be considered.

- The goal of meeting TALs should be included in each final workplan.
- Future permits should focus management of runoff within the entirety of each SMA, with more specific guidance and requirements that consider targets for treating untreated impervious areas, recommend practice types, recommend design standards, define maintenance requirements, require monitoring and more.

Sincerely,

For Communities for Clean Water

Rachel Conn
Amigos Bravos
rconn@amigosbravos.org
P.O. Box 238
Taos, NM 87571

Marian Naranjo
Honor Our Pueblo Existence
mariannaranjo@icloud.com

Joni Arends
Concerned Citizens for Nuclear Safety
jarends@nuclearactive.org

CC:
EPA
NMED Surface Water Quality Bureau

Stormwater Management Principles

- Slow stormwater runoff velocity and reduce volumes
- **Settle , capture, bind, and/or remove contaminated** sediments
- Convert ornamental landscape areas to biofiltration
- Amend soil with compost, improve soil microbiology

SWMU A

Issues

- **Contaminated materials from building and existing** drainage system in stormwater runoff
- Drainage passes through to SWMU B

Opportunities

- Disconnect **rooftop and surface runoff to cisterns and bioretention**
- Install sediment traps

SWMU B

Issues

- Concentrated contaminants from campus, serves as main drainageway
- **Trees and stream are ecologically and aesthetically valuable**

Opportunities

- Expand **existing channel** to larger, wider wetland to slow and filter runoff
- Amend soil with compost
- Add native and phytoremediating plant species

Legend

- existing storm drain
- existing gabion
- proposed bioretention rain garden
- proposed wetland
- proposed phytoremediation planting
- proposed rainwater cistern
- proposed sediment trap / vortex separator

*Locations and footprints are for illustrative purposes only and design requires confirmation

LANL SWMU Drainage Area & SW BMPs

Sediment Trap / Vortex Separator

Rainwater Cistern

Bioretention/Biofiltration

Pond/Wetland

Phytoremediation

LOS ALAMOS NATIONAL LAB	LANL CAMPUS SWMU AND STORMWATER BMPS	DATE: 1.26.12	NSI a wholly owned subsidiary of Biohabitats

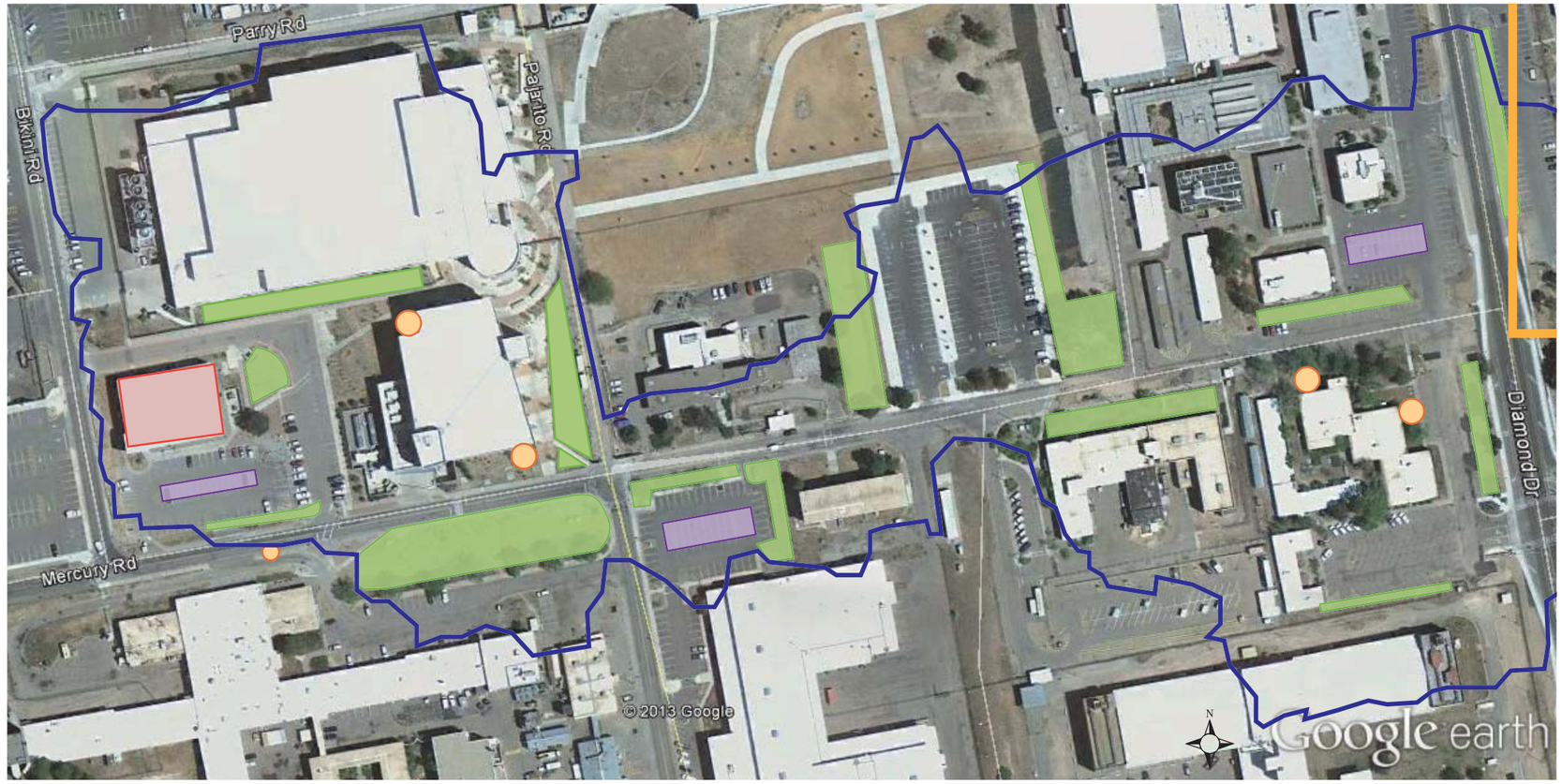
Rainwater Cistern

Bioretention/Biofiltration

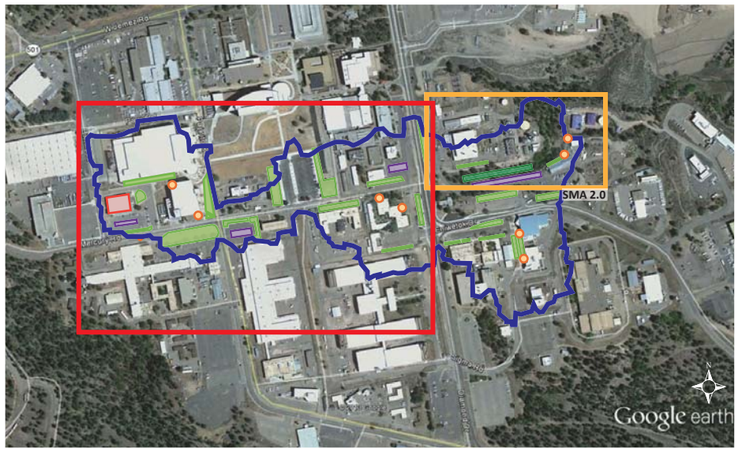
Regenerative Stormwater Conveyance

Permeable Pavement

Green Roof



LANL SWMU Drainage Area & SW BMPs



Context Map

Stormwater Management Principles

- Slow stormwater runoff velocity
- Settle sediments, capture metals, PCBs and other metals
- Convert impervious areas to biofiltration or landscaping
- Amend soil with compost, increase soil microbiology

Issues

- Urban pollutants of concern from impervious areas
- Very high percentage of untreated impervious area

Opportunities

- Disconnect rooftop runoff to cisterns and bioretention
- Collect surface runoff in bioretention areas
- Reduce impervious cover
- Attenuate/dissipate flows

Legend

- drainage area*
- proposed rainwater cistern*
- proposed bioretention rain garden*
- proposed regenerative stormwater conveyance*
- proposed permeable pavement*
- proposed green roof*

*Locations to be confirmed through future analysis

LOS ALAMOS NATIONAL LABS

LANL CAMPUS S-SMA-2.0 STORMWATER BMPS - WEST DRAINAGE

DATE: 6.11.13

Biohabitats
SOUTHWEST BASIN & RANGE BIOREGION

Stormwater Management Principles

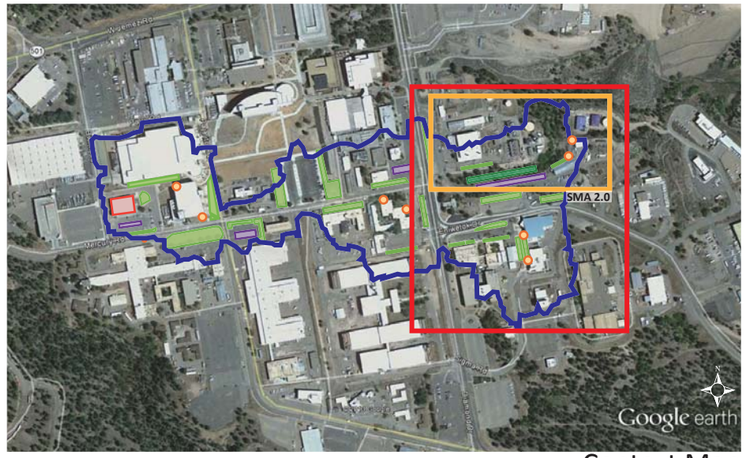
- Slow stormwater runoff velocity to minimize sediment transport from site and within downstream channels which could contain dispersed pollutants
- Settle sediment, capture metals, PCBs, and other potential contaminants
- Convert impervious areas to biofiltration and reduce impervious area to minimize runoff
- Amend soil with compost, increase soil microbiology

Issues

- Urban pollutants of concern in runoff from impervious areas, including rooftops
- Drainage over SWMU soils and through channel that may contain dispersed pollutants from previous SWMU runoff and particle migration; High velocity flows are more likely to resuspend and transport any pollutants downstream

Opportunities

- Disconnect rooftop runoff to cisterns and bioretention
- Collect surface runoff in bioretention areas
- Retain runoff where possible and attenuate/dissapate flow
- Remediate, cover, or divert flows away from contaminated areas

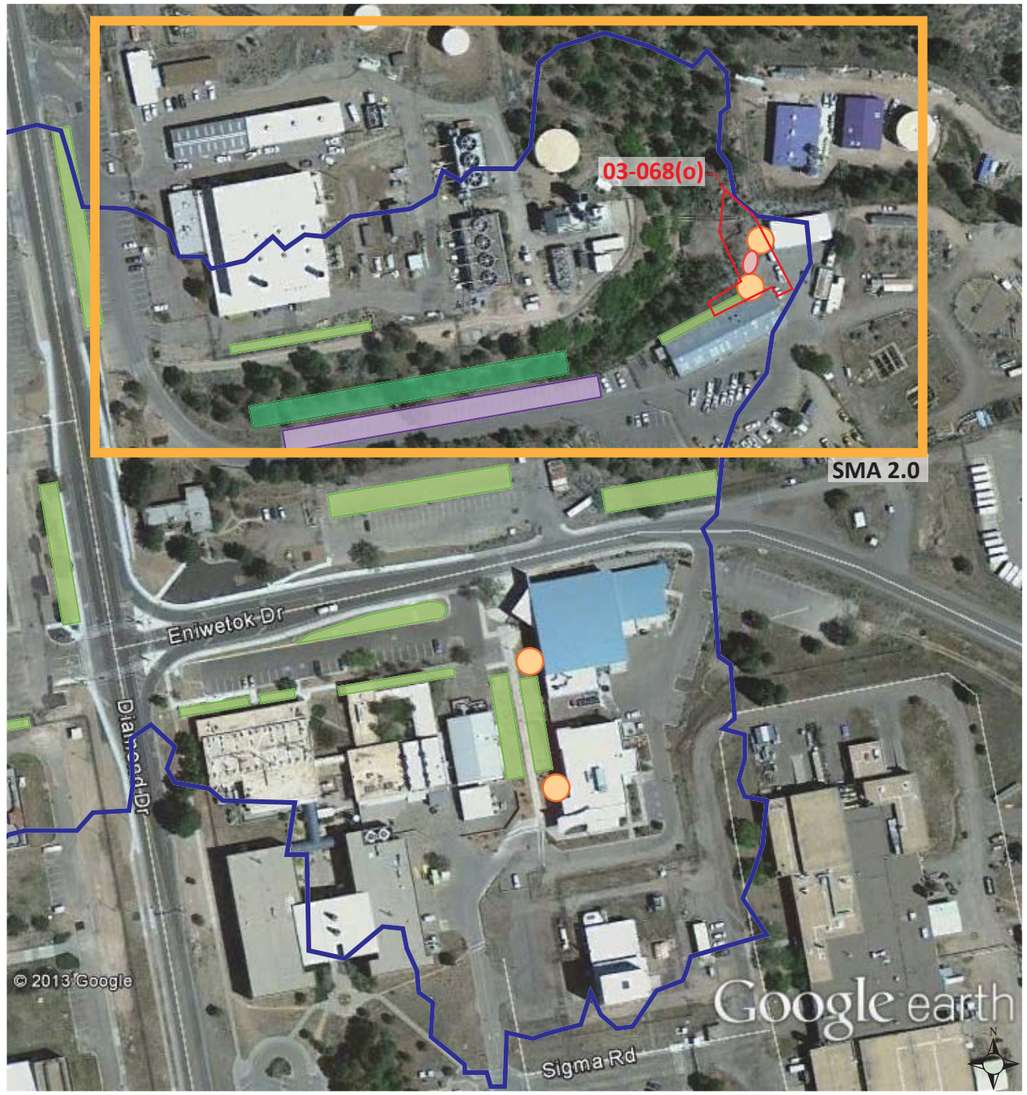


Context Map

Legend

- drainage area*
- proposed rainwater cistern*
- proposed bioretention rain garden*
- proposed regenerative stormwater conveyance*
- proposed permeable pavement*
- proposed detention pond*

*Locations to be confirmed through future analysis



LANL SWMU Drainage Area & SW BMPs


Rainwater Cistern


Bioretention/Biofiltration


Regenerative Stormwater Conveyance


Permeable Pavement


Detention Pond

LOS ALAMOS NATIONAL LABS	LANL CAMPUS S-SMA-2.0 STORMWATER BMPS - EAST DRAINAGE	DATE: 6.11.13	Biohabitats SOUTHWEST BASIN & RANGE BIOREGION

Attachment 2

Public Comments provided by the New Mexico Environment Department

From: owner-envoutreach@maillist.lanl.gov [mailto:owner-envoutreach@maillist.lanl.gov] On Behalf Of Yurdin, Bruce, NMENV
Sent: Friday, June 14, 2013 2:36 PM
To: envoutreach@lanl.gov; Veenis, Steve; david.rhodes@nnsa.doe.gov
Cc: Trujillo, Erin S, NMENV; Holcomb, Sarah, NMENV; Hogan, James, NMENV; chen.isaac@epa.gov; Ford-Schmid, Ralph, NMENV; Guevara, Lynette, NMENV; Yanicak, Stephen M
Subject: NM0030759, LANL's Alternative Compliance Request, Comments

NMED Surface Water Quality Bureau (SWQB) obtained a copy of LANL's NPDES Stormwater Individual Permit NM0030759 Request for Alternative Compliance for S-SMA-2 and S-SMA-0.25 to USEPA dated April 30, 2013 and LANL's "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" dated April 2013 (EP 2013-0037) report. The metals concentrations and radioactivity report was not part of the request package, but is used as a basis for the Request for Alternative Compliance. The Request for Alternative Compliance, in both cases, states that a literature review was conducted to determine the cause(s) of zinc and copper exceedances in urban stormwater. Due to the findings of that study, the regional background metals study was conducted.

SWQB has some concerns with using the cited report information at specific sites. It appears that LANL used an aggregate statistical quantity in what is referred to as "urbanized areas" as a "background." SWQB appreciates the substantial work done to date to assess metal availability in areas currently or previously under control by the Lab on the Pajarito Plateau, but the use of a generalized urban and legacy anthropogenic concentration does not appear appropriate to assess the pollutants running off Solid Waste Management Units (SWMUs) or Areas of Concern (AOC). For example, monitoring concentrations directly upgradient or upstream of each SWMU may be more appropriate than using an aggregate number in attempting to determine relative downgradient or downstream changes in pollutant concentrations.

If you would like to further discuss LANL's Request for Alternative Compliance with NMED SWQB, please contact Erin Trujillo at 505-827-0418 or me at 505-827-2795, or by e-mail at erin.trujillo@state.nm.us <mailto:erin.trujillo@state.nm.us> and bruce.yurdin@state.nm.us <mailto:bruce.yurdin@state.nm.us> .

Bruce J. Yurdin

Manager, Point Source Regulation Section

Surface Water Quality Bureau

New Mexico Environment Department

1190 South St. Francis Drive

Santa Fe, NM 87502

Phone: 505-827-2795

Fax: 505-827-0160

Attachment 3

Public Comments provided by the General Public

The following comments were received by email sent to envoutreach@lanl.gov.

Date of Email	Sender	Email
6/11/13	Mr. Abraham Cobb 8 Vista Grande Circle Santa Fe , NM 87508	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/11/13	Ms. Linda Carlson 107 West 86th Street New York, NY 10024	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/11/13	Dr. Phyllis Wilcox 1414 Girard SE Albuquerque, NM 87106	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

Date of Email	Sender	Email
6/11/13	Ms. Anne Salzmann 110 Verano Loop Santa Fe, NM 87508	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/11/13	Mrs. Sheila O'Malley 316 Spruce Lane Taos, NM 87571	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/11/13	Mr. Merlin Emrys 29 Chapala Road Santa Fe, NM 87508	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/11/13	Dr. Diana Hartel 273 Lower Ranchitos Rd Taos, NM 87571	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Ms. Kathleen Clark 1212 Vista Verde Crt Santa Fe, NM 87501	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Ms. Jeannie Magill 5 Grayhawk Place Santa Fe, NM 87508	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/12/13	Ms. Kay Greene 14 Canada del Rancho Santa Fe, NM 87508	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Ms. Sarah Sisk 11 Camino del Gallo Lamy, NM 87540	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Mr. Erik Fredrickson 205 Dartmouth Dr. SE Albuquerque, NM 87106	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/12/13	Ms. Kristin Ulibarri 50 Leroux Rd El Prado, NM 87529	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Dr. Susan Selbin 2431 Northwest Cir NW Auquerque, NM 87104	Dear Los Alamos National Laboratory, I live in ABQ and I care bout the health of Rio Grande Watershed. Please consider my.comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Mr. Stephen Schmidt 21 Calle Debra SANTA FE, NM 87507	Dear Los Alamos National Laboratory, As a resident of Santa Fe who gets water from the Rio Grande and is therefore very concerned about it's quality, I would like to submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. I would like to see simple measures to control pollutants, like cisterns for roof runoff and bioretention gardens around each SMA to reduce chemical and metal pollutants. Such low tech solutions along with high tech monitoring afterwards would be cost effective and allow evaluation of their effectiveness, and enable tweaking at low cost than a complicated high tech sollution. Green solutions are the best long term solution for all new buildings and old renovations. I hope Los Alamos National Laboratory will become the leader in these measures and an example to the nation.

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6/12/13	Ms. A Chandler 87 Fayette st Santa Fe, NM 87505	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Ms. Barbara Durner 6346 Roadrunner Loop Rio Rancho, NM 87144	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Mr. Douglas Conwell 1616 Paseo Conquistadora Santa Fe, NM 87504	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/12/13	Mr. Simon Teolis 7 Goodnight Trail East Santa Fe, NM 87506	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Ms. Glenda Fletcher 675 County Rd 57 Velarde, NM 87582	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/12/13	Mr. Gary Brookrt 550 Canyon Rd Santa Fe, NM 87501	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/12/13	Ms. Gaia Mika 425 Valverde Commons Dr Taos, NM 87571	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/13/13	Mr. Andrew Gold 6545 Richards Ave Santa Fe, NM 87508	As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/13/13	Ms. Melissa Epple 20 Village Lane Santa Fe, NM 87505	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

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6/13/13	Ms. Dominique Mazeaud 1352 Bishops Lodge Road Santa Fe, NM 87506	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/13/13	Ms. Kristina Fisher 1608 Camino la Canada Santa Fe, NM 87501	Dear Los Alamos National Laboratory, As a lifelong New Mexican who cares about the health of Rio Grande Watershed--the source of much of our drinking water here in Santa Fe--I am writing to submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25, I am concerned that the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. I encourage you to consider other innovative approaches to deal with runoff and decrease the levels of contaminants flowing through Sandia Canyon and into the Rio Grande. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would greatly reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance should be done after installation of these control measures to evaluate their effectiveness. Contrary to statements made in the S-SMA-.25 proposal, cisterns do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you will step up to the challenge and take advantage of this opportunity.
6/14/13	Ms. Susan Verkamp 1127 Bernabe Garcia Lane El Prado, NM 87529	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

Date of Email	Sender	Email
6/14/13	Ms. Joan Quinn 706 Loma Vista NE Albuquerque, NM 87106	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.
6/14/13	Mr. Bruce Stroud 141 Dona Ana Drive Ranchos de Taos, NM 87557	Dear Los Alamos National Laboratory, As a citizen who cares about the health of Rio Grande Watershed, I submit the following comments on the Alternative Compliance Request for S-SMA-2 and S-SMA-.25 in Sandia Canyon. While I am encouraged by Los Alamos National Laboratory's (LANL's) willingness to incorporate some Green Infrastructure and Low Impact Development concepts into the alternative compliance proposal for S-SMA-.25 the two proposals do not adequately protect water quality in Sandia Canyon and the Rio Grande. A more holistic approach to addressing runoff must be adopted to decrease levels of contaminants flowing through Sandia Canyon and into the Rio Grande. To meet Target Action Levels (TALs) for pollutants in the stormwater more must be done at each SMA. Specifically, control measures such as cisterns to capture roof runoff and bioretention gardens placed strategically around each SMA would drastically reduce PCBs and heavy metals found in the stormwater runoff In addition, regular monitoring and maintenance must be done after installation of these control measures to evaluate their effectiveness. Cisterns, contrary to statements made in the S-SMA-.25 proposal, do not require an unreasonable amount of maintenance and should be incorporated, not only into these alternative compliance proposals, but broadly across LANL property. In general, a much more proactive approach to retrofitting existing buildings as well as incorporating green stormwater practices into new buildings should be a priority at LANL. Los Alamos National Laboratory has a unique opportunity to be a leader in the arid southwest in developing effective green measures to control stormwater and protect the Rio Grande. I hope you step up to the challenge and capatilize on this opportunity.

Attachment 4

Alternative Compliance Request for S-SMA-2, Revision 1

Alternative Compliance Request for S-SMA-2, Revision 1

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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) and managed by Los Alamos National Security, LLC (LANS). The Laboratory, located in Los Alamos County in northern New Mexico, covers approximately 36 mi^2 (Figure 1). It is situated on the Pajarito Plateau, which is made up of a series of finger-like 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 National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (the Individual Permit or Permit) to DOE and LANS (collectively, the Permittees). The Individual Permit incorporating the latest modifications became effective on November 1, 2010 (EPA 2010).

Site monitoring area (SMA) S-SMA-2 contains four solid waste management units (SWMUs) or Sites, three of which are the subject of this alternative compliance request. S-SMA-2 is located in the central portion of Technical Area 03 (TA-03), as shown in Figure 2. Confirmation monitoring samples collected in 2011 from S-SMA-2 showed detections of copper, zinc, 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 E.3 of the Individual Permit for the Sites located within this SMA. The deadline for completing corrective action is November 1, 2013, because the four Sites in S-SMA-2 are high priority.

Under the Individual Permit, the Permittees can place a Site into Alternative Compliance where they have installed measures to minimize pollutants in their storm water discharges as required by Part I.A of the Permit at a Site or Sites but are unable to certify completion of corrective action under Sections E.2(a) through E.2(d) (individually or collectively). As described below, the Permittees have determined that three of the four Sites within this SMA, Sites 03-045(b), 03-045(c), and 03-056(c), can achieve completion of corrective action only through the alternative compliance process 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 March 2005 Compliance Order on Consent (Consent Order), administered by the New Mexico Environment Department (NMED), and its associated corrective action processes. This section also describes the path forward for Site 03-012(b).
- *Section 3.0, Overview of the Alternative Compliance Process,* summarizes the requirements in Part I.E.3(b) for making an alternative compliance request to EPA.
- *Section 4.0, Site Descriptions,* summarizes the historical operations that led to the identification of Sites in S-SMA-2 as SWMUs in the 1990 SWMU Report (LANL 1990), the current use of the Sites, 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 S-SMA-2,* details the baseline control measures that were installed in S-SMA-2.
- *Section 6.0, Storm Water Monitoring Results,* describes the confirmation monitoring results and TAL exceedances.

- *Section 7.0, Basis of Alternative Compliance Request,* summarizes the underlying studies and technical information that led the Permittees to conclude certification of completion of corrective action cannot be achieved under Parts I.E.2(a) through 2(d).
- *Section 8.0, Evaluation of Corrective Action Options,* details the Permittees' evaluation of each of the corrective action options in Parts I.E.2(a) through 2(d) and the basis for the conclusion that certification of completion of corrective action is not possible.
- *Section 9.0, Proposed Alternative Compliance Approach,* describes the storm water controls proposed by the Permittees to achieve completion of corrective action under Part I.E.3.

2.0 REGULATORY FRAMEWORK

2.1 Background

The Individual Permit regulates storm water discharges associated with industrial activities from specified Sites. The Individual Permit does not, however, regulate storm water discharges associated with current conventional industrial activities at the Laboratory. This distinction is important at TA-03, which is subject to the Laboratory's NPDES Multi-Sector General Permit ([MSGP] No. NMR05GB21). The covered industrial sectors that apply to TA-03 are Sector AA, fabricated metal products, and Sector O, steam electric-generating facilities. Pursuant to the MSGP, the Laboratory has site-specific storm water pollution prevention plans (SWPPPs) and performs benchmark storm water monitoring for the two relevant industrial sectors within TA-03. The SWPPP is a written assessment of potential sources of pollutants in storm water runoff and the control measures that are implemented at each site to minimize the discharge of these pollutants in runoff. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting.

Under the MSGP, the Laboratory successfully reduced the monitored constituents for the TA-03 building 34 metal shop (Sector AA) from aluminum, iron, nitrate, nitrite nitrogen, and zinc to only zinc. The TA-03 power and steam plant (Sector O) is currently monitored for iron. In addition, three NPDES-permitted outfalls located in TA-03 (Figure 3) are currently monitored for the following pollutants: total residual chlorine, E. coli, total suspended solids, aluminum, phosphorous, copper, PCBs, and whole effluent toxicity.

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

The Sites regulated under the Individual Permit are a subset of the SWMUs and areas of concern (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).

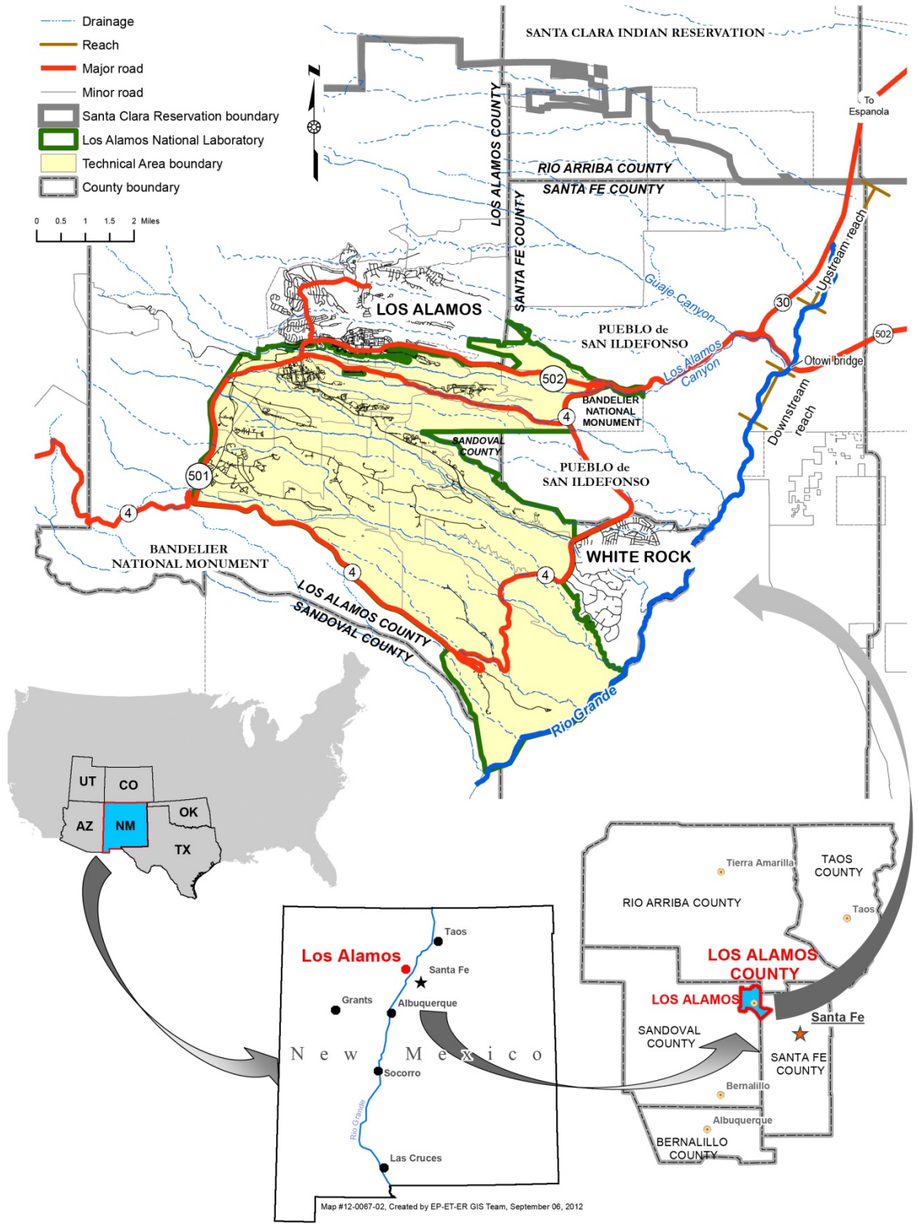

Figure 1 Location of the Laboratory with insets of New Mexico State and Los Alamos County

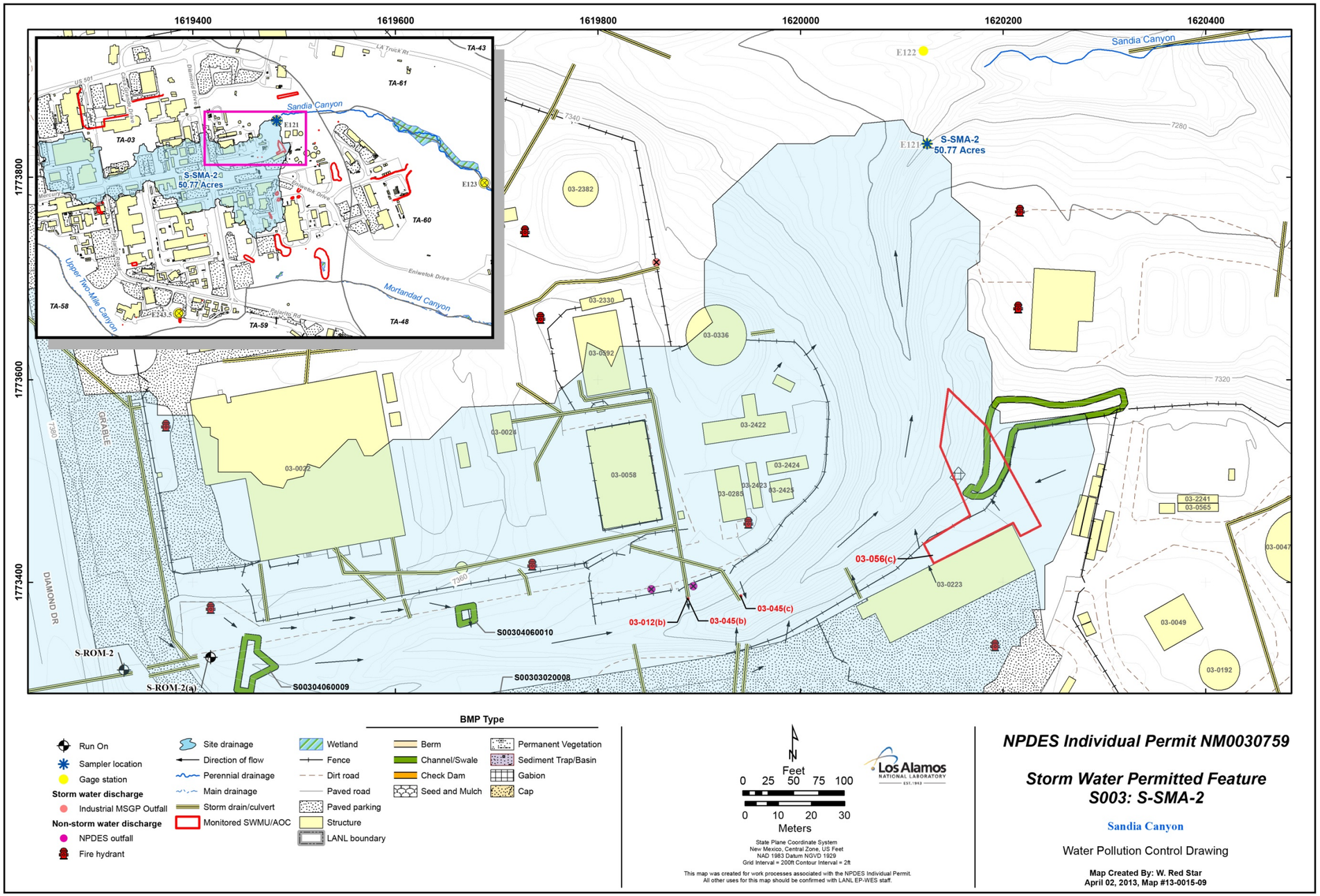

Figure 2 **Project map of S-SMA-2 showing monitored Sites, sampler locations, gage stations, and baseline controls**

Figure 3 NPDES-permitted outfalls in TA-03

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 identification and investigation of SWMUs and AOCs is an iterative process. The initial identification process is conservative—that is, it errs on the side of inclusion if there is any indication in the record 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 target analyte list metals, total cyanide, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), PCBs, and nitrate and perchlorate.

As the phased investigations proceed under the Consent Order, some AOCs and SWMUs will be eligible for no further action status (e.g., the data reveal no hazardous constituents were released). For the remaining SWMUs and AOCs, the phased 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 the Site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. The investigation and remediation of SWMUs and AOCs under the Consent Order began before the effective date of the Individual Permit and continues concurrently with implementation of the Permit.

A Site that has 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 is exposed to storm water (e.g., not capped or subsurface); (2) the SWMU/AOC contains "significant industrial material" (e.g., not cleaned up or has contamination in place); and (3) the SWMU/AOC potentially impacts surface 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 Permittees' storm water discharges associated with historical industrial activities from specified Sites. The Permittees are required to implement site-specific control measures (including BMPs) to address the nonnumeric technology-based effluent limits, as necessary, to minimize pollutants from the Sites in their storm water discharges.

The Permit establishes TALs that are equivalent to New Mexico State water-quality criteria. These TALs are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. That is, confirmation monitoring sample results for an SMA are compared with applicable TALs. If one or more confirmation monitoring results exceeds a TAL, the Permittees must take corrective action. Part I.E.2 of the Individual Permit defines "completion of corrective action" as follows:

- Analytical results from confirmation sampling show pollutant concentrations for all pollutants of concern 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 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" (Figure 4). 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.

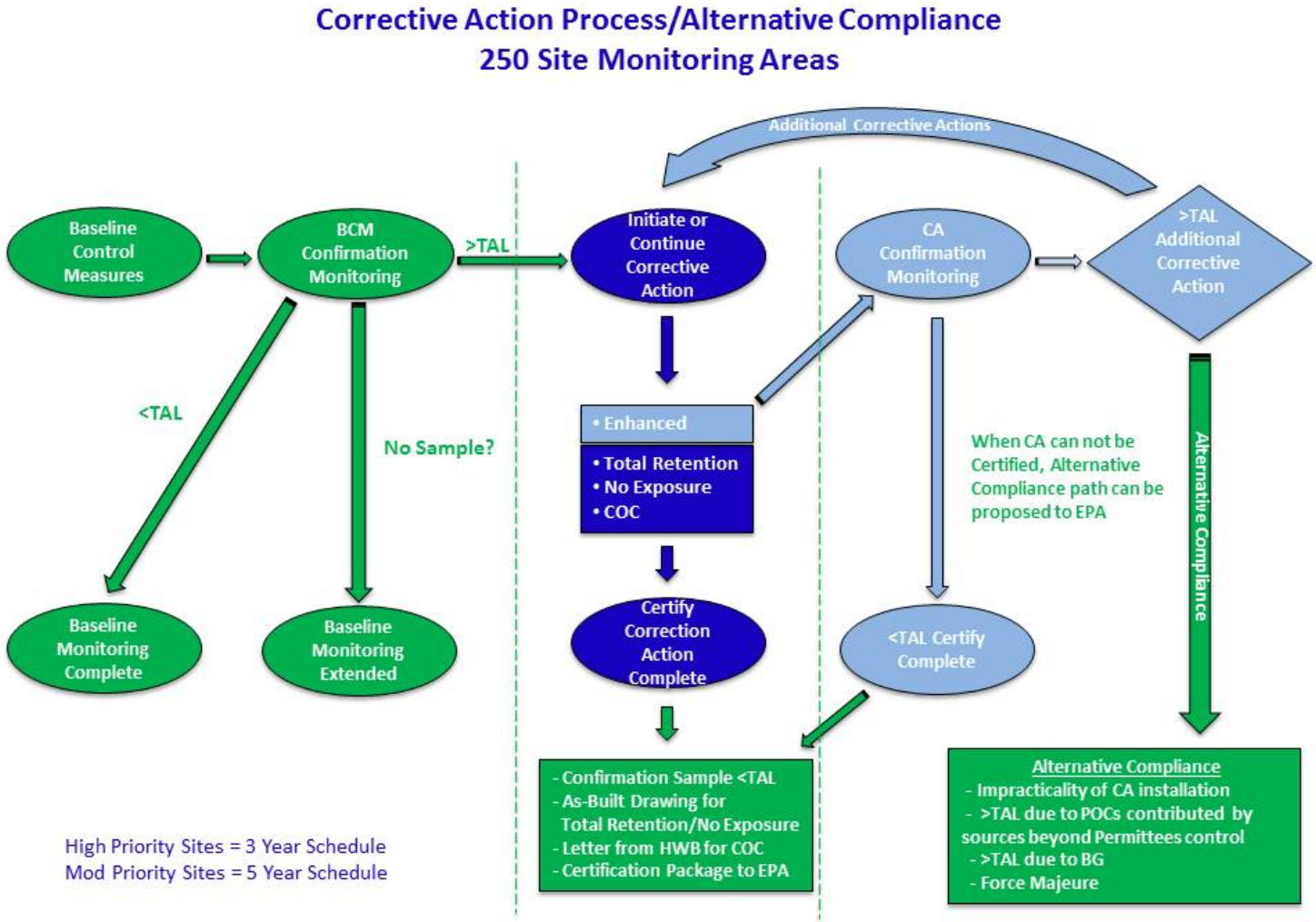

Figure 4 **Flow chart of the corrective action process/alternative compliance**

2.2 Path Forward for Site 03-012(b)

Four Sites are located within S-SMA-2: 03-012(b), 03-045(b), 03-045(c), and 03-056(c). One of these four Sites, Site 03-012(b), is not included in this alternative compliance request. The path forward for this Site is discussed below.

Site 03-012(b) was identified in the 1990 SWMU Report (LANL 1990) because of operational releases of hexavalent chromium from the TA-03 power plant (building 03-22) and associated cooling towers, including cooling tower drift (Figure 2). A gas turbine generator and cogeneration plant, along with supporting utilities, were installed east of the power plant within the eastern portion of Site 03-012(b) in 2007, and the original power plant is maintained for backup purposes. Industrial materials historically associated with operation of the TA-03 power plant include chromium, which was used as an additive to cooling water until the early 1970s, and petroleum products associated with power plant operations.

The distinction between Sites 03-012(b) and 03-045(b) is often not clear in historical documents because they are associated with the same outfall. Site 03-012(b) was intended to address only chromium releases associated with the power plant cooling water. Although chromium was released from the cooling tower outfall as well as by drift, discharge of chromium from the outfall ceased before the outfall's NPDES permit was issued. Sites 03-012(b) and 03-045(b) are physically the same outfall but address releases of different materials at different time periods. That is, SWMU 03 012(b) is associated with releases of chromated cooling water, which occurred until the mid-1970s, and SWMU 03-045(b) is associated with permitted discharges from the outfall, which occurred later. For the purposes of the Consent Order investigation and report, it was not practical to distinguish the releases associated with the same outfall. Thus, releases from the outfall as represented by both SWMUs 03-012(b) and 03-045(b) were addressed by the investigation of SWMU 03-045(b). The investigation of SWMU 03-012(b) was limited to chromium releases from cooling tower drift.

Site 03-012(b) is eligible for a certificate of completion under the Consent Order upon NMED approval of the Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area (LANL 2013) because all investigation results for SWMU 03-012(b) indicate the nature and extent of contamination are defined and the site poses no unacceptable risk to human health and the environment under current and reasonably foreseeable future land use. Investigation results were less than the residential soil screening levels (SSLs). The Individual Permit requires that the Permittees complete corrective action at high priority Sites within 3 yr of the Permit's effective date of November 1, 2010. As discussed during the October 29, 2012, meeting between EPA and the Permittees, DOE, LANS, and NMED have established a technical team under the January 5, 2012, Framework Agreement to review the characterization efforts undertaken to date pursuant to the Consent Order to identify those sites where the nature and extent of contamination have been adequately characterized and to shift efforts to cleanup for those sites. The Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, which includes Site 03-012(b), was submitted to NMED on August 27, 2013, and recommends Site 03-012(b) for corrective action complete without controls.

To allow time for NMED to review and approve the Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, the Permittees will submit a request for force majeure pursuant to Part I.E.4(c) by September 20, 2013. Part I.E.4(c) provides that EPA may approve an extension to this deadline if the Permittees can demonstrate a "force majeure" has resulted, or will result, in a delay in meeting the obligation to complete corrective action. Force majeure includes, among other things, "*the inability to obtain the necessary authorizations, approvals, permits or licenses due to an action or inaction by another governmental authority*" (emphasis added).

3.0 OVERVIEW OF ALTERNATIVE COMPLIANCE PROCESS

The Permittees may seek to place a Site or Sites into alternative compliance when 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. Part I.E.3(b) requires the Permittees to file a written request with EPA on, or at least 6 mo before, the applicable deadlines for completion of corrective action. The applicable deadlines to complete corrective action at high priority Sites and moderate priority Sites are October 31, 2013, and October 31, 2015, respectively.

If EPA grants the alternative compliance request in whole or in part, it will issue a new individually tailored work plan for the Site or Sites. EPA will also extend the compliance deadline for completion of corrective action, as necessary, to implement this work plan. 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 Parts 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 their 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 and sedimentation and run-on and runoff controls identified in Part I.A were installed as baseline controls measures within the first 6 mo of the effective date of the Permit, and certifications of completion 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 Parts 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 pollutants of concern, site conditions that make installing further control measures impracticable, or pollutants of concern contributed by sources beyond the Permittees' control. This list of provides examples of the type of conditions that EPA will consider as the basis for an alternative requirements request; it is not an inclusive list.

The third requirement is that the Permittees 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. Although not required by the Individual Permit, the Permittees have scheduled a public meeting on June 4, 2013, at Fuller Lodge in Los Alamos, New Mexico.

The Permittees issued a public notice of issuance of the alternative compliance request and the public meeting by publishing a notice in the *Los Alamos Monitor* and the *Santa Fe New Mexican*, by mailing a copy of the notice to those individuals on the NMED-maintained LANL Facility Mailing List and to NMED and by posting the notice on the Individual Permit section of the Laboratory's public website. This public notice included the following:

- The subject, the time, and the place of the public meeting and the ways in which interested persons may present their views;

- 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 and the public meeting, the Permittees prepared a written response to all relevant and significant comments and concerns raised during the comment period. This response will be provided to each person who requests a copy in writing by mail or email, including those who check the option for a copy on the online comment submittal form. The response will also be posted in the Individual Permit section of the Laboratory's public website.

During an April 10, 2013, meeting with EPA, the Permittees asked if an alternative compliance request could be revised in response to public comment. EPA replied in the affirmative and asked the Permittees to provide EPA with two copies: one in red-line strike out and one with the changes accepted. The Permittees have revised the Alternative Compliance Request for S-SMA-2.0 in response to Comment 13 by members of Communities for Clean Water:

> The commenters maintain that sites 03-045(b) and 03-045(c) should not be removed from the Individual Permit and provide the following justification:
>
> - The SWMU boundaries for 03-045(b) and 03-045(c) consist of the pipe and the drainage below the outfall pipe;
> - The Storm Water Discharge Pollution Prevention Plan lists "organic chemicals, metals, and radionuclides" as potential contaminants historically handled at the site; and
> - Site 03-045(c) is not monitored for PCBs under the NPDES outfall permit. It is a high priority site under the Individual Permit and should be monitored for PCBs.

As detailed in sections 4.2 and 7.1, copper and zinc are not associated with industrial materials historically managed at Sites 03-045(b) and 03-045(c), and Site 03-045(c) is not a likely source of PCBs. Although Site 03-045(b) is a possible minor source of PCBs from surface soils, urban "background" PCBs also contribute to the PCB TAL exceedance.

Two copies of this revised Alternative Compliance Request for S-SMA-2.0, along with the complete record of public comment and the Permittees' response to comments, were submitted to EPA Region 6 for a final determination on the request. The revised document was also included with the response to comments submitted to commenters and was posted in the Individual Permit section of the Laboratory's public website.

4.0 SITE DESCRIPTIONS

The 50.8-acre S-SMA-2, which includes four Sites [03-012(b), 03-045(b), 03-045(c), and 03-056(c)], is located in the central portion of TA-03 and encompasses numerous office, laboratory, and support facilities, paved roads and parking lots (Figure 2). Site 03-012(b) was described previously, and the remaining three sites, which are the subject of this alternative compliance request, are described below.

The core operational facilities for the Laboratory are located at TA-03, including the principal administration buildings, the library, the Chemistry and Metallurgy Research (CMR) Building, the Beryllium Technology Facility, a gas-fired electrical generating plant, and a former sanitary wastewater treatment plant (WWTP) and supporting structures. TA-03 was originally built as a firing site in 1945 that was decommissioned and cleared in 1949. In the early 1950s, operational facilities from former TA-01 (located in the Los Alamos townsite) were relocated to TA-03. Early TA-03 facilities included the Van de Graaff accelerator building, a laboratory and support structures, the communications building, the CMR Building, the general and chemical warehouses, the cryogenics laboratory, the administration building, the Sigma Building, a fire house, and the physics building. Additional new construction continued through the 1960s and 1970s, when storage areas, shops, office buildings, a WWTP, asphalt batch plant, cement batch plant, and numerous transportable structures were added. Support structures for these facilities included an automotive repair garage, a gas station, steam-cleaning facility, and warehouses. The Oppenheimer Study Center was constructed in 1977, and an annex was added to the administration building in 1981. A computer facility and several national centers for various scientific activities were constructed in the 1990s. The National Security Sciences Building and an associated parking structure were completed in 2006.

4.1 Sites in S-SMA-2.0 Proposed for Alternative Compliance

4.1.1 Site 03-045(b)

Site 03-045(b) is an active NPDES-permitted outfall (Outfall 001) that receives treated sanitary effluent from the TA-46 Sanitary Wastewater System Consolidation Plant, some of which receives further treatment at the Sanitary Effluent Reclamation Facility (SERF) before discharge. Other wastewater treated at SERF and discharged through the outfall includes wastewater from makeup water production and boiler blowdown water from the cogeneration plant, and other discharges from the TA-03 power plant (building 03-22). The NPDES permit number for the outfall was previously identified as EPA 01A001 but is currently permitted as 001 on the 2007 NPDES authorization permit. This outfall discharges onto sand and gravel southeast of building 03-22 and into a small tributary of Sandia Canyon (Figure 3). Outfall 001 is currently monitored for the following parameters: pH, total residual chlorine, E. coli, temperature, total suspended solids, aluminum, PCBs, and whole-effluent toxicity. The June 29, 2013, draft reissued NPDES permit has eliminated the requirement to monitor for aluminum because no reasonable potential exists for an exceedance of the water quality standard.

This outfall also historically received effluent from power plant cooling tower 03-25. As described previously, this cooling water contained chromate. The cooling tower blowdown also contained naturally occurring constituents (e.g., metals) that were concentrated through evaporation. Cooling tower 03-25 was demolished in 1990, and a new cooling tower structure, 03-592, was constructed at the same location in 1998. Cooling towers 03-58 and 03-592 are currently operated during testing of the backup power plant and discharge intermittently to Outfall 001 [Site 03-045(b)].

Wastewater historically discharged from the Site 03-045(b) outfall contained low concentrations of PCBs. As noted in EPA's June 26, 2013, fact sheet for the draft reissued NPDES permit for this outfall, however, PCBs have been prohibited for decades, and the Laboratory does not use PCBs in any process. Therefore, the Site 03-045(b) outfall is not considered to be a source of the PCBs detected in the S-SMA-2 sampler.

4.1.2 Site 03-045(c)

Site 03-045(c) is a second active NPDES-permitted outfall (EPA 03A027) that is located approximately 55 ft east of Site 03-045(b) (Figure 3). Site 03-045(c) currently receives blowdown from the cooling towers at the Strategic Computing Complex (building 03-2327), which became operational in 2002. Site 03 045(c) also formerly received effluent from cooling tower 03-285, which was constructed in 1968 to serve the generators powering a Laboratory computer system. Cooling tower 03-285 was taken out of service in 2006. Site 03-045(c) may have historically received chromate-treated water. The cooling tower blowdown would have also contained naturally occurring constituents (e.g., metals) concentrated through evaporation. Outfall 03A027 is currently monitored for the following parameters: pH, total residual chlorine, total suspended solids, phosphorous, copper, and whole-effluent toxicity. The June 29, 2013, draft reissued NPDES permit has eliminated the requirement to monitor for copper because no reasonable potential exists for an exceedance of the water quality standard.

There are no known sources of PCBs in the water historically and currently discharged from the Site 03-045(c) outfall, and the NPDES permit for Outfall 03A027 does not require monitoring for PCBs.

4.1.3 Site 03-056(c)

Site 03 056(c) is an inactive outdoor storage area located at TA-03 on the north side of a utilities shop, building 03-223 (Figure 2). The Site extends along the length of building 03-223 to the south and is bounded by a security fence to the north. The storage area was used from 1967 to 1992 to store electrical equipment, capacitors, and transformers with PCB-containing dielectric fluid.

The Site currently consists of a sloped, asphalt lot with a curb cut draining runoff into upper Sandia Canyon. The paved lot is next to the Laboratory's utilities control center, an approximately 9000 ft^2 metal-sided and -roofed building. The immediate area above Site 03-056(c) includes metal storage sheds, transportainers, utility equipment and materials staging, and roughly 1200 ft of chainlink fencing around the utilities control center perimeter.

In addition to PCBs, industrial materials potentially released at this Site during its operating life include halogenated solvents. The types of solvents used at the Site from 1967 to approximately 1981 are not known. It is believed that the maintenance crew disposed of all these waste materials at an approved waste-disposal facility. Viking R30 (1,1,1-trichloroethane) was used from 1981 to 1990. From 1990 to 1992, a nonhazardous citrus-based solvent was used as a substitute for halogenated solvents. In addition, Transclene, which contains tetrachloroethene, may have been stored at the site because it was used by an electrical equipment maintenance subcontractor to fill transformers in the field. The 1990 SMWU Report (LANL 1990) identified soil-staining at the Site that might have indicated past releases.

4.2 Summary of Consent Order and Other Investigations

4.2.1 Site 03-045(b)

Eleven soil and sediment samples were collected during the 1994 RCRA facility investigation (RFI) (LANL 1996) from 5 locations at a depth of 0.0 to 0.5 ft below ground surface (bgs) at the outfall, which is currently designated SWMU 03 045(b).Of the 11 mg/kg samples analyzed for PCBs, total PCBs were detected in 4 samples at concentrations ranging from 0.83 to 7.6 mg/kg. Concentrations exceeding residential soil screening levels (SSLs) (1.12 mg/kg to 2.22 mg/kg) were detected in three samples, all from 1 location at the outfall. Copper and zinc were not detected above background values (BVs) in the 5 samples analyzed for metals.

Site 03-045(b) was investigated as part of the 2009 Upper Sandia Canyon Aggregate Area investigation (LANL 2010), but only two soil samples were collected (from depths of 0.0–1.0 ft and 1.0–2.0 ft bgs) at one location at the outfall. These samples were analyzed for metals, VOCs, SVOCs, total petroleum hydrocarbon diesel range organics (TPH-DRO), PCBs, and cyanide. Copper was not detected above its BV. Zinc was detected above the soil BV (48.8 mg/kg) in 1 sample at a concentration of 53.4 mg/kg. This result is less than the maximum concentration in the background data set (75.5 mg/kg). Because the maximum detected concentration of zinc was less than the maximum background concentration, the supplemental investigation report determined that zinc is not a chemical of potential concern at Site 03-045(b).

Aroclor-1254 and Aroclor-1260 were detected in both samples at maximum concentrations of 0.0803 mg/kg and 0.117 mg/kg, respectively, These results are less than 10% of the residential SSLs (1.12 mg/kg and 2.22 mg/kg, respectively) and more than an order of magnitude less than the results from the 1994 RFI. The PCBs detected in these samples are believed to be associated with either historical discharges from the outfall or upgradient urban sources unrelated to historical releases of industrial materials from the outfall. Because samples were only collected at one location, the contribution from upgradient urban sources could not be assessed, but will be evaluated with future Consent Order sampling.

4.2.2 Site 03-045(c)

Site 03-045(c) was not investigated during the 1994 RFI. Site 03-045(c) was investigated as part of the 2009 Upper Sandia Canyon Aggregate Area investigation (LANL 2010), but only two soil samples were collected (from depths of 0.0–1.0 ft and 1.0–2.0 ft bgs) at one location at the outfall. These samples were analyzed for metals , VOCs, SVOCs, TPH-DRO, PCBs, and cyanide. Copper was not detected above its BV. Zinc was detected above the soil BV (48.8 mg/kg) in 1 sample at a concentration of 50.3 mg/kg. This result is less than the maximum concentration in the background data set (75.5 mg/kg). Because the maximum detected concentration of zinc was less than the maximum background concentration the supplemental investigation report determined that zinc is not a chemical of potential concern at Site 03-045(c).

Aroclor-1254 and Aroclor-1260 were detected in both samples at maximum concentrations of 0.812 mg/kg and 3.19 mg/kg, respectively, The Aroclor-1254 results are less than the residential SSL (1.12 mg/kg) and the Aroclor-1260 results exceed the residential SSL (2.22 mg/kg) but are less than the industrial SSL (8.26 mg/kg). The PCBs detected in these samples are believed to be associated with upgradient urban sources unrelated to the management of historical industrial materials at the Site sources. Because samples were only collected at one location, the contribution from upgradient urban sources could not be assessed but will be evaluated with future Consent Order sampling.

4.2.3 SWMU 03-056(c)

Two actions have been performed at SWMU 03-056(c) to remove historical PCB contamination. Approximately 1000 yd^3 of PCB-contaminated soil was removed from August to November 1995. The objective of the 1995 removal action was to remove all soil with PCB concentrations above 10 mg/kg.

An additional 2400 yd^3 of material was removed from September 2000 to March 2001. This second removal action was initiated through a voluntary corrective action (VCA) (LANL 2001). PCB-contaminated soil was removed from the western and northern slope areas and the ephemeral slope drainage areas. Because of the site's proximity to a watercourse, the PCB cleanup targets were less than 1 ppm of PCBs in soil in accordance with the Toxic Substances Control Act (TSCA). The VCA plan was

approved by NMED in 2002 (NMED 2002). The VCA also included placing clean backfill in excavated areas, stabilizing exposed backfill, seeding, stabilizing soil around trees, and the installing a gabion apron to dissipate the energy of storm water running off the asphalt pad on the edge of the mesa. Following removal of PCB-contaminated soil and tuff, a total of 93 confirmation samples were collected from 83 locations and analyzed for PCBs. Twenty-one samples were also analyzed for metals and VOCs. Arsenic and tetrachloroethene were identified as chemicals of potential concern because of detected concentrations greater than BVs and their respective risk-based screening action levels, but assessment of the residual risk at the site after the VCA indicated no unacceptable risks to human receptors. The VCA report for SWMU 03-056(c) was approved by EPA in November 2001 (EPA 2001) and by NMED in September 2002 (NMED 2002).

NMED issued a certificate of completion with controls for SWMU 03-056(c) on February 18, 2011 (NMED 2011). In its certificate NMED stated that the nature and extent of contamination were defined, confirmatory sample results indicated the Site met the EPA's PCB cleanup criterion, and the Site poses no potential unacceptable human health and ecological risks from PCBs or VOCs. The required controls were to institute and maintain a control on the Site by monitoring storm water discharge for potential off-site transport of residual PCB contamination. The basis for the required control under the Consent Order was the possibility that storm water discharge may mobilize residual contamination from the Site. NMED also indicated the storm water monitoring was currently implemented pursuant to the Individual Permit.

4.3 Rationale for Inclusion of Sites in the Individual Permit

Identification of SWMUs 03-012(b), 03-045(b), 03-045(c), and 03-056(c) as high priority PCB Sites in the Individual Permit was based on the detection of PCBs in storm water samples collected from Sandia E-station E-121 (Figure 2) pursuant to the Federal Facility Compliance Agreement. At the time the application was submitted, Aroclor-1254 and Aroclor-1260 were detected at 0.71 µg/L and 1.2 µg/L, respectively, at station E-121 (Sandia right fork at Power Plant).

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

A number of baseline control measures were installed within S-SMA-2 in accordance with Part I.A. All active control measures are listed in Table 1, and their locations are shown on the project map (Figure 2). Copies of the certification packages, including photographs, are provided in Attachment A. Table 1 presents descriptions of each of the baseline control measures used at the site.

Table 1
Active Control Measures for S-SMA-2

Control ID	Control Name	Run-on Control?	Runoff Control?	Sediment Control?	Erosion Control?	Control Status
S00304060011	Channel/Swale-Rip Rap	X			X	B
S00303020008	Berms-Base Course	X		X		CB
S00304060009	Channel/Swale-Rip Rap	X			X	CB
S00304060010	Channel/Swale-Rip Rap	X			X	CB
S00302010007	Established Vegetation-Grasses and Shrubs				X	CB
S00307020006	Gabion Blanket		X	X		CB
S00304060005	Channel/Swale-Rip Rap	X			X	CB
TBD	Channel/Swale-Rip Rap	X			X	EC
TBD	Rip Rap Inlet Protection	X				EC
TBD	Rip Rap Inlet Protection	X				EC
TBD	Rock Check Dams (4)	X		X		EC
TBD	Rock Mulch	X			X	EC

Notes: Blank cell indicates control type does not apply. TBD: Control ID to be determined.
B: Additional baseline control measure.
CB: Certified baseline control measure.
EC: Enhanced control measure to be certified in 2013.

Rain gage RG121.9 recorded two storm events at S-SMA-2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in Table 2.

Table 2
Control Measure Inspections during 2011 and 2012

Inspection Type	Inspection Reference (from The Maintenance Connection)	Inspection Date
Preventive Maintenance	BMP-14026	07-11-2011
Storm Rain Event	BMP-16266	08-09-2011
Storm Rain Event	BMP-17236	08-24-2011
Storm Rain Event	BMP-18911	09-14-2011
TAL Exceedance	COMP-20168	10-19-2011
S-SMA-2: Annual Erosion Evaluation	COMP-20015	10-19-2011
S-SMA-2: Annual Erosion Evaluation 2012	COMP-22637	05-08-2012
Storm Rain Event	BMP-25249	07-24-2012
Storm Rain Event	BMP-28706	10-23-2012

Maintenance activities conducted at the SMA are summarized in Table 3.

Table 3
Maintenance during 2011 and 2012

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23538	Installed riprap S00304060011 as outlet protection at outlet west of existing riprap-0009.	05-29-12	21 day(s)	Maintenance conducted as soon as practicable
BMP-25864	Reshaped and built up base course berm S00303020008.	7-31-12	7 day (s)	Maintenance conducted in a timely manner
BMP-25865	Added rock to riprap S00304060009.	8-8-12	15 day (s)	Maintenance conducted as soon as practicable
BMP-29158	Riprap S00304060009 extended south to span entire width of channel.	11-6-12	14 day (s)	Maintenance conducted in timely manner.

Note: No maintenance activities were conducted in 2011.

6.0 STORM WATER MONITORING RESULTS

The location of the sampler for S-SMA-2 is shown in Figure 2. Baseline confirmation samples were collected from S-SMA-2 on July 28, 2011, and August 13, 2011, showing exceedances for copper, total PCB, and zinc. These data are summarized in Table 4. The results of this sampling effort are presented in graphs as a ratio of the respective maximum target action level (MTAL) or average target action level (ATAL) in Attachment B.

Table 4
Summary of Storm Water Data

Analyte	Unit	Number of Detects	Concentration Range	ATAL	Geometric Mean	Geometric Mean/ ATAL Ratio	MTAL	Number of MTAL Exceedances
Copper	µg/L	2	5.8 to 8.3	n/a*	n/a	n/a	4.3	2
Total PCB	µg/L	2	0.14 to 0.19	0.00064	0.163	255	n/a	n/a
Zinc	µg/L	2	23.8 to 62.6	n/a	n/a	n/a	42	1

*n/a = Not applicable.

7.0 BASIS OF ALTERNATIVE COMPLIANCE REQUEST

NMED issued a certificate of completion with controls for SWMU 03-056(c) on February 18, 2011. NMED stated that its issuance of a certificate of completion with controls was because “storm water discharge may mobilize residual [PCB] contamination from the site” (NMED 2011), and therefore, NMED directed the Permittees to implement and maintain a control on the Site by monitoring storm water discharge for potential off-site transport of residual PCB contamination. Furthermore, NMED stated the storm water monitoring was currently implemented pursuant to the Individual Permit. The storm water monitoring performed under the Individual Permit identified PCBs above TALs.

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 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 the applicability of these three categories to the feasibility of implementing corrective action options at Site 03-056(c) are detailed below.

7.1 Sources of Pollutants

Based upon a review of historical site use and soil sampling performed under the Consent Order, copper and zinc are not associated with industrial materials historically managed at Sites 03-045(b), 03-045(c) and 03-056(c). The cooling tower blowdown discharged from Sites 03-045(b) and 03-045(c) may have contained naturally occurring copper and zinc concentrated by evaporation but would not be considered industrial materials. There are two likely sources of PCBs: the historical releases at Sites 03-045(b) and 03-056(c) and anthropogenic urban "background" sources.

7.1.1 Copper and Zinc

Because the two metals that exceed TALs from S-SMA-2, copper and zinc, are also common in urban storm water, a literature search was performed to identify potential sources of copper and zinc in storm water from industrial and urban areas. The sources of metals in urban storm water are numerous including, but not limited to, automobile tires, roofing and down spouts, metal culverts, and chainlink fencing. These pollutants accumulate until the first significant storm of the season (Rosenbloom 2009).

The following potential sources of copper and zinc were consistently identified in the literature search.

Galvanized Metals

Galvanization is the process of coating iron or steel with zinc, which acts to protect the metal from corrosion or rust. Galvanized metal storm water sewer pipes and chainlink fences are common sources of zinc in storm water runoff at industrial and commercial sites. Chainlink fencing has a considerable area of exposed galvanized material: a linear inch of a 6-ft-high fence has a surface area comparable to a 1 in. wide by 7-ft long galvanized metal roof (Golding 2006). Other typical galvanized surfaces include metal roofs and siding; roof heating, ventilation, and air-conditioning (HVAC) systems, ductwork, turbines, and equipment boxes; downspouts and gutters; and light poles (Golding 2008).

Parking and Paved Areas Subject to Vehicle Traffic

Contributions of zinc to the parking areas, loading docks, and paved grounds common to industrial facility sites appear to come from two primary sources: motor oil and tire wear (Golding 2006).

Motor oil is known to contain high levels of zinc and may also contain copper. Major brands of motor oil contain zinc from 0.11%–0.20% zinc by weight (Golding 2006). Motor oil accumulating on paved surfaces during periods of little or no precipitation and areas where motor oil leaks, such as parking areas and loading docks, contribute to an industrial facility's storm water discharge (Golding 2006).

Tire material consists of 1% zinc by weight, which is released with tire wear as particulate dust or as deposits onto pavement. This release of zinc from tire wear has been found to be a source in storm water runoff (Golding 2006).

Vehicle brake emissions are one of the most important sources of copper in the urban environment (Sondhi 2010). Copper and other metal additives have been used in brake pads since the 1960s. Between 1998 and 2002, the use of copper in domestic brake pads increased by 90% to meet new federal safety regulations. The content of copper in brake pads varies from 15%–25% at present and accounted for an estimated 47% of copper in a Maryland urban residential neighborhood. Brake emissions in California were estimated to contribute 80% of the copper found in urban storm water runoff leading to the South San Francisco Bay (Sondhi 2010).

7.1.2 Regional Background Metals Study and Run-on Data Evaluation

Storm water samples were collected from 2009 to 2012 at developed urban monitoring locations throughout the Laboratory and within the Los Alamos County townsite to determine BVs for metals. These results are summarized in a recent Laboratory publication analyzing background and baseline metals in northern New Mexico, titled "Background Metals Concentrations and Radioactivity in Storm Water on the Pajarito Plateau, Northern New Mexico" (hereafter, the Background Metals Report [LANL 2013]). The principal objectives of the study were (1) to determine background concentrations in runoff for metals and radionuclide constituents and (2) to determine the baseline concentrations of metals and radionuclide constituents in urban runoff from the Los Alamos townsite and Laboratory property. Sampling locations were selected to avoid any known contamination and to provide reasonable estimates of baseline concentrations, including a wide variety of bedrock source areas and sediment texture. Water-quality conditions measured at background sites and at urban locations reflect the contaminant levels in storm runoff that were derived from the landscape.

The monitoring locations evaluated in the Background Metals Report (LANL 2013) were upstream (upgradient) from Sites and considered representative of a developed landscape associated with buildings, parking lots, and roads. The results were analyzed using Statistica 8.0 (StatSoft 2007, Statistica 8.0, Statistics and Analytical Software Package, Tulsa, OK) and ProUCL 4.1.01 (available at http://www.epa.gov/nerlesd1/databases/datahome.htm). Statistical analyses were considered significant at $p<0.05$. An upper tolerance limit ([UTL] 95%; 95% confidence) was calculated to represent a BV to compare with TAL exceedances observed at SMA monitoring locations that experience run-on from urban sources (Table 5).

The Permittees also collected run-on storm water samples during the 2012 field season to support this alternative compliance request. The samples were taken upstream of the SMA, and the locations of the run-on samplers are shown in Figure 2.

The results of the comparison of urban "background" and site-specific run-on data for copper and zinc with the analytical results obtained under the Individual Permit are summarized below.

Copper

The copper background UTL for storm water runoff from an urban/developed landscape on the Pajarito Plateau is 32.3 µg/L, greater than both Individual Permit storm water results of 5.8 µg/L and 8.3 µg/L. This relationship confirms the source of copper in storm water at S-SMA-2 is not from the historical release of industrial materials at the Sites.

Site-specific storm water run-on samples collected within the SMA, but upgradient of the Sites, contained copper at concentration ranging from 4.78 µg/L to 21.3 µg/L, greater than the TAL of 4.3 µg/L, and in several results greater than concentrations detected in storm water runoff from the SMA. These data confirm the TAL exceedance is not related to historical use of industrial materials at the Sites and strongly indicate the copper is associated with storm water run-on from urban development. These findings are also consistent with likely sources of copper identified in the literature. The parking lots at TA-03 serve as collection points for pollutants from brakes pads and motor oil that are deposited on the impervious pavement.

The absence of Site-related sources of copper is confirmed by the lack of an observable difference between concentrations of copper in storm water collected running on to the Sites, at the SMA, and running off from the SMA at E-121 (Figure 5).

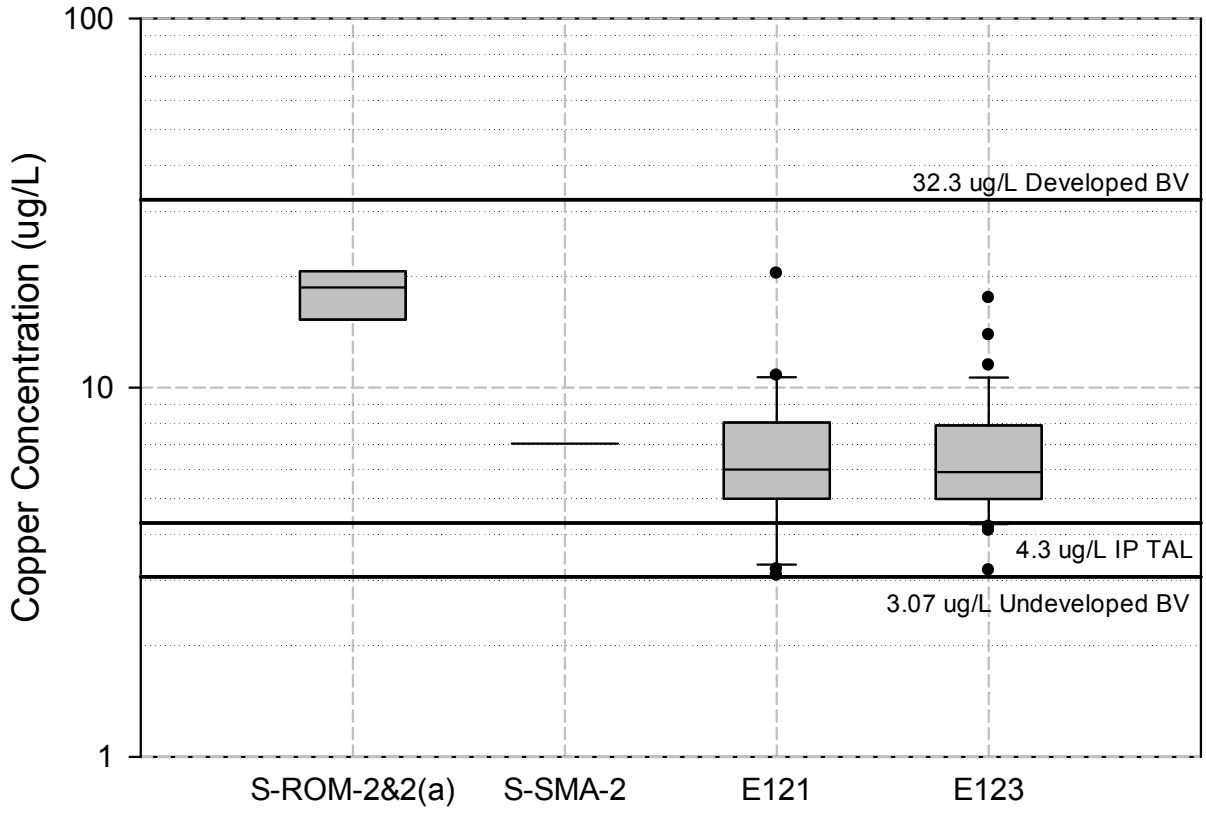

Figure 5 **Statistical range of copper in storm water running onto the SWMU [S-ROM-2 and S-ROM-2(a)], in discharges from the SWMU itself (S-SMA-2), and at downstream gage stations E121 and E123**

Table 5
Comparison of BV and TAL Exceedances at SMA Locations

		Water															
		Individual Permit Compliance			Hardness Adjusted TAL at S-SMA-2		Hardness Adjusted TAL at E121		Urban Background Comparison		BLM-Adjusted TALs		Run-On Location 1 [S-ROM-2(a)]		Run-On Location 2 [S-ROM-2]		E121 (Storm Water) at Downstream of S-SMA-2	
Location	Analyte	Individual Permit TAL (µg/L)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Hardness-Adjusted TAL at S-SMA-2[a] (µg/L)	No. of Detects/Total No. of Analyses (% Hardness-Adjusted TAL Exceedance)	Hardness Adjusted TAL at E121 (µg/L)	No. of Detects/Total No. of Analyses (% Hardness-Adjusted TAL Exceedance)	Background UTL from Urban Landscape in µg/L[b]	% Permit Results Exceedance Background UTL	Criterion Maximum Concentration in µg/L[c]	No. of Detects/Total No. of Analyses (% CMC Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)
S-SMA-2	Copper	4.3	5.8–8.3	2/2 (100%)	5.35	2/2 (100%)	3.34	2/2 (100%)	32.3	0%	62	2/2 (0%)	18.7–21.3 (20.2)	4/4 (100%)	4.78–16.9 (12.4)	3/3 (100%)	3.1–20.4	20/20 (80%)
S-SMA-2	Zinc	42	23.8–62.6	2/2 (50%)	65.7	2/2 (0%)	41.7	2/2 (50%)	1120	0%	na[d]	na	48.1–104 (79.9)	4/4 (100%)	30.9–61.2 (44.4)	3/3 (66.7%)	5.1–259	19/20 (5%)
S-SMA-2	Total PCB	0.00064	0.14–0.19 (0.163)	2/2 (100%)	0.00064	2/2 (100%)	0.00064	2/2 (100%)	0.098	100%	na	na	0.00756–0.0312 (0.0167)	5/5 (100%)	0.00439 to 0.0341 (0.0141)	3/3 (100%)	0.11–0.25 (0.147)	4/4 (100%)

		Water									
		E121 (Base Flow)		E121 (Snowmelt)		E123 (Storm Water)		E123 (Base Flow)		E123 (Snowmelt)	
Location	Analyte	Concentration Range in µg/L (Geometric Mean)	Total No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)	Concentration Range in µg/L (Geometric Mean)	No. of Detects/Total No. of Analyses (% Permit TAL Exceedance)
S-SMA-2	Copper	3–6.39 (10)	13/15 (60%)	3.8	1/1 (0%)	4.1–17.5	33/36 (86%)	3–6.72 (10)	18/25 (24%)	3.7	1/1 (0%)
S-SMA-2	Zinc	32.4–390	15/15 (60%)	51.4	1/1 (100%)	11.1–108	35/36 (25%)	10.8–99	25/25 (28%)	11.5	1/1 (0%)
S-SMA-2	Total PCB	0.00647–0.00938 (0.00813)	3/3 (100%)	na	na	0.43–0.9 (0.612)	4/4 (100%)	0.03–0.05 (0.0387)	2/2 (100%)	na	0/0

Table 5 (continued)

		All Horizon Soil and Rock											
		Consent Order Compliance		03-012(b) ALLH		03-045(b) ALLH		03-045(c) ALLH		03-056(c) ALLH		03-056(c) QBT	
Location	Analyte	ALLH Background in mg/kg[e]	QBT4 BV in mg/kg[f]	Concentration Range in mg/kg	No. of Detects/No. Total Analyses (% ALLH BV Exceedance)	Concentration Range in mg/kg	No. of Detects/No. Total Analyses (% ALLH BV Exceedance)	Concentration Range in mg/kg	No. of Detects/No. Total Analyses (% ALLH BV Exceedance)	Concentration Range in mg/kg	No.# of Detects/No. Total Analyses (% ALLH BV Exceedance)	Concentration Range in mg/kg	No. of Detects/No. Total Analyses (% QBT BV Exceedance)
S-SMA-2	Copper	14.7	4.66	1.67–26.1	50/50 (4%)	3.52–4.95	2/2 (0%)	10.7–12.3	2/2 (0%)	2.7–15	9/9 (22%)	1.3–5.3	5/5 (40%)
S-SMA-2	Zinc	48.8	63.5	17.8–145	50/50 (26%)	47.4–53.4	2/2 (50%)	40.4–50.3	2/2 (50%)	24–69	9/9 (11%)	14–64	5/5 (20%)
S-SMA-2	Total PCB	Na	na	na	na	na	na	na	na	na	na	na	na
S-SMA-2	Aroclor-1254	Na	na	0.0085–0.336	3/5 (na)	0.021–0.0803	2/2 (na)	0.235–0.812	2/2 (na)	na	0/37 (na)	na	0/39 (na)
S-SMA-2	Aroclor-1260	Na	na	0.0321–0.925	4/5 (na)	0.0905–0.117	2/2 (na)	0.862–3.19	2/2 (na)	0.043–4.1	29/37 (na)	0.041–19	22/39 (na)

[a] The hardness-adjusted TAL for metals using the calculated hardness at a specific SMA.
[b] Background UTL value calculated from all storm water runoff results from a developed urban landscape on the Pajarito Plateau; see text for more detail.
[c] Criteria maximum concentration (CMC). The new criterion or TAL calculated by the biotic ligand model (BLM) using a full chemical analysis and considering copper complexes and pH. This is an estimate of the highest concentration of copper in ambient water to which an aquatic community can be *exposed briefly* without resulting in an unacceptable adverse effect. This is the acute criterion and represents a more applicable TAL for copper.
[d] na = Not available.
[e] BV for all horizons (ALLH) soil media.
[f] BV for Unit 4 of the Bandelier Tuff (QBT4).

In addition to evaluating the regional and site-specific background sources of copper in storm water, the Permittees also applied the biotic ligand model (BLM) to develop the criteria maximum concentration (CMC). The CMC calculated by the BLM uses a full chemical analysis, including hardness, and identifies copper complexes and free copper concentrations that may produce a biological insult to a target organism in an aquatic ecosystem. This value is an estimate of the highest concentration of copper in ambient water to which an aquatic community can be *exposed briefly* without resulting in an unacceptable adverse effect. A conservative approach was used to calculate the CMC value of 62 µg/L for storm water at S-SMA-2, which is higher than the TAL of 4.3 µg /L. This value was calculated using bulk chemistry of run-on storm water and the lowest hardness and highest copper value in storm water runoff from the Site. All copper results in Site runoff are below the CMC.

Zinc

The zinc background UTL calculated for storm water runoff from an urban/developed landscape on the Pajarito Plateau is 1,120 µg/L (LANL 2013), greater than both Individual Permit storm water results of 23.8 µg/L and 62.6 µg/L by 2 orders of magnitude. This relationship confirms the source of zinc in storm water at S-SMA-2 is not from the historical release of industrial materials at the Site 03-056(c).

Site-specific storm water run-on samples collected within the SMA, but above the Sites, contained zinc at concentrations ranging from 30.9 µg/L to 61.2 µg/L. In most cases, zinc in storm water run-on is greater than the TAL of 42 µg/L. These data confirm the TAL exceedance is not related to historical use of industrial materials at the Site and strongly indicate the zinc is associated with storm water run-on from urban development.

These findings are also consistent with likely sources of zinc identified in the literature. The parking lots at TA-03 serve as collection points for pollutants from engine oil, tires, and brakes pads deposited on the impervious pavement. Galvanized fencing, building materials, and culverts at TA-03 are also sources of zinc.

The absence of a Site source of zinc is confirmed by the lack of a detectable difference between concentrations of zinc in storm water collected running onto the Sites at the SMA and running off the SMA at E121 (Figure 6).

PCBs

Two likely sources of the PCBs were found above the TAL in S-SMA-2: the historical releases at Sites 03-045(b), 03-045(c), and 03-056(c) and anthropogenic urban “background” sources. The results of previous PCB sampling, historical releases, and Site status after the VCA are described in section 4.1 above. The anthropogenic sources of PCBs are described below.

PCBs are common anthropogenic constituents as a result of environmental cycling of past releases of PCBs. DOE, the NMED–DOE Oversight Bureau, and LANS conducted a multiyear cooperative study to characterize PCBs in certain surface waters located in the upper Rio Grande watershed and in areas in and around the Laboratory. The May 2012 report, titled “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.

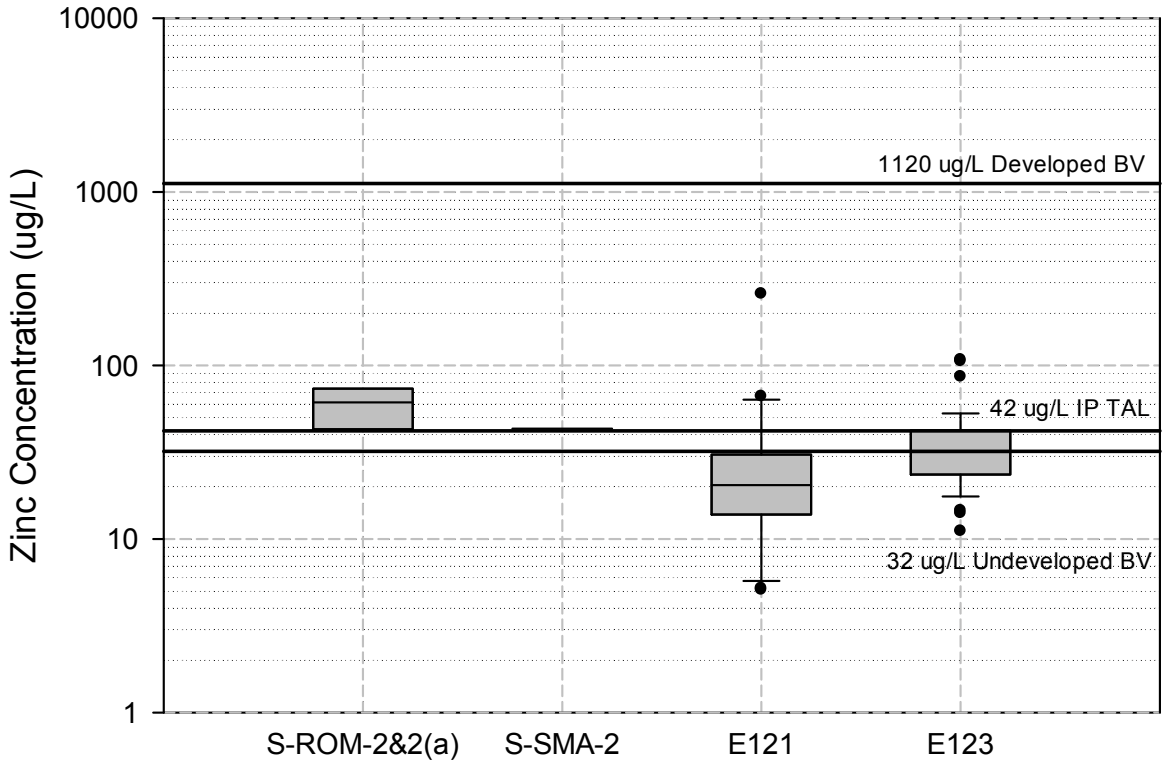

Figure 6 **Statistical range of zinc in storm water running onto the SWMU [S-ROM-2 and S-ROM-2(a)], in discharges from the SWMU itself (S-SMA-2), and at downstream gage stations E121 and E123**

This study was designed to characterize PCB levels in precipitation and storm water in the non-industrialized portions of the upper Rio Grande watershed (LANL 2012). The principal objectives of the study were to determine (1) baseline levels of PCB concentrations in precipitation and snowpack in northern New Mexico; (2) baseline levels of PCB concentrations in storm water in northern New Mexico streams and arroyos that are tributaries to the Rio Grande and Rio Chama; (3) the range of PCB concentrations found in the Rio Grande during base-flow and storm-flow conditions; (4) baseline levels of PCBs in storm water from undeveloped watersheds of the Pajarito Plateau; (5) the concentrations of PCBs in urban runoff from the Los Alamos townsite and Laboratory property; and (6) how these findings may be used to target significant pollution sources. The following excerpt from the PCB Background Report (LANL 2012) summarizes the findings relative to these objectives.

> Total PCB concentrations for precipitation and stormwater are summarized in Table 16 [of the PCB Background Report, presented as Table 6 in this request]. The concentrations in precipitation were generally low, probably reflecting the rural nature of the study area. Although PCB concentrations in precipitation and snowpack are relatively low, those sources still play a major indirect role in impacting surface-water quality. Over long periods of time—perhaps decades—precipitation events leave behind an inventory of PCBs on surface soil. The quality of nearby surface water deteriorates once the surface soil is eroded and carried by runoff into watercourses. Temporary deterioration of water quality is observed in drainages both small and large. Storm flow occurs infrequently. These flow events are generally very short lived, with flows lasting from less than an hour to—rarely—several days….

Environmental monitoring results show that small tributaries carrying a moderate amount of suspended soil/sediment likely will have total PCB concentrations above human health WQC [water-quality criteria] (0.64 ng/L) and occasionally the wildlife habitat WQC (14 ng/L), even in the absence of industrial pollution. PCB concentrations above the WQC would be expected in the most remote parts of the drainage system because of the high sediment load carried by small tributaries during periods of storm runoff. Table 16 [of the PCB Background Report] shows that concentrations greater than the New Mexico human health WQC were measured in 91% of stormwater samples collected from tributaries to the Rio Chama and Rio Grande, in 28% to 78% in ephemeral channels on the Pajarito Plateau, and in 38% of stormwater samples from the Rio Grande or Rio Chama.

Sources of PCBs detected in water may include recognizable discrete local-scale PCB sources as well as ubiquitously dispersed sources. The upper ranges of PCB concentrations in baseline or Rio Grande storm runoff were approximately an order of magnitude larger than those for precipitation (less than 1 ng/L in precipitation and 10 ng/L to 50 ng/L in storm runoff). This increase was primarily from the presence of PCBs associated with suspended sediment in runoff. Similarly, another order of magnitude increase in PCB concentrations was evident when upper ranges in urban runoff (above 100 ng/L) were compared with upper ranges in baseline or Rio Grande storm runoff. The higher concentrations associated with the urban runoff likely resulted from the contribution of additional diffuse local sources in the urban environment. This finding is consistent with information in the toxicological profile for PCBs published by the Agency for Toxic Substances and Disease Registry as well numerous studies that report PCB concentrations in stormwater in urban areas are higher than in rural locations….

The disparity between PCB concentrations during base-flow (ambient) and storm-flow periods because of suspended sediment is significant. While concentrations are elevated during storm runoff events in perennial or intermittent segments, they may recover quickly to lower levels during the intervening periods of base flow (unless impacted by a significant pollution source). On a time-weighted basis, average exposure levels in the water column would be relatively low, yet the perennial segment could exceed NMWQCC [New Mexico Water Quality Control Commission] criteria if the assessment data set includes samples collected when runoff was occurring.

To illustrate the role of suspended sediment in affecting PCB concentrations in surface water, data for base-flow periods were compiled for these same drainage areas. Figure 48 [of the PCB Background Report, presented as Figure 7 in this request] shows that PCB concentrations were only rarely above the New Mexico human health WQC under base-flow conditions because suspended sediment concentrations associated with base flow were very low, typically less than 100 mg/L. For perennial or intermittent surface waters, base flow predominates perhaps 90% or more of the time. Consequently, on any given day, the PCB concentrations in the water column of perennial or intermittent surface water would be relatively small. (LANL 2012)

Table 6
Summary of Total PCB Concentrations in Upper Rio Grande Watershed

Category	Median (ng/L)	UTL (ng/L)	Max Conc. (ng/L)	Percentage of Results Greater Than NM Health Standard (0.64 ng/L)	Percentage of Results Greater Than NM Wildlife Standard (14 ng/L)
Precipitation	0.12	0.68	0.61	0	0
Snowpack	0.14	0.7	0.65	8	0
Rio Grande/Rio Chama					
Base Flow	0.01	—*	1.36	6	0
Storm Water (Runoff)	0.24	—	51.4	39	3
Northern New Mexico Tributaries Storm Water	5.5	24	30.6	91	22
Baseline Pajarito Plateau Storm Water					
Reference Sites (Flows Originating on Pajarito Plateau)	0.4	11.7	11.6	28	0
Western Boundary Sites (Flows Originating in Jemez Mountains)	2.1	19.5	20.7	78	17
Reference and Western Boundary Combined	0.97	13	20.7	56	10
Urban Runoff Los Alamos Townsite	12	98	144	98	46

*— = Not available.

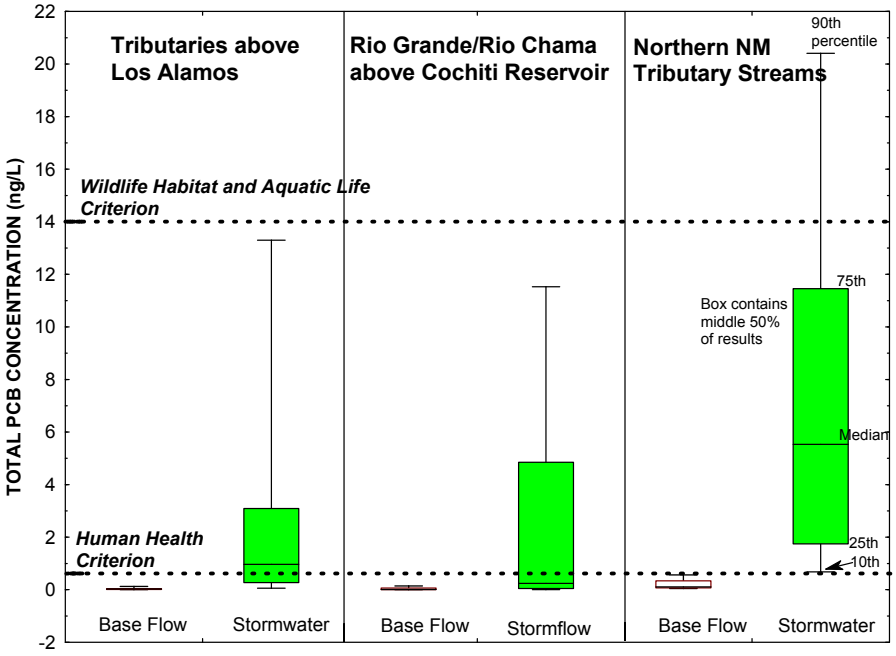

Figure 7 **Box plots of base flow and storm runoff PCB concentrations for various drainages in the upper Rio Grande system**

The PCB background UTL for storm water runoff from an urban/developed landscape on the Pajarito Plateau is 0.098 µg/L, less than both Individual Permit storm water results of 0.14 µg/L to 0.19 µg/L (LANL 2012). The presence of a Site source of PCBs is confirmed by an observable difference between concentrations of PCBs in storm water collected running on to the Sites, at the SMA, and running off from the SMA at E-121 (Figure 8). These data confirm the residual concentrations of PCBs associated with past releases at 03-056(c) and potentially Site 03-045(b) are a source of PCBs to storm water.

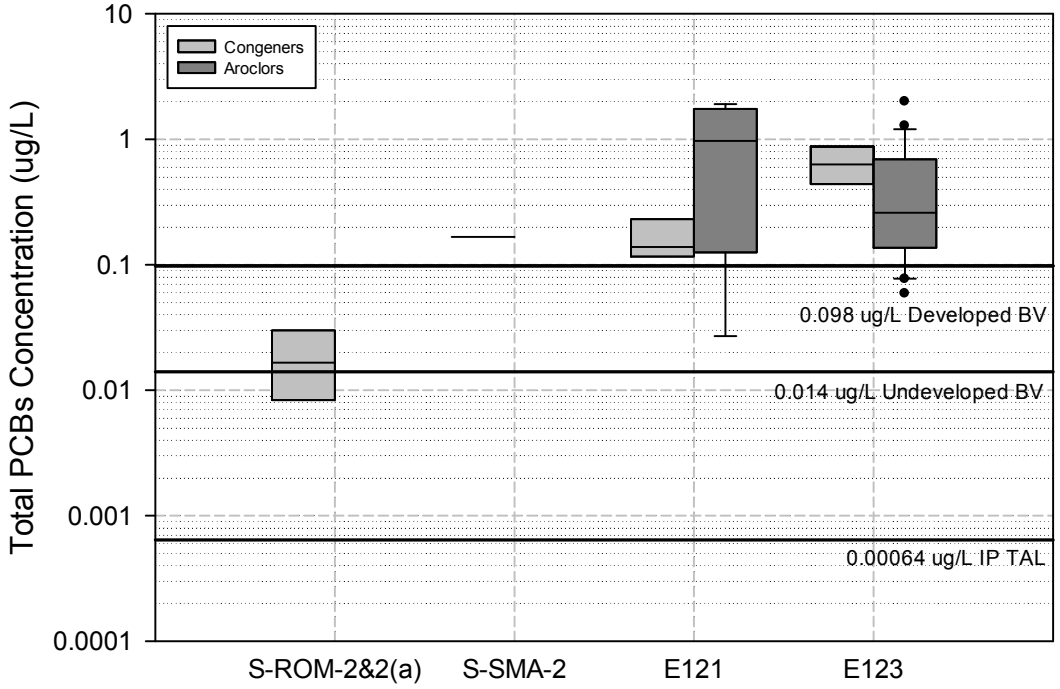

Figure 8 **Statistical range of total PCBs in storm water running onto the SWMU [S-ROM-2 and S-ROM-2(a)], in discharges from the SWMU itself (S-SMA-2), and at downstream gage stations E121 and E123. Note: storm water collected at S-ROM-2 and S-ROM-2(a) was analyzed using PCB congener methods, and storm water collected from E121 and E123 was analyzed using both the Aroclor and congener methods.**

Site-specific storm water run-on samples collected within the SMA also demonstrate that urban "background" PCBs contribute to the TAL exceedance. Although Site 03-056(c) is a known source of Site-related source of PCBs identified in S-SMA-2 and Site 03-045(b) is a potential source, the run-on samples contained PCBs at concentrations ranging from 0.00439 µg/L to 0.0341 µg/L, which are less than PCBs detected in storm water runoff from the Site but greater than the 0.00064 µg/L TAL. The regional background UTL of 0.098 µg/L is also higher than the TAL.

7.2 Technical Feasibility and Practicability

Because Sites 03-045(b), 03-045(c), and 03-056(c) are not the source of the zinc or copper TAL exceedances, the construction of enhanced controls, a cap or other cover on exposed portions of the Sites, or a total retention structure will not affect the concentrations of these constituents in runoff from

these Sites. The urban storm water discharges specifically associated with current conventional industrial activities at TA-03, are covered under the MSGP and described in section 2.1.

Although an enhanced control, cap, or total retention structure may improve water quality related to residual concentrations of PCBs from Sites 03-045(b), 03-045(c), and 03-056(c), technical feasibility and practicability issues prevent the Permittees from using any of these corrective action options to certify completion of corrective action. In addition, the anthropogenic background sources of PCBs, which are unrelated to industrial materials managed at Sites 03-045(b), 03-045(c), and 03-056(c) or the other Site within S-SMA 2.0, would likely still result in a TAL exceedance even if all sources of residual PCBs at Sites 03-045(b), 03-045(c), and 03-056(c) were no longer exposed to storm water or totally contained.

8.0 EVALUATION OF CORRECTIVE ACTION OPTIONS

A request to place a Site or Sites in alternative compliance must include a detailed demonstration of how the Permittees reached the conclusion that they are unable to certify completion of corrective action under Parts I.E.2(a) through E.2(d). The Permittees have thoroughly evaluated these corrective action options and reached the conclusion that they are unable to certify completion of corrective action for Sites 03-045(b), 03-045(c), or 03-056(c).

8.1 Sites 03-045(b) and 03-045(c)

An engineering evaluation of Sites 03-045(b) and 03-045(c) was performed to determine if the construction of enhanced controls, total retention structures, or a cap would successfully address the TAL exceedances at these Sites and would allow the Permittees to certify completion of corrective action under Part I.E.2.

This evaluation of corrective action options was based on the following assumptions: (1) neither Site is the source of the copper or zinc TAL exceedances, (2) Site 03-045(c) is not a source of PCBs, (3) Site 03-045(b) is possibly a minor source of PCBs from surface soils but the outfall no longer discharges PCBs, and (4) urban “background” PCBs also contribute to the PCB TAL exceedance.

8.1.1 Enhanced Control Measures to Meet the TAL

No engineered options were identified for enhanced controls that would be reasonably expected to achieve TALs.

8.1.2 Control Measures That Totally Retain and Prevent Storm Water Discharge

The Permittees performed a total retention engineering evaluation for Sites 03-045(b) and 03-045(c) to determine if it is feasible to build a control measure that would totally retain and prevent the discharge of storm water from these Sites. It is important to note that Sites 03-045(b) and 03-045(c) are the point source effluent discharges for permitted outfalls and do not have “watersheds.” Because it is not practical to design a total retention structure for these Sites alone, the Permittees evaluated a combination retention structure for S-SMA-2 and S-SMA-0.25, located to the west of S SMA 2 in TA-03, that would utilize the “land bridge” below where these two watersheds converge (Figure 10) as a total retention structure. Section 8.2.2 discusses the engineering evaluation of the total retention option.

8.1.3 Control Measures That Totally Eliminate the Exposure of Pollutants to Storm Water

The Permittees performed an engineering evaluation to determine if it is feasible to build a control measure that would totally eliminate exposure of contaminants at Sites 03-045(b) and 03-045(c). Since the Sites are the historical and current outfall points at the end of the outfall discharge lines, the one technically feasible solution would be to line the stream channel to a point where historical contaminants no longer exceed TALs. Historical chromium contamination, the primary contaminant of concern at and below the two outfalls, was not detected or was detected at very low values (2.0 µg/L and 2.7 µg/L) in storm water samples at the S-SMA-2 sampler.

Of these two Sites, only Site 03-045(b) appears to have historically contributed PCBs to the reach of the stream channel monitored by the S-SMA-2 storm water sampler. As discussed in section 4.2.1, the concentrations of PCBs (Aroclor-1254 and Aroclor-1260) remaining in the soil near the outfall were detected at maximum concentrations less than 10% of the residential SSLs. Upgradient urban sources unrelated to historical releases of industrial materials from the outfall are equally likely sources of the PCB TAL exceedance.

For the no-exposure option, the Permittees evaluated the installation of a shotcrete channel lining extending from the outfalls for a length of 150 ft (Figure 11). This option includes the following components:

- Installing an18-in. corrugated metal pipe (CMP) temporary bypass for outfalls to below the construction area,
- Installing a 24-in. CMP storm drain routing to bypass the construction area,
- Installing a shotcrete lining in the channel to pass the 25-yr storm,
- Removing the storm drain bypass, and
- Removing the outfall bypass.

Although it is technically feasible to construct a channel lining to cover the site, site conditions make it impracticable for the following reasons.

- The installation of the outfall bypass tie-in would have to occur when the power plant is in shutdown.
- The stream channel in this reach of Sandia Canyon is very steep and contains many large boulders and plunge pools typical of a mountain stream and would require significant regrading.
- Equipment access to the canyon bottom will be difficult and require construction of new access roads.
- Construction will result in significant environmental impacts to the area.
- Covering the Site and channel with shotcrete will result in significant environmental damage, including the potential damage to the Sandia wetlands caused by significant increase in storm water runoff peaks and flows.
- Covering the Site and channel with shotcrete will require costly maintenance through time.

In addition, even if this cover were built, the Permittees would still not be able to certify completion of corrective action under Part I.E.2(b) because TAL exceedances would still occur as a result of urban "background" PCBs within the SMA watershed.

While economic achievability is not the controlling factor when evaluating corrective action options under the Individual Permit, Part I does allow the Permittees to consider cost when evaluating site-specific control measures. The significant cost of this option, approximately $770K for construction costs alone, combined with the technical challenges, led the Permittees to reject this option.

8.1.4 Receipt of an NMED-Issued Certificate of Completion under the RCRA Consent Order

Because sufficient samples to characterize extent of contamination were not collected at either Site during the 2009 Upper Sandia Canyon Aggregate Area investigation (LANL 2010), additional sampling needs to be performed under the Consent Order before the Permittees may request certificates of completion for these Sites from NMED. Additional sampling was recommended in the supplemental investigation report for these sites so the extent of contamination can be defined.

8.2 Site 03-056(c)

An engineering evaluation of Site 03 056(c) was also performed to determine if the construction of enhanced controls, total retention structures, or a cap would successfully address the TAL exceedances at Site 03-056(c) and would allow the Permittees to certify completion of corrective action under Part I.E.2. Although Site 03-056(c) has a certificate of completion with controls under the Consent Order, the PCB TAL exceedances from the storm water samples collected in the summer of 2011 demonstrate the residual PCBs remaining at the Site after soil removal to TSCA standards are still a source of PCBs to storm water.

This evaluation of corrective action options was based on the following assumptions: (1) Site 03-056(c) is not the source of the copper or zinc TAL exceedances, (2) residual PCBs at Site 03-056(c) are the primary source of the PCB TAL exceedance, and (3) urban "background" PCBs also contribute to the PCB TAL exceedance.

8.2.1 Enhanced Control Measures to Meet the TAL

This evaluation focused on how to control the run-on from the parking lot and road directly above Site 03-056(c) and convey this run-on downslope so it does not come in contact with the Site surface (Figure 9).

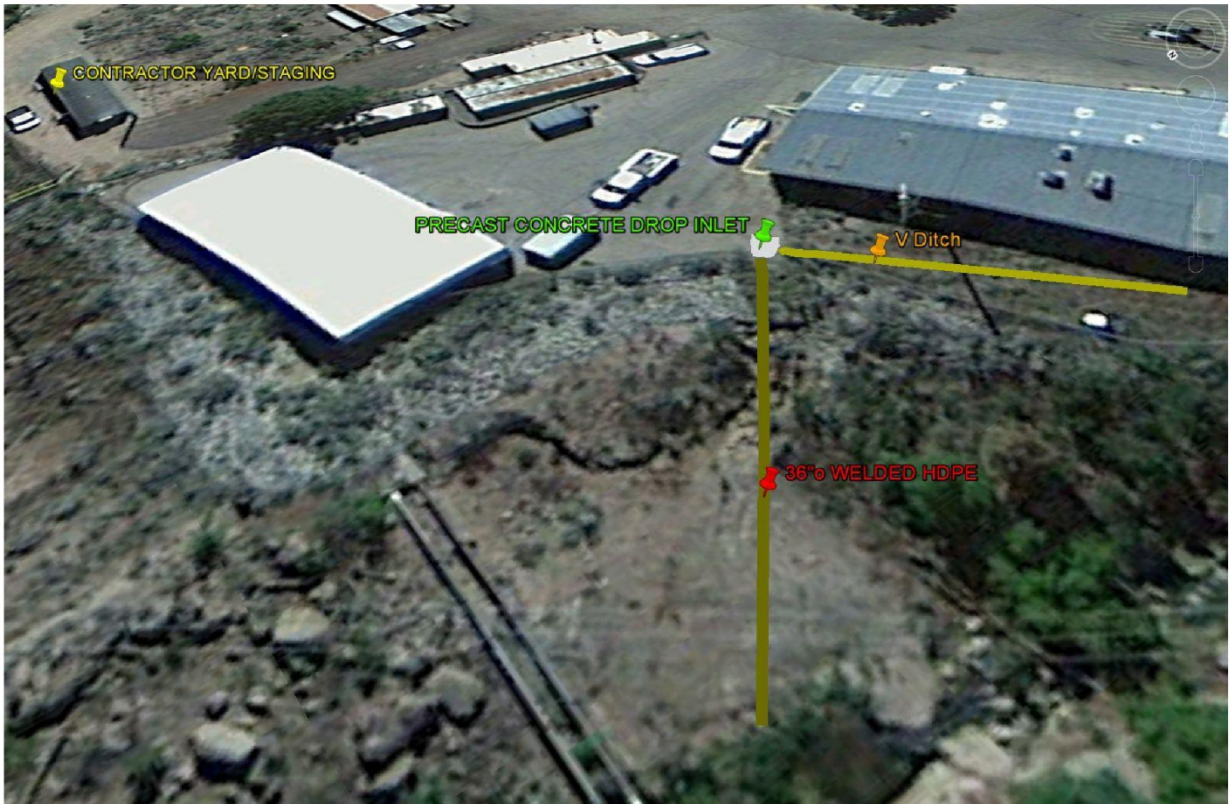

Figure 9 No exposure inlet and conveyance alternative for S-SMA-2

Run-on from the paved and gravel parking areas, roof drains from building 03-223, and a covered parking area to the south are a significant source of run-on to Site 03-056(c). This approach would control this run-on by directing it to a drop inlet directly above the Site, followed by a manhole and conveyance pipe to the canyon bottom. It would serve as the replacement for the current curb cut and existing damaged gabion system, which currently directs storm water from the catchment area directly over the Site.

This option would include the following components:

- Partially removing riprap along the top of the hill at the edge of the parking lot.
- Cutting a shallow V-ditch between building 223 and the existing chainlink fence to convey water to the catch basin.
- Excavating and installing a new precast drop inlet, catch basin, manhole, and pipe across the SWMU to the canyon bottom.

Although this enhanced control is technically feasible and could be constructed at this Site, it would not allow the Permittees to achieve TALs and certify completion of corrective action under Part I.E.2(a) for the following reasons:

- Precipitation would continue to fall on the Site and potentially mobilize residual PCB contamination, and
- Urban “background” PCBs within the SMA watershed would not be affected by the control measure.

8.2.2 Control Measures That Totally Retain and Prevent Storm Water Discharge

The Permittees performed a total retention engineering evaluation for Site 03-056(c) to determine if it is feasible to build a control measure that would totally retain and prevent the discharge of storm water from the Site. Because it is not practical to design a total retention structure for the Site alone, the Permittees evaluated a combination retention structure for S-SMA-2 and S-SMA-0.25, located to the west of S-SMA-2 in TA-03, that would utilize the "land bridge" below where these two watersheds converge (Figure 10) as a total retention structure.

The approximate amount of impervious surface for S-SMA-0.25 is 90%. The approximate amount of impervious surface for S-SMA-2 is 80%. For the combined watershed retention structure, the Permittees were conservative and assumed 100% runoff from both watersheds. Out of the 50-acre watershed, only approximately 0.9 acres or 1.8% of the watershed discharges over Site 03-056(c). The total storage required for these two watersheds is approximately 9 acre-ft of water. The area just above the land bridge is the only location at TA-03 where it is possible to construct a retention structure of this magnitude. The retention depth required to hold 9 acre-ft behind the land bridge is 26 ft, which is not technically practicable. Figure 10 shows the total retention alternatives for S-SMA-0.25 and S-SMA-2 in Upper Sandia Canyon.

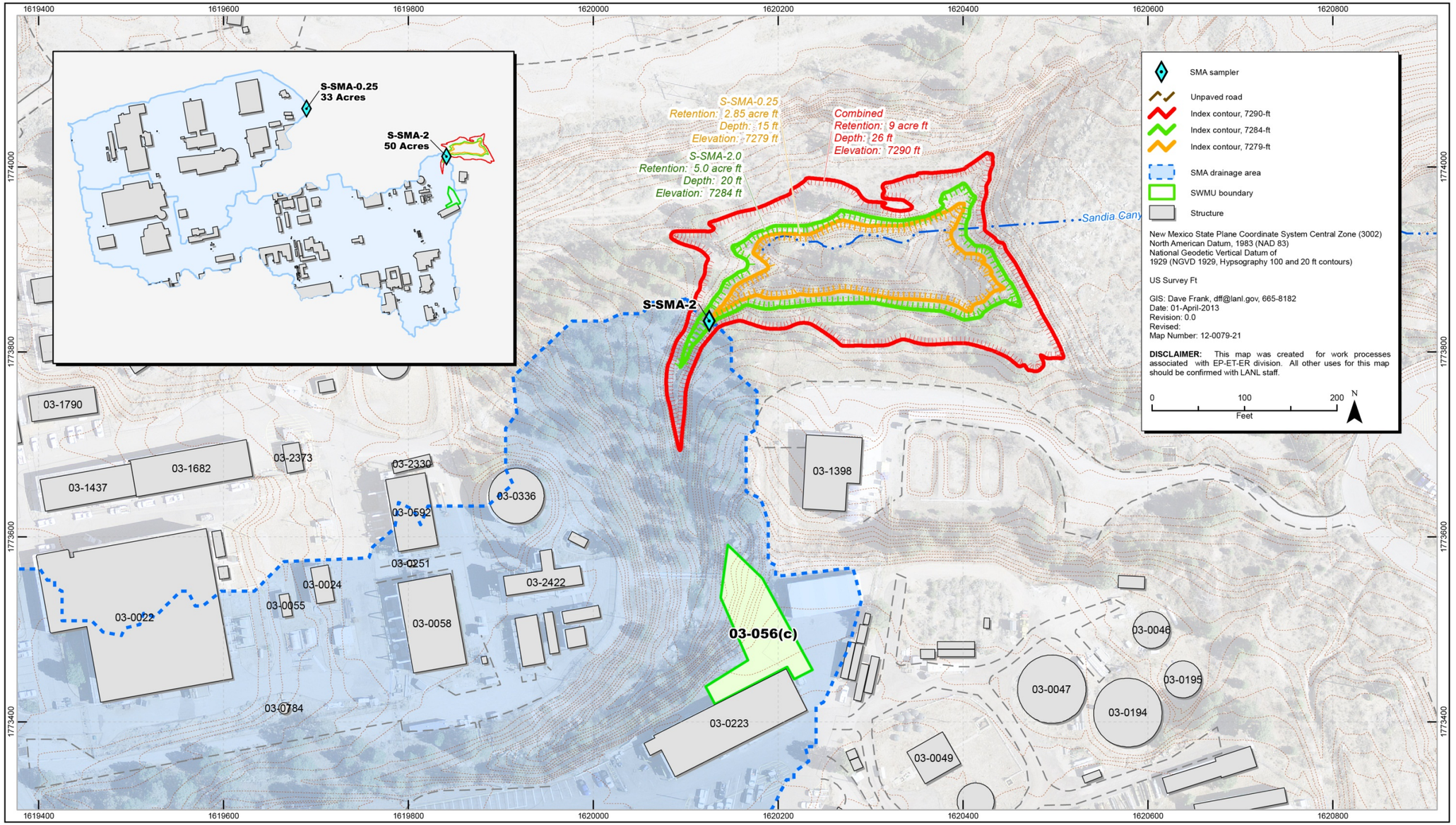

Figure 10 **Total retention alternatives for S-SMA-0.25 and S-SMA-2 in Upper Sandia Canyon**

The construction of this total retention structure would include the following components:

- Performing a geotechnical investigation to determine the stability of the land bridge and the foundation materials.
- Building an access road to the top and bottom of the land bridge.
- Removing the upstream face of the land bridge to a depth of approximately 20 ft and rebuilding it to an engineered standard using quality-control processes to ensure structural stability.
- Installing an impervious upstream liner on the upstream face of the land bridge, including extending the liner to key it into bedrock or upstream to form a partial seepage cutoff barrier.
- Exposing the welded high-density polyethylene storm drain to canyon bottom and holding it in place with two concrete cast blocks.
- Constructing a spillway at the proper elevation including a downstream discharge area to safely discharge storm events greater than the design capacity of the structure.
- Excavating the upstream end of the existing 72-in. corrugated metal pipe that carries storm flows under the land bridge.
- Constructing a reinforced concrete riser that has openings in the sides gaged to release flows from the reservoir over a period of days and prevent water from ponding for long periods of time.
- Clearing the reservoir area of trees and unwanted vegetation below the storage level.

Although it is technically feasible to build this total retention option, site conditions make it impracticable to pursue this option for the following reasons.

- Base flows are required to prevent overtopping of the land bridge. As a result, this option would become a detention structure, not a “total retention” structure.
- Two active NPDES outfalls [Site 03-045(b) and Site 03-045(c)] would have to be rerouted around the land bridge and then discharged into the Sandia wetlands, thus separating the current outfalls from the historical outfall locations.
- The retention depth of 15 to 31 ft of water behind the land bridge could result in increased hydraulic head at the location of the source of contamination associated with the chromium plume and potentially increase migration of contamination to groundwater.

In addition, even if this total retention structure was built, the Permittees would still not be able to certify completion of corrective action under Part I.E.2(b) because TAL exceedances would still occur as a result of urban “background” PCBs within the SMA watershed.

8.2.3 Control Measures That Totally Eliminate the Exposure of Pollutants to Storm Water

The Permittees performed an engineering evaluation of control measures to determine if it is feasible to build a control measure that would totally eliminate the exposure of residual PCBs at Site 03-056(c). One technically feasible option was evaluated: shotcrete and soil nailing. This option includes the following components:

- Removing riprap river rock (control S-00304060005) and chainlink fencing slope protection to allow access for the crew along the top of the hill.
- Installing rock bolts into the exposed vertical canyon face.

- Installing soil nails in exposed extreme grade areas.
- Regrading an existing trail to create access for small equipment and construct a staging area.
- Cleaning out the existing sediment in the stream bed directly below the Site.
- Constructing a small concrete bridge with 12 structural piers to protect existing effluent pipes.
- Excavating a new bench lengthwise across the Site in the least difficult, most level area for the drill rig or other small equipment access.

Although it is technically feasible to construct a cover on Site 03-056(c), site conditions make it impracticable to pursue this option for the following reasons:

- Constructing a cover at Site 03-056(c) could result in increased stream flows that would mobilize contaminants in currently stable sediment and degrade water quality.
- The steep slope and limited access at Site 03-056(c) (Figure 11) will result in significant environmental impacts over a larger footprint than the current Site, including, but not limited to, the construction of significant temporary storm water control measures (e.g., temporarily rerouting the Sandia channel).
- Covering the Site with shotcrete will result in significant environmental damage, including the potential damage to the Sandia wetlands caused by significant increase in storm water flows.
- Covering the Site with shotcrete will require costly maintenance through time.

In addition, even if this cover were built, the Permittees would still not be able to certify completion of corrective action under Part I.E.2(b) because TAL exceedances would still occur as a result of urban "background" PCBs within the SMA watershed.

While economic achievability is not the controlling factor when evaluating corrective action options under the Individual Permit, Part I does allow the Permittees to consider cost when evaluating site-specific control measures. The significant cost of this option, approximately $2.19 million for construction costs alone, combined with the technical challenges, led the Permittees to reject this option.

Figure 11 No exposure shotcrete option at Site 03-056(c)

8.2.4 Receipt of an NMED-Issued Certificate of Completion under the RCRA Consent Order

Site 03-056(c) is unusual in that it has a certificate of completion with controls under the Consent Order, but the required control is linked to the Individual Permit. The required controls were to institute and maintain a control on the Site by monitoring storm water discharge for potential off-site transport of residual contamination. The basis for the required control was the possibility that storm water discharge may mobilize residual contamination from the Site. The PCB TAL exceedances from the storm water samples collected in the summer of 2011 demonstrate the residual PCBs remaining after soil removal to TSCA standards are still a source of PCBs to storm water. Therefore, the Permittees have submitted this alternative compliance request to EPA despite having a certificate of completion for Site 03-056(c).

9.0 PROPOSED ALTERNATIVE COMPLIANCE APPROACH

Based on this evaluation of corrective action options, the Permittees have concluded that they would not be able to certify completion of corrective action for Sites 03-045(b), 03-045(c) or 03-056(c) under Parts I.E.2(a) through E.2(d).

9.1 Sites 03-045(b) and 03-045(c)

As detailed in section 8.1 above, the Permittees are not proposing any engineered controls for Sites 03-045(b) and 03-045(c). Based on the data presented in Section 7.1 above, neither Site is the source of the zinc or copper TAL exceedances and engineered controls would not be effective in achieving TALs. Although PCBs were historically present in the discharge from the Site 03-045(b) outfall, the NDPDES–permitted discharge no longer contains PCBs. Although the low concentrations (i.e., less than 10% of the residential SSL) of PCBs in the soil samples collected under the 2009 Upper Sandia Canyon Aggregate Area investigation (LANL 2010) could be attributed to historical releases, the concentrations are consistent with urban background and engineered controls at this Site would not be effective in achieving TALs. PCBs were not managed at Site 03-045(c). The likely source of the low concentrations of PCBs detected in soils during the 2009 Upper Sandia Canyon Aggregate Area investigation (LANL 2010) is urban, nonsite related sources.

The construction of enhanced control measures or a total retention structure, while technically feasible, would not result in confirmation sample concentrations below TALs because

- Site 03-045(c) is not the source of the copper, zinc, or PCB TAL exceedance;
- Site 03-045(b) is not the source of the copper or zinc TAL exceedance; and
- The contribution of urban, non-Site related “background” PCBs is indistinguishable from any remaining site-related PCBs historically released from the outfall.

While the Permittees believe that NMED will issue certificates of completion under the Consent Order for both Sites once the additional samples are collected, no date for the additional sampling work has been set.

9.2 Site 03-056(c)

If EPA concurs with the Permittees’ corrective action evaluation and places this Site into alternative compliance, the Permittees request that EPA consider the run-on control described in Section 8.1 as part of its individually tailored work plan for Site 03-056(c).

Installing a catch basin and routing storm water across the SWMU via a pipe to the canyon bottom will likely result in a measureable improvement to storm water quality because it will reduce the contact of storm water with the residual PCB contamination at the Site and will minimize erosion.

In addition to any requirements that EPA will issue if this alternative compliance request is granted, the Laboratory is also performing work under the Consent Order downstream of the Site in Upper Sandia Canyon. The Laboratory is working with NMED under the Consent Order to ensure the Sandia wetlands continue to maintain the hydrologic and geochemical conditions that minimize contaminant migration. This work includes constructing a series of three stepped-grade-control structures followed by a cascade pool to arrest a headcut taking place in the lower portion of the wetland (Figure 12). Construction began in April 2013 and is scheduled to be completed in October 2013. The objective of this scope of work, which was approved by NMED on November 15, 2011, is to ensure that the Sandia wetlands continue to maintain their hydrologic and geochemical conditions to minimize contaminant migration.

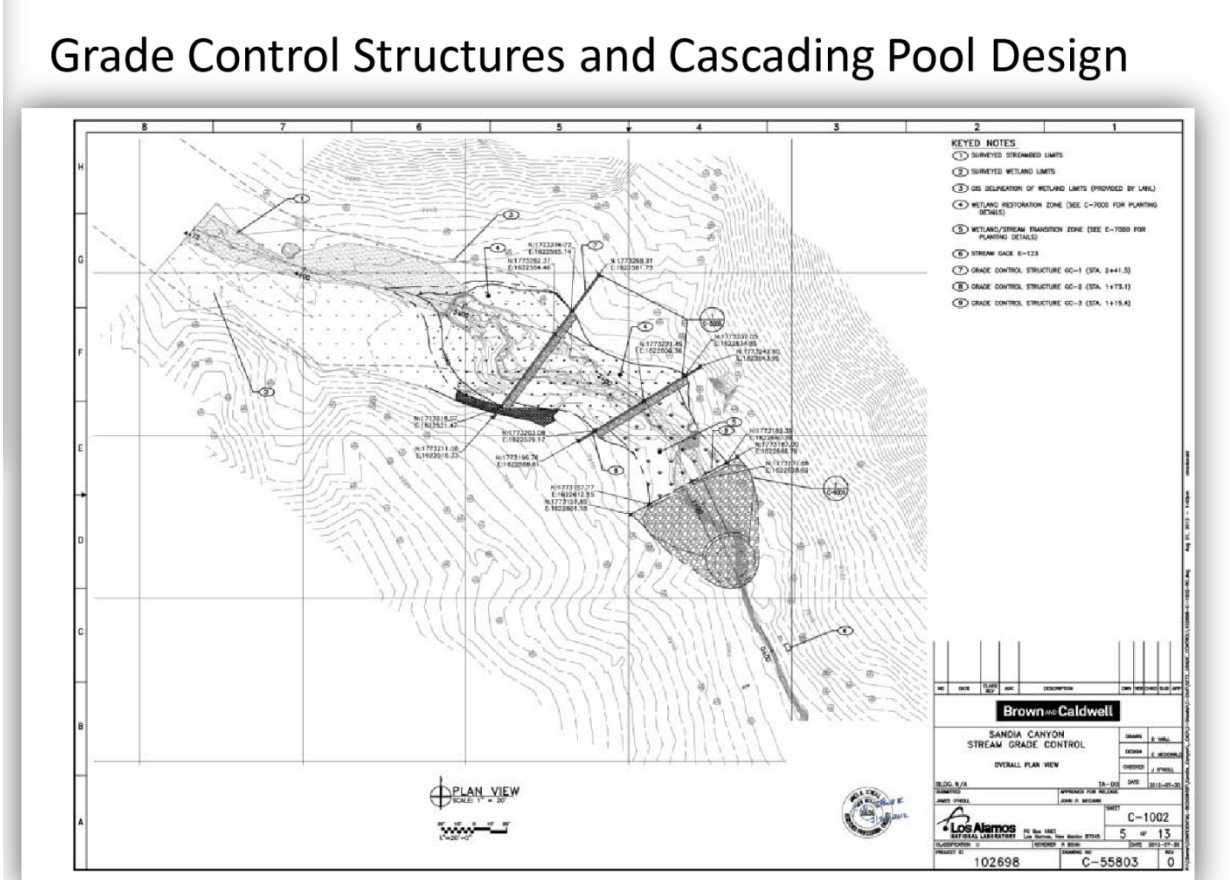

Figure 12 Current and future conditions of the terminus of Sandia Canyon wetlands

10.0 REFERENCES

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Attachment A

Certification of Completion of Baseline Controls at S-SMA-2

CERTIFICATION OF COMPLETION OF BASELINE CONTROL MEASURE IMPLEMENTATION AT THE FOLLOWING PERMITTED FEATURES / SITE MONITORING AREAS

NPDES Permit No. NM0030759

PERMITTED FEATURE	SITE MONITORING AREA
S001	S-SMA-0.25
S003	S-SMA-2
S006	S-SMA-3.6

CERTIFICATION OF COMPLETION OF BASELINE CONTROL MEASURE IMPLEMENTATION AT THE FOLLOWING PERMITTED FEATURES / SITE MONITORING AREAS

NPDES Permit No. NM0030759

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penaly 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."

A R Grieggs

Anthony R. Grieggs
Group Leader, ENV-RCRA
Environmental Protection Division
Los Alamos National Laboratory

11/22/10
Date

Gene Turner

Gene Turner, Environmental Permitting
Los Alamos Site Ofiice
National Nuclear Security Administration

11/17/10
Date

PF: S003 SMA: S-SMA-2

Baseline Control Measures Required :

Type of Control Measure	Erosion Control (EC)	Run-Off Control (ROF)	Run-On Control (RON)	Sediment Control (SC)
Channel/Swale	X		X	
Established Vegetation	X			
Gabions		X		X

Baseline Control Measures Installed :

BMP ID	Type of Control Measure	Control Measure	Photo ID	EC	ROF	RON	SC
S00303020008	Berms	Base Course Berm	7600-1.JPG			X	X
S00304060005	Channel/Swale	Rip Rap	7600-4.JPG	X		X	
S00304060010	Channel/Swale	Rip Rap	7600-5.JPG	X		X	
S00304060009	Channel/Swale	Rip Rap	7600-2.JPG	X		X	
S00302010007	Established Vegetation	Permanent Vegetation Grasses and Shrubs	7600-3.JPG	X			
S00307020006	Gabions	Gabion Blanket	7600-6.JPG		X		X

Comments

None applicable.

Photo 7600-1.JPG (taken 08/03/10) S00303020008 : Berms - Base Course Berm.

PF: S003 SMA: S-SMA-2

Photo 7600-2.JPG (taken 08/03/10) S00304060009 : Channel/Swale - Rip Rap.

Photo 7600-3.JPG (taken 08/03/10) S00302010007 : Established Vegetation - Permanent Vegetation Grasses and Shrubs.

PF: S003 SMA: S-SMA-2

Photo 7600-4.JPG (taken 08/03/10) S00304060005 : Channel/Swale - Rip Rap.

Photo 7600-5.JPG (taken 08/03/10) S00304060010 : Channel/Swale - Rip Rap.

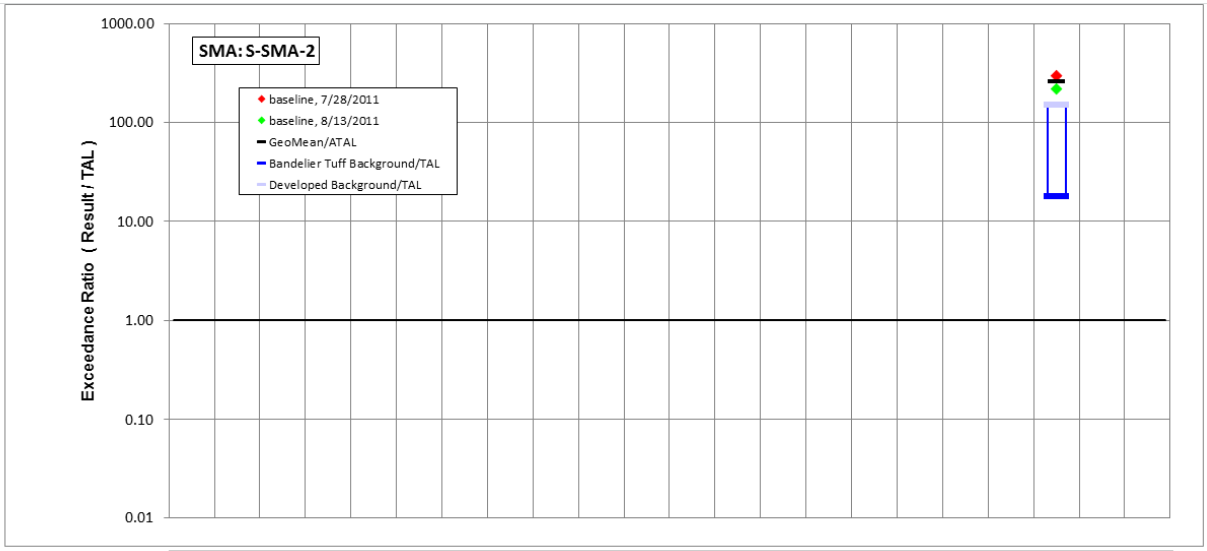
PF: S003

SMA: S-SMA-2

Photo 7600-6.JPG (taken 08/03/10) S00307020006 : Gabions - Gabion Blanket.

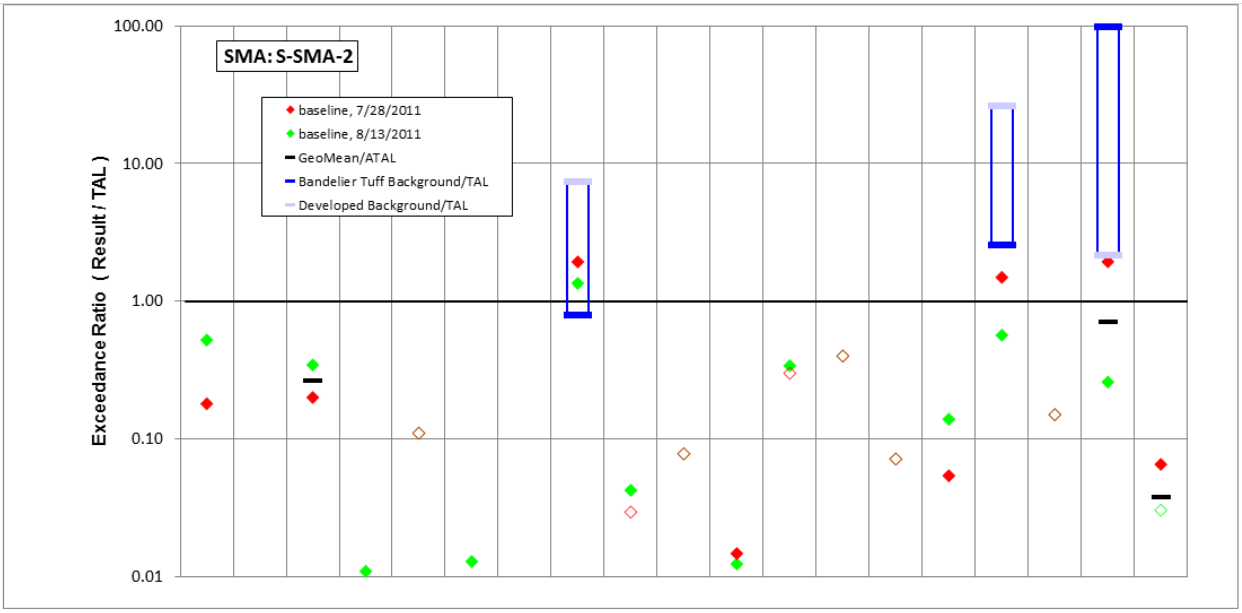
Attachment B

Storm Water Exceedances in Baseline Confirmation Samples at S-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
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.14**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**220**	-	-
7/28/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.19**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**300**	-	-

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



	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
8/13/2011 result	392	1.4	3.1	54.6	*0.11*	2.7	1.8	**5.8**	0.72	*0.06*	2.1	1.7	*0.2*	*0.45*	13.9	23.8	*0.002*	3.88	*0.91*
result / TAL	0.52	0.0022	0.34	0.011	*0.11*	0.013	0.0018	**1.3**	0.042	*0.078*	0.012	0.34	*0.4*	*0.071*	0.14	0.57	*0.15*	0.26	*0.03*
7/28/2011 result	135	1.8	1.8	32	*0.11*	*2*	1.8	**8.3**	*0.5*	*0.06*	2.5	*1.5*	*0.2*	*0.45*	5.4	**62.6**	*0.002*	**29**	1.96
result / TAL	0.18	0.0028	0.2	0.0064	*0.11*	*0.01*	0.0018	**1.9**	*0.029*	*0.078*	0.015	*0.3*	*0.4*	*0.071*	0.054	**1.5**	*0.15*	**1.9**	0.065

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