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Permit

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Date: April 1, 2004
Refer to: RRES-WQH: 04-058

Ms. Waudell Strickley
Water Enforcement Branch (6EN-WC)
U. S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

SUBJECT: SUBMITTAL OF DRAFT STORM WATER MONITORING PLAN NPDES MSGP NO. NMR05A734 & NMR0SA735

Dear Ms. Strickley:

The Department of Energy (DOE) and the University of California's (UC) is submitting the Laboratory's Draft Storm Water Monitoring Plan (SWMP) for your review and comment. This plan was prepared by the Laboratory's Water Quality and Hydrology Group (RRES-WQH) as a requirement of the Federal Facility Compliance Agreement (FFCA). This SWMP addresses monitoring storm water on a watershed scale and specifically covers, Data Quality Objectives, sample methodology, quality control, action levels and reporting requirements. Copies of this SWMP have also been sent to the New Mexico Environment Department's Hazardous Waste and Surface Water Quality Bureaus for review and comment. Please provide comments by May 1, 2004. Once comments from all parties are received, a meeting will be scheduled to discuss all issues and to arrive at a consensus on a path forward. A final draft will then be prepared and submitted to EPA Region 6 and NMED.

Please contact Mike Saladen at (505) 665-6085 or myself at (505) 667-0013, if you have questions or need additional information regarding the Laboratory's NPDES Permit Programs.

Sincerely,

Steve Veenis

Steve Veenis
Water Quality & Hydrology Group

SV/lm

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NMED Hazardous Waste Bureau

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Draft
Storm Water Monitoring Plan

RRES-WQH
LA-UR-04-2157
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Introduction

This Storm Water Monitoring Plan (SWMP) is provided to fulfill the requirements of the Federal Facilities Compliance Agreement (FFCA) and the EPA Schedule Order for a plan that describes the watershed-specific storm water monitoring, sampling, and reporting at Los Alamos National Laboratory. Both the watershed-specific monitoring required by the FFCA, and the monitoring of conventional sites under the Multi-Sector General Permit (MSGP) requirements are covered by this plan. The recommendations in the January 6, 2004 letter from Steve Yanicak, DOE Oversight Bureau to Gene Turner, DOE, Subject: Recommendations for Improved Watershed Storm Water Monitoring Methods also provided the basis for much of this plan.

This document begins with a description of the Data Quality Objectives (DQOs) that drive the sampling program. The DQO section describes the problem to be addressed and provides the decision framework for evaluating the data collected under this plan. The sampling methodology that supports these DQOs is then described. This is followed by a discussion of the analytical quality control requirements. The final section on Reporting describes the reports that will be provided to support the FFCA and the MSGP.

Responsibilities for accomplishing the requirements of this plan are shared by the Department of Energy (DOE) and the University of California (UC). DOE and UC are co-permittees of the MSGP. The FFCA will apply to DOE. The EPA Schedule Order will apply to UC.

This plan covers the MSGP and the watershed scale monitoring. There is a separate plan which describes the approach for Site Specific SWMU sampling in support of the FFCA. It is provided as an Appendix to the Storm Water Pollution Prevention Plan for Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs). That document describes SWMU Site Specific water monitoring, erosion controls, and reporting and will be submitted separately.

DQOs for Storm Water Monitoring Plan

1. Problem Statement

The Federal Facilities Compliance Agreement (FFCA), EPA Schedule Order, and Multi-Sector General Permit (MSGP) require that quarterly grab samples be collected at watershed stations across the Laboratory. The purpose of this monitoring is to determine if the concentration of a constituent is greater than an applicable water quality standard or an MSGP Benchmark. At this time, the applicable standards are the Livestock Watering, Wildlife Habitat, Acute Aquatic Life (Fisheries) Standards adopted by the New Mexico Water Quality Control Commission (WQCC), and the appropriate MSGP Sector Benchmarks. wSALs are to be used as a screening tool to help assess whether potential ecological or human health impacts may develop due to the concentrations of various

constituents discovered in water. They will be used to assess best management practices (BMPs) performance. These standards are identified as acute or chronic standards below.

These wSALs shall be determined in a step-wise process.

1. The applicable State of New Mexico Standards for Interstate and Intrastate Surface waters (20 NMAC 6.4) will be used as the first criteria for setting wSALs.

Acute wSALs

a. The Acute Aquatic Life (Fisheries) criteria for any compound found in the water quality standards, measured as total recoverable concentration in water, will be listed as an initial Acute wSAL.

Chronic wSALs

a. Livestock Water Standard and Wildlife Habitat Standards measured as dissolved or total as specified in the applicable State of New Mexico Standards for Interstate and Intrastate Surface waters (20 NMAC 6.4)

b. NPDES Storm Water Multi-Sector General Permit (MSGP, 65 FR 64746-64880) benchmark values will be used as the next source of available wSALs.

c. If any constituents of concern (COCs) are identified that are not included in the above, or the wSALs are considered inappropriate, wSALs may be developed using procedures for developing acute criteria in the Standards for Interstate and Intrastate Surface Waters (20.6.4.12 F) NMAC and the National Recommended Water Quality Criteria 2002, 40 CFR 131 (EPA-822-R-02-047), or where information is unavailable to develop acute criteria, procedures used by EPA to develop NPDES effluent limitations and storm water benchmarks.

d. Where no appropriate criterion is available, an acceptable wSAL can be developed in consultation with the Administrative Authority(s).

High explosives, dioxins and furans, and perchlorate are analyzed to fulfill requirements as described in the FFCA and EPA Schedule Order. Additionally, DOE voluntarily shares radionuclide data for contaminated sites pursuant to DOE guidance dated September, 1998, entitled *Sharing Radionuclide Information With States*, and pursuant to the Agreement-in-Principle between DOE and the State of New Mexico for Environmental Oversight and Monitoring, dated, November 29, 2000. Radionuclide data will be provided in accordance with FFCA and EPA Schedule Order reporting schedules. All the SWMP data will be available to the Remediation Services Program for their evaluation.

2. Identify the Decisions

1) Have Laboratory operations or industrial activities caused concentrations in storm runoff to be greater than a wSAL such that corrective actions may be required?

2) How do we determine when there are sufficient analytical results to demonstrate that the watershed represented by a station is not contributing constituents of Laboratory origin such that sampling frequency may be reduced or halted and the station discontinued?

3. Identify Inputs to the Decisions

Storm runoff samples will be automatically collected as multiple grab samples with ISCO samplers at each of the locations specified in the FFCA, EPA Schedule Order and/or MSGP and incorporated into this Storm Water Monitoring Plan. The samples will be collected during the first thirty minutes of flow in accordance with EPA MSGP protocols. The one liter plastic or glass bottles will be individually submitted for each analytical suite. In some cases multiple sample bottles will be submitted to provide sufficient water for an analytical suite. No compositing of samples will be performed. This represents a change in the sampling procedure so the analytical results will not be comparable to results reported under the Environmental Surveillance Program in previous years.

4. Boundaries

Sampling stations are established at designated locations throughout the Laboratory, primarily at confluences of major drainages and at Laboratory boundaries. The locations and analytical suites represent those identified in the FFCA, the EPA Schedule Order, and the stations covered by the Multi-Sector General Permit. The Sampling Methodology section, beginning on page 10, includes the stations to be sampled and the suites of analytes to be collected at each station. The stations will be operated to collect four samples per year when precipitation causes sufficient flow so that samples can be collected. For more detail see the Sampling Frequency section under Sampling Methodology on page 14.

5. Decision Rules

An exceedance of a wSAL will trigger inspection of sites and associated BMPs. Clearly visible problems shall be documented and a corrective action plan developed to add or improve BMPs. If no problems are evident based on a visual inspection, then a focused investigation of additional sampling, including background sampling where appropriate, shall be conducted.

The wSALS are the basis for the following decisions. Figure 1 presents a flow chart that shows the decision logic as described below. The Acute Aquatic Life Standards (Fisheries) will be evaluated as Acute wSALs. The Livestock Watering Standard, Wildlife Habitat Standard, and the MSGP Benchmarks will be evaluated for chronic

conditions and will be referred to as Chronic wSALs. The Chronic wSALs will be compared to the calculated concentration as described below.

Decision Rule for Acute wSALs

1) At present the Acute wSALs are the Acute Aquatic Life (Fisheries) criteria. If the analytical result of a single unfiltered grab sample is greater than the Acute wSAL, and using best professional judgment it is determined that the cause represents a Laboratory impact, then the Laboratory will identify the source and implement corrective actions. We will use best professional judgment to determine Laboratory impacts by developing technology-based BMPs on a case-by-case basis using all reasonably available and relevant data.

2) If corrective actions are warranted according to Decision Rule 1) the Laboratory will continue to monitor the station until three consecutive results are less than the Acute wSAL. When this occurs the Laboratory will recommend that the sampling frequency be reduced, will propose a modification of the SWMP, and will submit it to EPA for review and approval. Monitoring plans must be submitted to EPA and NMED by March 31st, following a monitoring period.

Decision Rules for Chronic wSALs

The Chronic wSALs are identified in the Problem Statement on page 5. The Chronic wSALs include the Livestock Watering Standard, the Wildlife Habitat Standard, and the appropriate MSGP Benchmarks.

Calculated Concentration

The first step in evaluating a Chronic wSAL is to determine the ***calculated concentration*** for a sample or group of samples. The calculated concentration is calculated in two ways depending on the number of samples collected in a year.

Four or more samples were collected in a year:
If four or more samples are collected in a calendar year the calculated concentration is the average concentration of all the sample results for the calendar year.

Fewer than four samples collected in a year:
If fewer than four samples are collected in a calendar year the calculated concentration is the average of the four most recent sample results. This is called the moving average of the four most recent samples.

1) If the calculated concentration is greater than a Chronic wSAL, see Problem Statement on page5, and using best professional judgment it is determined that the cause represents a Laboratory impact, then the Laboratory will identify the source and implement corrective actions until the calculated concentration for subsequent samples is less than the Chronic wSAL. We will use best professional judgment to determine Laboratory impacts by developing technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data.

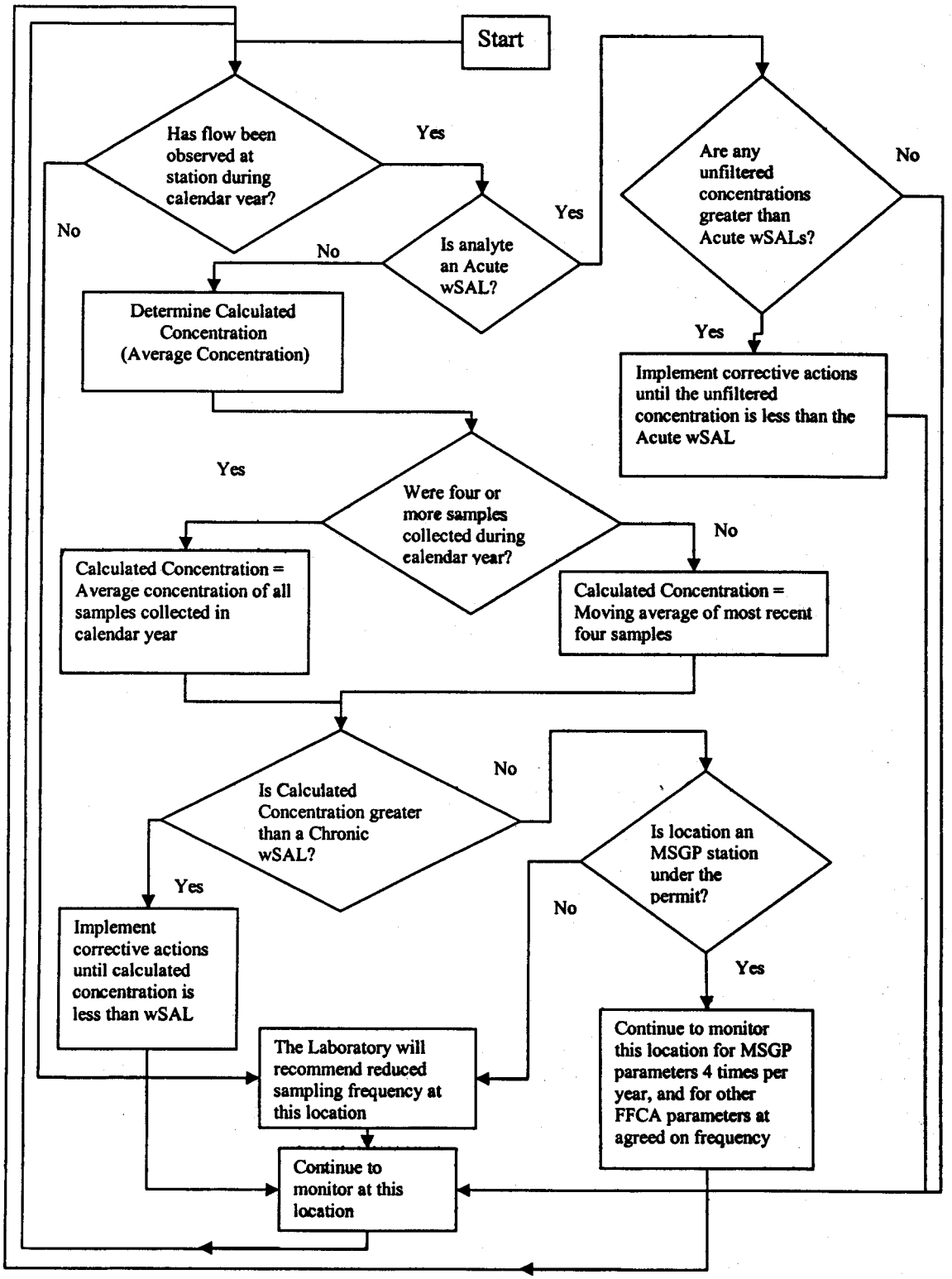
2) If corrective actions are warranted according to Decision Rule 1) the Laboratory will continue to monitor the station until the first instance where the calculated concentration (the average of four or more samples as described above) is less than the Chronic wSAL. When this occurs the Laboratory will recommend that the sampling frequency be reduced, will propose a modification of the SWMP, and will submit it to EPA for review and approval. Monitoring plans must be submitted to EPA and NMED by March 31st, following a monitoring period.

3) If four samples have been collected at a station, not covered by the MSGP, and the calculated concentration is less than a Chronic wSAL, then the Laboratory will recommend that the sampling frequency be reduced, will propose a modification to the SWMP, and will submit it to EPA for review and approval. Monitoring plans must be submitted to EPA and NMED by March 31st, following a monitoring period. If the station is under the MSGP we will continue to monitor for only the appropriate sector parameters until the MSGP is modified or superseded. The MSGP monitoring will continue regardless of whether an analytical result is greater or less than a Benchmark value.

Decision Rule for Flow

If no flow is observed at a station for a calendar year, and the lack of documented flow is not due to a mechanical error, then the Laboratory will recommend that the sampling frequency be reduced. The Laboratory will propose a modification of the SWMP and submit it to EPA for review and approval. Monitoring plans must be submitted to EPA and NMED by March 31st, following a monitoring period.

Figure 1 Decision Logic Flow Chart



6. Limits on Uncertainty

- Determine that the calculated concentration is greater than a wSAL and is of Laboratory origin when that is not the case – Consequences include the expense of unnecessary further study and potential mitigation actions, possible state or federal enforcement, and unnecessary alarm to the Laboratory's neighbors.
- Fail to determine that a calculated concentration is greater than a wSAL and is of the Laboratory origin when, in fact the calculated concentration is greater than a wSAL and is of Laboratory origin. – Consequences include a continuing unresolved potential threat to human health or the environment.

7. Optimize the Design

After one year of sampling the Laboratory will evaluate the data, re-assess the DQO Decision Criteria, and determine if a more resource effective design could provide the data that meets all the DQOs.

Sampling Methodology

Objective

One of the objectives of the SWMP is to collect the full required analytical suite as shown on Table 1 at each location, four times each year when precipitation (as rainfall or as snowmelt) produces stream flow in volumes large enough to allow for sample collection. At the end of each calendar year, the data will be reviewed and an evaluation be made to propose if sampling should continue at that station. See the above DQOs for the decision criteria to be used to make this determination.

Analytes, Suites, and Analytical Methods

Table 1 shows the analytical suites and locations that will be sampled under the Storm Water Monitoring Plan. In addition to the suites listed in Table 1, SSC will be included in the analysis for all locations. The corresponding analytes, analytical methods, and detection limits are presented in Appendix A. For those analytical suites where 40 CFR 136 methods are not available, other methods have been specified. The Laboratory will request EPA approval for these methods. Appendix A includes a table for amenable cyanide (CN (amen). This analyte is included because it is included in the Wildlife Habitat WQCC standards. The locations where this analyte will be sampled for have not been determined.

Table 1 Stations and Suites to be Sampled

			MSGP	FFCA Suites					
Location Name		Conventional Site	Sector	Rad	Metals	PCB	DIOX/FUR	HE	ClO4
Los Alamos below Ice Rink	E026			X	X	X			
Los Alamos above DP Canyon	E030		K	X	X	X			
DP above TA-21	E038		K	X	X	X			
DP below Meadow at TA-21	E039		K	X	X	X			
DP above Los Alamos Canyon	E040			X	X	X			
Los Alamos above SR-4	E042		K	X	X	X			
Los Alamos below LA Weir	E050			X	X	X			
Pueblo above Acid	E055		K	X	X	X			
Acid above Pueblo	E056		K	X	X	X			
South Fork of Acid Canyon	not assigned				X	X	X		
Pueblo above SR-502	E060		K	X	X	X	X		
Sandia right fork at Power Plant	E121	Yes	K,O	X	X	X			
Sandia left fork at Asphalt Plant	E122	Yes	K, AA		X	X			
Sandia Tributary from Roads and Grounds	E122.2	Yes	K						
Sandia Tributary below Sigma	E122.3	Yes	F						
Sandia Tributary behind MRF	E122.35	Yes	N						
Sandia tributary at Heavy Equipment	E122.5	Yes	K						
Sandia below Wetlands	E123				X	X			
Sandia above Firing Range	E124		K	X	X	X		X	
Sandia above SR-4	E125			X	X	X		X	
TA-55 NW above Effluent Canyon	E196	Yes	K						
Mortandad below Effluent Canyon	E200		K	X	X	X			X
Mortandad above Ten Site	E201		K	X	X	X			
Ten Site at TA-50	E201.1	Yes	K						
Ten Site below MDA C	E201.3	Yes	K	X	X				
Ten Site above Mortandad	E201.5		K	X	X				
Mortandad above Sediment Traps	E202			X	X				
Mortandad below Sediment Traps	E203			X	X				

			MSGP	FFCA Suites					
Location Name		Conventional Site	Sector	Rad	Metals	PCB	DIOX/FUR	HE	ClO4
Mortandad at LANL Boundary	E204		K	X	X				X
Canada del Buey near TA-46	E218		K	X	X	X			
TA-54 RANT	E220	Yes	K						
Area J West	E220.5	Yes	L						
Area J East	E220.7	Yes	L						
MDA L	E223	Yes	K						
Canada del Buey near MDA G	E225		K	X	X	X			
MDA G-13	E227	Yes	K, L	X	X	X			
Canada del Buey above SR-4	E230			X	X	X			
Pajarito below SR-501	E240			X	X				
Pajarito above Starmers	E241				X				
Starmers above Pajarito	E242		K		X				
La Delfe above Pajarito	E242.5		K		X			X	
Pajarito above Twomile	E243		K	X	X			X	
Twomile tributary at TA-3	E243.5	Yes	K	X	X		X		
Twomile above Pajarito	E244		K	X	X	X	X	X	
Pajarito above TA-18	E245			X	X	X		X	
Pajarito above Threemile	E245.5			X	X	X		X	
Threemile above Pajarito	E246		K	X	X	X		X	
MDA G-1	E247			X	X	X			
MDA G-2	E248	Yes	K, L						
MDA G-6U	E248.5	Yes	K, L	X	X	X			
MDA G-4	E249	Yes	K, L	X	X	X			
MDA G-7	E249.5	Yes	K, L						
Pajarito above SR-4	E250		K	X	X	X	X	X	
Water above SR-501	E252			X	X				
Canon de Valle above SR-501	E253			X	X				
Canon de Valle below MDA P	E256		K		X			X	
Canon de Valle tributary at Burn Grounds	E257	Yes	K		X			X	
Water above S Site Canyon	E260		K		X			X	
S Site Canyon above Water	E261		K		X			X	
Canon de Valle above Water	E262	Yes	K	X	X			X	
Water below MDA AB	E262.5		K	X	X			X	
Water at SR-4	E263			X	X			X	
Indio at SR-4	E264			X	X			X	
Water below SR-4	E265			X	X	X			
Potrillo at Lower Slobbovia	E266		K	X	X			X	

			MSGP	FFCA Suites					
Location Name		Conventional Site	Sector	Rad	Metals	PCB	DIOX/FUR	HE	ClO4
Potrillo above SR-4	E267			X	X				
Fence below Meenie	E267.5	Yes	K						
Ancho north fork below SR-4	E274	Yes	K	X	X	X		X	
Ancho below SR-4	E275			X	X	X		X	
Chaquehui at TA-33	E338		K	X	X				
Chaquehui tributary at TA-33	E340		K		X				
Note:									
Suspended Sediment Concentration (SSC) will be analyzed with every sample									

When MSGP sampling is required at the same location where the FFCA requires metals:
Sector AA- add NO3+NO2-N
Sector F- included in FFCA Metals Suite
Sector K- add NH3-N, COD, and CN (TOTAL)
Sector L- Iron is included in FFCA Metals Suite, SSC is required for every sample
Sector N- add COD to Order Metals Suite, SSC is required for every sample
Sector O- Included in FFCA Metals Suite

Conventional Industrial Sites

A Conventional Industrial Site is a site with an industrial activity as defined by 40 CFR 122.26 (b)(14) that is not exclusively designated as a Solid Waste Management Unit as defined by EPA Region VI. The stations that monitor Conventional Sites are identified by a "Yes" in the Conventional Sites column in Table 1. At the Laboratory the Conventional Industrial Sites are:

- TA-54 MDA G, H, J, and L,
- TA-54 RANT,
- DX Firing Sites,
- DX Metals Fabrication,
- TA 3-39, Metals Fabrication,
- TA 3-38, Metals Fabrication,
- TA-60 Motor Pool
- TA-3-66 Sigma Foundry,
- TA-3-22 Steam Electric Power,
- TA-50 RLWF Facility,
- TA-55 Plutonium Facility, and
- TA-60 Materials Recycling Facility (MRF).

In some instances, SWMUs are co-located within Conventional Industrial Site drainage areas. When this occurs, Sector K Benchmark parameters are added to the analytical suite for monitoring.

Sampling Frequency

The stations will be operated to collect four complete samples each year when precipitation causes sufficient flow so that samples can be collected. Runoff to be sampled under this plan includes both runoff from snowmelt and runoff from rainfall. No more than one snow melt sample will be collected per year. If a snowmelt sample is collected in a year then three storm runoff samples should be collected if flow permits. It no snowmelt sample is collected four storm runoff samples should be collected if flow permits. There will be no requirement for samples to be collected during any particular quarter. While samples will be collected from separate runoff events there is no minimum time required between sampled events. Occasionally, insufficient water is collected and only a partial sample can be submitted for analysis. If this occurs the remaining analytical suites will be the first priority for the next sampling event.

Freezing temperatures during winter months make it infeasible to operate the automated samplers. In addition, it is very unusual to have rainfall events that result in enough runoff to collect samples during the winter months. For these reasons the automated samplers will be turned off from December 1 through March 1.

Sampling, Priorities, and Volumes

To accomplish this sampling automated ISCO samplers will be installed at each of the locations in Table 1. The objective is to fill all the necessary bottles in the first thirty minutes of the event. Two ISCO samplers will be installed at the locations where organics are part of the analytical suite. One ISCO will contain plastic containers and the other sampler will contain one liter glass jars. At those locations where there is only one ISCO sampler an additional one liter glass bottle or two 350 ml glass bottles will be added to the carousel to collect samples for mercury and tritium. The ISCOs will be programmed to pump continuously until all the bottles are filled.

Table 2 shows the volume and bottle requirements in order of priority. For all non-radionuclides, these volumes are twice the analytical laboratory's absolute minimum volume required. If sufficient water is not collected to meet this volume the lab can manage with one half the volume shown. For radionuclides this volume represents the minimum volume that the analytical laboratory requires to perform the analysis.

An attempt is made to try to provide the analytical laboratory with extra water to allow for errors and spills. To accomplish this the carousels should be equipped with extra bottles to provide extra water to the analytical laboratory for reserve in case problems are encountered in the analysis. These extra sample bottles should be submitted unpreserved so they can be used for any required analyses.

Table 2 Priorities and Volumes

Priorities and Volumes		1.0 Liter Plastic		1.0 Liter Glass	
Suite	Volume[1] (ml)	Number of I.0 L plastic	Preservative	Number of 1.0 L glass[2]	Preservative
High Explosives	1540			2	Cold
PCB	2000			2	Cold
DIOX/FURAN	2000			2	Cold
ClO4	100	1	None		
SSC	300	1	Cold		
[3]Metals (Filtered and Unfiltered)	600	1	HNO3	1	HNO3[4]
Special MSGP parameters as needed and CN (amen)	varies 100	1	H2SO4[5] NaOH/cold		
Radionuclides	3800	4	HNO3	1	None[6]
Total	10440	8		8	

[1]Except for radionuclides the volumes shown are twice the absolute minimum volume the lab can use. We provide the la extra water to allow for errors and spills. If sufficient water is not collected one half the listed volume can be used. For radionuclides the volume shown above is the minimum volume the lab can use.

[2]A separate ISCO sampler will be used to collect organics in 1.0 Liter glass bottles

[3]Filter one half of 1 liter plastic into a second bottle in the field for the filtered metal analysis. Shake the bottle well, pour off the approximate amount to be filtered, then filter. This prevents leaving an excessive amount of sediments in the unfiltered sampled. Preserve both bottles after filtering.

[4]For Hg

[5]H2SO4 - except CN (amen) and/or CN (TOTAL) which is NaOH/cold

[6]For Tritium

Retrieving Samples from ISCOs

When the samples are retrieved the time and date when each bottle filled will be recorded on the field sheet. No sample compositing or splitting will be done. The individual sample bottles from the ISCO carousels will be preserved appropriately and submitted for analysis. Table 2 shows the suites in order of priority. In those cases where insufficient water is collected to satisfy all the analytical requirements the Laboratory will submit samples in the priority order from top to bottom for the glass or plastic bottles that have been filled.

For example, if all the suites are required at a particular location, the first two 1.0 Liter glass bottles will be submitted for High Explosives analyses. The last four one liter plastic bottles (not including the extra bottles) will be submitted for radionuclides. The extra samples will be submitted to the analytical laboratory and will be labeled *Extra for Reserve.* If all the required suites are not collected during a runoff event the missing suites will be the first priority for the next runoff event at that station.

Three to five hundred milliliters from the one liter plastic container collected for metals will be filtered into a separate bottle, preserved, and submitted for filtered metals analysis. Filtration and preservation will be accomplished as soon as practical to meet 40 CFR 136 requirements. The filtration will be performed as follows: shake the bottle well; pour off the approximate amount to be filtered into a second, clean bottle; filter from the second bottle into a third clean bottle; preserve and submit the third bottle with the filtered water in it; discard whatever is left behind in the second bottle after filtering. This process prevents leaving an excessive amount of sediments in the unfiltered sample.

The priorities in Table 2 were established for the following reasons. Perchlorate is the first priority because it is the newest contaminant of concern, and therefore the Laboratory has conducted less sampling for perchlorates in surface water, compared to other analytes. The next analyte is Suspended Solid Concentration. Because many contaminants are bound to sediments this concentration is critical to understanding the other analytical results. The filtered and unfiltered metals and the special Multi-Sector General Permit analytes are collected next to complete the required analytical suites under the FFCA and EPA Schedule Order. Radionuclides are collected last as these are collected voluntarily and because this suite requires the most water.

Splitting Samples with Other Entities

It is anticipated that other entities or organizations may desire to split samples or to collect samples at the Laboratory's gaging stations. In the Laboratory's experience there is often too little water to complete the full analytical suite for each storm runoff event. If other entities desire split samples they will be expected to provide their own ISCO samplers. The Laboratory will assist the other entity in installing and operating their ISCO sample at the Laboratory's gaging station.

Laboratory and Field QC Samples

Table 3 shows the extra volume required for samples submitted for laboratory quality control samples. Since we are using an additional ISCO sampler where organics are required there should be sufficient water for laboratory or field QC requirements. See the ***Analytical Quality Control*** section below for a more thorough discussion of the quality control sample requirements.

Table 3 Priorities and Volumes for Samples with Laboratory QC

Suite	Volume[1] (ml)	1.0 Liter Plastic Number of I.0 L plastic	Preservative	1.0 Liter Glass Number of 1.0 Liter glass[2]	Preservative
High Explosives	2240			3	Cold
PCB	3000			3	Cold
DIOX/FURAN	4000			4	Cold
ClO4	150	1	None		
SSC	300	1	Cold		
[3]Metals (Filtered and Unfiltered)	900	2	HNO3	1	HNO3[4]
		1	NaOH/cold		
Special MSGP parameters as needed	varies	1	H2SO4[5]		
and CN (amen)	150		NaOH/cold		
Radionuclides	4950	5	HNO3	1	None[6]
Total	15690	11		12	

[1]This is the minimum volume the lab can use to process the QC sample. For the volumes listed here there is no provision for extra water for errors or spills.
[2]A separate ISCO sampler will be used to collect organics in 1.0 Liter glass bottles
[3]Filter one half of 1 liter plastic into a second bottle in the field for the filtered metal analysis. Shake the bottle well, pour off the approximate amount to be filtered, then filter. This prevents leaving an excessive amount of sediments in the unfiltered sampled. Preserve both bottles after filtering.
[4]For Hg
[5]H2SO4 except for SSC which is cold
[6]For Tritium

Analytical Quality Control

Laboratory Quality Control Samples and Batching Requirements

The analytical laboratory quality control (QC) requires running a replicate or matrix spike and matrix spike duplicate for each of the analytical methods used for the SWMP. These must be run for each batch of samples. To allow the laboratory to do this the Laboratory must submit additional water for one sample in each batch. There are two requirements for batching samples. 1) The laboratory QC samples must be run at minimum for every 20 samples. 2) If samples are stored to accumulate a larger batch size, holding times must not be exceeded.

To simplify this process the Laboratory will submit storm runoff samples by runoff event. The Laboratory will collect samples when precipitation produces stream flow in volumes large enough to sample. The Laboratory will not attempt to store or accumulate samples to achieve larger batch sizes. Samples will be shipped as they are collected by runoff event. A storm runoff event will make up a batch unless there are more than 20 samples collected. If more than 20 samples are collected in a runoff event they will be submitted as two or more batches each containing less than 20 samples. Each batch will have one sample for each analytical method with sufficient volume for the analytical laboratory to run the required matrix spike and matrix spike duplicate, or the replicate sample. Table 4 shows the volume requirements and the holding times for these laboratory QC samples.

Table 4 Volume Requirements for Laboratory QC

Volume Requirements for Matrix Spike, Matrix Spike Duplicate, and Replicates

Suite	Method(s)	Sample volume* (mL)	MS (mL)	MSD (mL)	Rep (mL)	Total Volume required (mL)	Holding Time (Sample)	Holding Time (Extract)
Radionuclides	Generic:Alpha-Spec	1000			1000	2000	180 days	NA
	Generic:Gas Flow Proportional Counting	500	500	500		1500	180 days	NA
	EPA:900	100	100	100		300	180 days	NA
	Generic:Liquid Scintillation Counting	50	50	50		150	180 days	NA
	EPA:901.1	500			500	1000	180 days	NA
Radionuclides Total Volume						4950		
Metals	EPA:200.7	50	50	50		150	180 days	NA
	EPA:200.8	50	50	50		150	180 days	NA
	EPA:245.1	50	50	50		150	28 days	NA
Metals Total Volume (filtered OR unfiltered)						450		
High Explosives	SW-846:8330	770	770	700		2240	7 days	40 days
DIOX/FURAN	EPA:1613	2000	1000	1000		4000	30 days	40 days
PCB	EPA:608	1000	1000	1000		3000	7 days	40 days
CN(TOTAL)	EPA:335.3	50	50	50		150	14 days	NA
CN (amen)	EPA:335.1	50	50	50		150	14 days	NA
ClO4	EPA:314.0 & LC/MS/MS	50	50	50		150	28 days	NA
SSC	EPA 160.2	150			150	300	7days	NA
Additional MSGP Parameters								
Sector AA- add NO3+NO2-N	EPA:353.1	50	50	50		150	28 days	NA
Sector K- add NH3-N, COD, CN (TOTAL)	EPA:350.1, EPA:410.4, and EPA 335.3	150	150	150		450	28 days (NH3-N, COD) -14 days (CN)	NA
Sector N- add COD	EPA:410.4	50	50	50		150	28 days	NA

*This represents the minimum volume that the analytical lab can use to perform the analysis. We try to supply the lab with double this amount for insurance.

Field Quality Control Samples

One of every ten samples will be a field quality control sample. The four types of field QC samples described below will be analyzed. The descriptions of the QC samples are followed by Table 5 showing what parameters are evaluated by each type of sample. Under the SWMP, the Laboratory will collect and submit one performance evaluation blank, field blank, equipment rinsate blank, or field duplicate, on a rotating basis.

Performance Evaluation Blank

This is a sample of deionized water sent to an analytical laboratory with the expectation that it will arrive uncontaminated. These samples will be sent to the laboratory in new, clean bottles, not in cleaned ISCO bottles. This sample is similar to the Field Trip Blank used for volatile organic compounds. These samples evaluate the analytical laboratory's ability to measure zero. They are also useful for identifying contamination that occurs at the analytical laboratory. Many of these sample results, taken together, can suggest a high or low bias in the analytical results.

Field Blank

Deionized water is taken to the sampling site where it is transferred to the appropriate ISCO sample bottle(s) at the same time and under the same conditions as the regular sample. The sample is exposed to the same environmental conditions and the same physical handling as the regular sample. It is filtered and preserved like the regular sample. Ideally this sample would be collected in ISCO bottles that have been sitting empty in a sampler carousel for some time. This would help us to evaluate the potential for dust contamination. Field blanks measure accidental or incidental sample contamination that might occur during the sampling process.

Equipment Rinsate Blank

Deionized water is taken to the sampling site and carried through the entire sampling process. For the Storm Water Monitoring Plan equipment rinsate blanks will be collected by inserting the suction hose from the stream channel into a container of deionized water and pumping the deionized water into the sample bottles in the carousel. The sample will then be filtered and preserved like a regular sample as appropriate.

Equipment rinsate blanks should only be collected immediately after the tubing is replaced. If a station has previously collected storm runoff samples it is assumed that there would be residual sediments in the lines and around the suction tube that would contaminate the sample. When the tubing is replaced, equipment rinsate blanks should be collected at a rate of one per every forty regular samples.

Field Duplicate

Field duplicates are independent samples that are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These samples provide a measure of sample in-homogeneity and a measure of the reproducibility of the laboratory's measurement. If the results are significantly different, further analysis and

often more samples are required to determine which effect has occurred. It also often happens that these samples are serendipitously collected where the matching sample produces an unusually high value. This provides a basis for suspecting that the high value is aberrant. In this case the duplicate result calms fears while more samples are collected and analyzed.

Table 5 identifies the parameter that is being evaluated by each type of field QC sample.

Table 5 Field Quality Control Samples

	Lab ability to measure zero	Bottles cleaned completely	Contamination from sampling process	Contamination from tubing and sampler	Reproducibility of lab measurement	Sample inhomogineity
Performance Evaluation Blank	X					
Field Blank	X	X	X			
Equipment Rinsate Blank	X	X	X	X		
Field Duplicate					X	X

Reporting

This section describes quarterly and annual reporting for data collected under the Laboratory's Storm Water Monitoring Plan.

Quarterly Reporting

A quarterly status report will be submitted to the Environmental Protection Agency (EPA) Region VI and the New Mexico Environment Department. This report will describe the accomplishments and progress towards meeting the deadlines and milestones for the watershed scale monitoring section of this Plan to fulfill the requirements of the FFCA and the Schedule Order. This report is described below.

SWMP Status Report

DOE and the Laboratory shall submit a written status report to EPA Region VI and NMED/SQWB no later than sixty (60) calendar days after the end of each calendar year quarter based on FFCA and EPA Schedule Order requirements. The status report shall state and describe the cause of any failure to meet the milestones and deliverables described in this Storm Water Monitoring Plan. At a minimum the Status Report shall include:

(a) The deadlines and other milestones which DOE/UC was required to meet during the reporting period

(b) A description of the progress made toward meeting the deadlines and other milestones

(c) The reasons for any failures to meet those deadlines or milestones

(d) A description of any matters relevant to DOE/UC obligation to meet the requirements of this Plan

Unless specified otherwise, the quarterly SWMP Status Reports shall be addressed to Ms.Waudelle Strickley, U.S. EPA Region 6, 1445 Ross Avenue, Suite 1200 (6EN-WC), Dallas, Texas 75202-2733. This SWMP Status Report will be deemed submitted on the date it is postmarked.

Annual Reporting for Multi-Sector General Permit

Multi-Sector General Permit

Annual reporting in the form of Discharge Monitoring Reports (DMRs) is required for each National Pollutant Discharge Elimination System (NPDES) MSGP Conventional Industrial Site monitoring station at the Laboratory. Either a no flow DMR or a sample DMR is required for each Conventional station. The stations where MSGP sampling and reporting are required are identified in Table 1. Sampling and reports are required every other year; 2004 is the next year when monitoring is required. DMRs will be submitted in accordance with the MSGP.

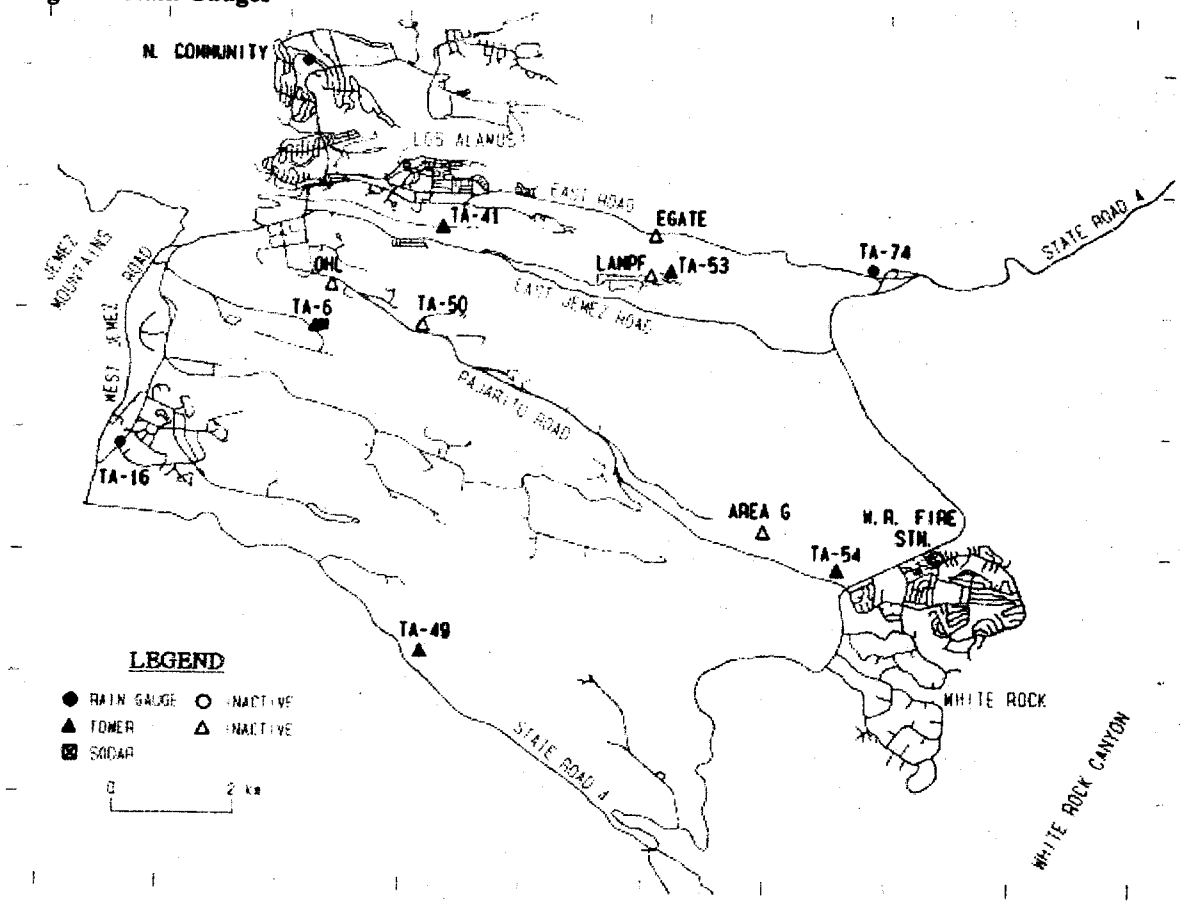
Annual Reporting for the Watershed Monitoring for FFCA

For the watershed scale monitoring the monitoring period will be the calendar year. All results for watershed monitoring will be submitted to EPA and NMED by March 31 of each year following the monitoring period (e.g., DOE/UC will submit the results for calendar year 2004 by March 31, 2005). This section describes the content that will make up the Annual Report.

Precipitation Reporting

Total precipitation for an event will be determined from the MET towers operated by the air quality group, RRES-MAQ. These stations are situated in various locations around the Laboratory, allowing a representative precipitation amount to be determined for a specific storm water monitoring station. The locations of the towers are shown in Figure 2.

Figure 2 Rain Gauges



The rain gauge data from the stations in Table 6 will be reported annually as shown in Table 7. To minimize the volume of data that is reported only days when precipitation was recorded will be reported.

Table 6 Rain Gauge Stations

TA-6
TA-41
TA-49
TA-53
TA-54
TA-74
TA-16

Table 7 Precipitation Report

Data is for tower at TA-6.

All data times are Mountain Standard Time (MST).

month mm	day dd	year yyyy	tprecip in
2	7	2003	0.01
2	13	2003	0.25
2	15	2003	0.06
2	20	2003	0.18
2	25	2003	0.15
2	26	2003	0.21
2	27	2003	0.02
3	1	2003	0.06
3	16	2003	0.05
3	17	2003	0.06
3	18	2003	0.19
3	19	2003	0.05
3	20	2003	0.02
3	21	2003	0.07
3	25	2003	0.03
3	28	2003	0.1

Flow Reporting

Flows will be reported annually in the format shown in Table 8. The report will be modified from the format shown to provide this data as an annual report covering the calendar year.

Table 8 Example of Format for Reporting Flow

E200 Mortandad below Effluent Canyon

Daily Mean Discharge in Cubic Feet per Second

Water Year October 1999 to September 2000

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.03	0	0	.06	.03	0	.03	.05	0	.02	.02
2	0	.05	.03	.03	.03	.06	0	.03	.08	0	.02	0
3	0	.04	.03	.03	.03	.05	.06	.03	.01	.03	.02	0
4	.06	0	0	.03	.03	0	.06	.03	0	.01	.02	0
5	.07	0	0	.01	0	0	0	.03	.02	.03	0	.01
6	.03	0	.05	.06	.03	.03	0	0	.03	.03	0	.01
7	.03	0	.03	0	.03	.03	.06	0	0	.03	.02	.02
8	0	0	.03	.01	.03	.03	0	0	0	0	.04	.01
9	0	0	.04	.01	.03	.03	0	0	.03	0	.01	0
10	.03	.03	0	.03	.03	.06	.06	.03	0	.03	.04	0

11	0	.02	0	.04	.03	0	.03	.01	0	.03	0	.01
12	.03	.02	0	.03	0	0	.03	0	.03	.03	0	.01
13	.03	.03	.01	.02	0	.03	.06	0	.03	.06	0	0
14	.04	.03	.03	.02	.06	.03	.03	0	.03	.01	0	.01
15	.04	.06	.01	0	.03	.03	.01	.06	.06	0	.01	.01
16	.02	.09	.03	.02	.06	.08	0	0	.06	0	.01	0
17	.02	.10	.03	0	.03	.03	.06	0	0	.03	.05	0
18	.06	.03	0	.02	.03	0	.03	.03	.10	.03	.16	.01
19	.04	.05	.01	.02	0	0	.03	.03	.03	.06	.48	0
20	.04	.02	.06	.02	.03	.03	0	0	.01	.06	.02	.01
21	.07	.02	0	.02	0	.03	0	0	0	.03	.06	.02
22	.03	.04	.04	0	.06	.14	0	0	0	0	.02	.02
23	0	.03	.03	0	.03	.07	0	.03	.03	0	.04	0
24	0	.08	.01	.02	.03	.03	.03	.03	0	.03	.02	0
25	.04	.01	.01	.02	.03	0	.03	.03	0	.04	.02	.02
26	.02	.01	.03	.03	0	0	.03	.03	0	.05	0	0
27	.04	.02	0	.02	0	.03	.03	0	.03	.02	0	0
28	.03	.05	.02	.02	.03	.06	.03	.03	.03	.02	.02	.04
29	.04	0	0	.01	.03	.06	.01	.01	.06	.09	.02	0
30	0	.02	.01	.02	-----	.03	0	0	.11	.01	.02	0
31	0	-----	.03	.01	-----	0	-----	.05	-----	.05	0	-----
Total	0.83	0.88	0.57	0.57	0.78	1.00	0.68	0.52	0.83	0.81	1.14	0.23
Mean	.027	.029	.018	.018	.027	.032	.023	.017	.028	.026	.037	.008
Max	.07	.10	.06	.06	.06	.14	.06	.06	.11	.09	.48	.04
Min	0	0	0	0	0	0	0	0	0	0	0	0
Ac-Ft	1.5	1.7	1.1	1.2	1.5	2.0	1.3	1.0	1.6	1.6	2.3	.5

Wtr Year	2000	Total	8.84	Mean	.024	Max	.48	Min	0	Ac-Ft	17
Cal Year	1999	Total	13.33	Mean	.037	Max	.91	Min	0	Ac-Ft	26

Analytical Data Reporting

To facilitate reviewing the data and to minimize the number of pages required to report the analytical information a format similar to the Laboratory's Annual Environmental Surveillance Report will be used. The analytical results for samples collected to fulfill the MSGP, FFCA and the EPA Schedule Order will be reported in these tables. The analytical results will be reported in the formats shown in Appendix B. To meet EPA requirements, Discharge Monitoring Reports will also be provided to EPA for MSGP parameters at the Conventional Industrial MSGP stations. The MSGP parameters measured at the Conventional Industrial sites will thus be reported in two forms and on two reports. The data for the MSGP stations that are not representing Conventional Industrial activities will be reported on tables as shown in Appendix B.

The examples provided in Appendix B contain a limited amount of data from 2002. This data is not intended to be complete or accurate data. It is only included as an example.

The complete data set will be provided for all the analysis except for organics. To reduce the volume of organic data reported two tables are included. The first table, Number of Samples Collected for Each Suite of Organic Compounds in Runoff Samples shows the number of organic samples collected at each location by date. The second table, Organic Compounds Detected in Runoff shows the detections and the associated laboratory and validation qualifiers. Following these two tables there are two more tables that provide descriptions for the qualifiers assigned by the analytical laboratory, Laboratory Qualifiers, and the flags assigned in validation, Validation Flag Codes.

Appendix A-

Analytes, Analytical methods, and Detection Limits

High Explosives

Analyte	Detection Limit ug/L	Method	Bottle/Group	Volume Required* (ml)	Container	Preservative
Amino-2,6-dinitrotoluene[4-]	0.1	SW-846:8330	HE	1540	amber glass	cold
Amino-4,6-dinitrotoluene[2-]	0.1					
Dinitrobenzene[1,3-]	0.1					
Dinitrotoluene[2,4-]	0.1					
Dinitrotoluene[2,6-]	0.1					
HMX	0.1					
Nitrobenzene	0.1					
Nitrotoluene[2-]	0.1					
Nitrotoluene[3-]	0.1					
Nitrotoluene[4-]	0.1					
RDX	0.1					
Tetryl	0.1					
Trinitrobenzene[1,3,5-]	0.1					
Trinitrotoluene[2,4,6-]	0.1					

* The absolute minimum volume the analytical lab can use is one half of this amount.

PCB

Analyte	Detection Limit ug/L	Method	Bottle/ Group	Volume Required* ml	Container	Preservative
Aroclor-1016	0.1	EPA:608	PCB	2000	amber glass	cold
Aroclor-1221	0.1					
Aroclor-1232	0.1					
Aroclor-1242	0.1					
Aroclor-1248	0.1					
Aroclor-1254	0.1					
Aroclor-1260	0.1					
Aroclor-1262	0.1					

* The absolute minimum volume the analytical lab can use is one half of this amount.

DIOX/FURAN

Analyte	Detection Limit pg/L	Method	Volume Required* (ml)	Container	Preservative	Note
		EPA 1613	2000	amber glass	cold	
2,3,7,8-TCDF	1.8					
2,3,7,8-TCDD	1.9					
1,2,3,7,8-PeCDF	1.8					
2,3,4,7,8-PeCDF	1.9					
1,2,3,7,8-PeCDD	2.5					
1,2,3,4,7,8-HxCDF	3					
1,2,3,6,7,8-HxCDF	3.4					
2,3,4,6,7,8-HxCDF	1.8					
1,2,3,7,8,9-HxCDF	2.7					
1,2,3,4,7,8-HxCDD	3.8					
1,2,3,6,7,8-HxCDD	3.7					
1,2,3,7,8,9-HxCDD	2.6					
1,2,3,4,6,7,8-HpCDF	2.1					
1,2,3,4,7,8,9-HpCDF	2.7					
1,2,3,4,6,7,8-HpCDD	3.2					
OCDF	4.8					
OCDD	21					

* The absolute minimum volume the analytical lab can use is one half of this amount.

ClO4

Analyte	Detection Limit ug/L	Method	Bottle/ Group	Volume Required* (ml)	Container	Preservative
ClO4	4.0	EPA:314.0	ClO4	100	P, G	NA
ClO4	0.25	LC/MS/MS	ClO4-MS	Requires no extra water	P, G	NA

CN (amen)

Analyte	Detection Limit ug/L	Method	Bottle/ Group	Volume Required* (ml)	Container	Preservative
CN (amen)	2	EPA:335.1	CN (amen)	100	Poly	NaOH/cold

* The absolute minimum volume the analytical lab can use is one half of this amount.

Cyanide (amenable) will be collected unfiltered only for comparison to the Wildlife Habitat standard.

MSGP Specific Requirements and SSC

	Detection Limit ug/L	Method	Bottle/Group	Volume Required* (ml)	Container	Preservative
Suspended Sediments Concentration		EPA 160.2	SSC	300	P, G	Cold
Sector AA- add NO3+NO2-N		EPA:353.1	Sector AA	100	P	H2SO4
Sector F- included in Order Metals Suite						
Sector K- add NH3-N and COD			Sector K			
NH3-N		EPA:350.1		100	P	H2SO4
COD (Can NH-3 and COD be submitted in the same bottle?)		EPA:410.4		100	P	H2SO4
Cyanide (TOTAL)		EPA:335.3		100	P	NaOH/cold
Sector L- Iron is included in Order Metals Suite, SSC is required for every sample						
Sector N- add COD to Order Metals Suite, SSC is required for every sample		EPA:410.4	Sector N	100	P	H2SO4
Sector O- Included in Order Metals Suite						

* The absolute minimum volume the analytical lab can use is one half of this amount.

Metals
Metals will be analyzed both filtered and unfiltered.

Method				EPA:200.7	EPA:200.8	EPA:245.1			
Analyte	Desired MQL[1] ug/L	Desired MDL[1] ug/L	Lab MDL[2] ug/L	MDL ug/L	MDL ug/L	Bottle/Group	Volume Required[3] (ml)	Container	Preservative
Ag	2	0.6		0.6 [4]		Order Metals	100	Poly	HNO3 to pH < 2
Al	100	30.3	14			Order Metals			
As	10	3.0	1.7			Order Metals			
Ba	100	30.3	0.3			Order Metals			
Be	5	1.5	0.2			Order Metals			
Ca			10			Order Metals			
Cd	1	0.3		0.3 [4]		Order Metals			
Co	50	15.2	0.8			Order Metals			
Cr	10	3.0	1.5			Order Metals			
Cu	10	3.0	1.8			Order Metals			
Fe			15			Order Metals			
Hg	0.2	0.06			0.05	Order Metals	100	Amber Gla	HNO3 to pH < 2
K			40			Order Metals			
Mg			5			Order Metals			
Mn			0.3			Order Metals			
Mo[5]			1			Order Metals			
Na			20			Order Metals			
Ni	5	1.5		0.07		Order Metals	100	Poly	HNO3 to pH < 2
Pb	5	1.5		0.05		Order Metals			
Sb	60	18.2		0.2		Order Metals			
Se	5	1.5		1.0		Order Metals			
Tl	10	3.0		0.02		Order Metals			
U						Uranium is included in the Rad suite			
V	50	15.2	0.7			Order Metals			
Zn	20	6.1	0.4			Order Metals			
Hardness			8			Calculated from Ca and Mg measured by EPA 200.7			

Total volume for full metals suite 300

The above metals will be analyzed both filtered and unfiltered.

Hardness will be included in the filtered analysis only and will be used to calculate hardness dependent concentrations.

[1]Desired MDL is based on Permit No. NM0028355 requirements for MQL (MQL = 3.3 X MDL)
[2]From TAL Metals by 200.7 sheet
[3]The absolute minimum volume the analytical lab can use is one half of this amount.
[4]GEL requested that we run these by 200.8 to achieve our desired detection limit.
[5]Since Mo is required at some stations it has been added to the TAL metals suite to simplify order suites.

Radionuclides

Analyte	Method	Detection Limit[1] pCi/L	Bottle/Group	Volume Required[2] (ml)	Container	Preservative
Am-241	Generic:Alpha-Spec	0.05	Iso- Alpha	1000	P, G	HNO3 to pH < 2
Pu-238	Generic:Alpha-Spec	0.05	Iso- Alpha			
Pu-239,240	Generic:Alpha-Spec	0.05	Iso- Alpha			
Sr-90	Generic:Gas Flow Proportional Counting	0.5	Sr-90	1000	P, G	HNO3 to pH < 2
U-234	Generic:Alpha-Spec	1	Uranium- Alpha	500	P, G	HNO3 to pH < 2
U-235,236	Generic:Alpha-Spec	1	Uranium- Alpha			
U-238	Generic:Alpha-Spec	0.5	Uranium- Alpha			
GROSSA	EPA:900	3	Alpha-Beta	200	P, G	HNO3 to pH < 2
GROSSB	EPA:900	3	Alpha-Beta			
H-3	Generic:Liquid Scintillation Counting		H-3	100	G	None
Cs-137	EPA:901.1	8	Gamma Spec	1000	P, G	HNO3 to pH < 2
Np-237	EPA:901.1	50	Gamma Spec			
Co-60	EPA:901.1	8	Gamma Spec			
K-40	EPA:901.1	100	Gamma Spec			
Na-22	EPA:901.1	10	Gamma Spec			
Total volume for full rad suite				3800		

[1] Detection limits from a review of 2002 and 2003 Environmental Surveillance Data for Storm Runoff samples
[2] The absolute minimum volume the analytical lab can use is one half of this amount.

Appendix B- Examples of Analytical Data Reports

Radionuclide Analysis of Storm Runoff

Location Name	Fld Matrix Code	Start Date Time	Fld Prep Code	Lab Sample Type Code	H-3 pCi/L Result	H-3 Uncert	H-3 MDA	Sr-90 pCi/L Result	Sr-90 Uncert	Sr-90 MDA	Cs-137 pCi/L Result	Cs-137 Uncert	Cs-137 MDA	U-234 pCi/L Result	U-234 Uncert	U-234 MDA	U-235,236 pCi/L Result	U-235,236 Uncert	U-235,236 MDA	U-238 pCi/L Result	U-238 Uncert	U-238 MDA	Pu-238 pCi/L Result	Pu-238 Uncert	Pu-238 MDA	Pu-239,240 pCi/L Result	Pu-239,240 Uncert	Pu-239,240 MDA
DP above TA-21	WT	7/23/2002	F	CS				0.0724	0.0897	0.299	-2.4	1.87	6.25	0.0659	0.0229	0.0612							-0.0027	0.0027	0.032	0.0027	0.0089	0.0354
DP above TA-21	WT	7/23/2002	F	DUP										0.0452	0.0219	0.0909	-0.0123	0.0062	0.0729	0.012	0.0136	0.0727	-0.0023	0.004	0.0215	-0.0185	0.0104	0.0466
DP above TA-21	WT	7/23/2002	UF	CS	0	53.4	176																					
Sandia right fork at Power Plant	WT	7/23/2002	UF	CS	0	54.2	178																					
Sandia below Wetlands	WT	7/14/2002	UF	CS	55.5	52.3	167																					
Pajarito above Starmers	WT	7/25/2002	UF	CS	0	53.2	175																					
La Delfe above Pajarito	WT	7/14/2002	UF	CS	0	50.7	167																					
La Delfe above Pajarito	WT	7/14/2002	UF	DUP	109	52.8	163																					
Canon de Valle above SR-501	WT	7/25/2002	UF	CS	0	54	178																0.0137	0.0069	0.0315	-0.003	0.0067	0.0348
Water at SR-4	WT	7/14/2002	F	CS							0.382	1.68	6.13	0.132	0.0278	0.0492												
Water at SR-4	WT	7/14/2002	F	DUP							0.545	1.77	6.63				-8.68	10.4		140	68.5	255						
Water at SR-4	WT	7/14/2002	UF	CS	57.4	57.4	184																					
Water at SR-4	WT	7/14/2002	UF	DUP	-28	53.7	179																-0.0035	0.0077	0.0296	-0.0125	0.0056	0.0328
Potrillo tributary Study Area	WT	7/26/2002	F	CS				0.0748	0.0685	0.226	0.647	1.82	6.51	0.392	0.0708	0.11												
Potrillo tributary Study Area	WT	7/26/2002	F	DUP																			0	0.0179	0.153	0.129	0.0455	0.169
Potrillo tributary Study Area	WT	7/26/2002	UF	CS	220	59.5	176	1.38	0.217	0.238	1.2	1.71	6.3	7.5	0.71	0.284							0	0.014	0.038	0.222	0.0514	0.0743
Potrillo tributary Study Area	WT	7/26/2002	UF	DUP	166	58.4	177	1.26	0.284	0.332				8.29	0.731	0.302	0.773	0.147	0.199	8.46	0.742	0.257	0	0.0039	0.0326	-0.011	0.0061	0.036
Twomile tributary at TA-3	WT	7/14/2002	F	CS				-0.0431	0.0676	0.268	-0.222	1.96	6.9															
Twomile tributary at TA-3	WT	7/14/2002	F	DUP																			0.0071	0.0085	0.0281	0.0142	0.0075	0.0311
Twomile tributary at TA-3	WT	7/14/2002	UF	CS	83.8	53.5	168	0.0856	0.0636	0.231	-3.11	1.7	5.24										0.021	0.0091	0.0357	0.021	0.0091	0.0395
Twomile tributary at TA-3	WT	7/18/2002	UF	CS							1.32	1.65	6.27	0.0971	0.0248	0.0527							0.0025	0.0056	0.0233	0.015	0.008	0.0233
Twomile tributary at TA-3	WT	7/18/2002	UF	DUP										0.0954	0.0255	0.0706	0.0127	0.0074	0.0115	0.159	0.0292	0.0393	0	0.0027	0.0321	0.0027	0.0027	0.0355
Twomile tributary at TA-3	WT	7/25/2002	F	CS				-0.001	0.0567	0.196	-1.2	1.68	5.97	0.0209	0.0163	0.0788							-0.0051	0.0081	0.0305	0.0026	0.0147	0.0337
Twomile tributary at TA-3	WT	7/25/2002	UF	CS	85	57.4	181	0.0478	0.0655	0.22	6.55	2.02	8.09	0.135	0.0359	0.116							-0.0029	0.0041	0.0341	0.0029	0.0064	0.0377
Twomile tributary at TA-3	WT	7/25/2002	F	CS				-0.0815	0.0702	0.246	0.73	1.82	6.56	0.0842	0.0285	0.106												
Twomile tributary at TA-3	WT	7/25/2002	F	DUP				0.0272	0.0634	0.216																		
Twomile tributary at TA-3	WT	7/25/2002	UF	CS	-54.8	51.7	175																					

Radionuclide Analysis of Storm Runoff continued

Location Name	Fld Matrix Code	Start Date Time	Fld Prep Code	Lab Sample Type Code	Am-241 pCi/L Result	Unc	MDA	GROSSA pCi/L Result	Uncert	MDA	GROSSB pCi/L Result	Uncert	MDA	Co-60 pCi/L Result	Uncert	MDA	K-40 pCi/L Result	Uncert	MDA	Na-22 pCi/L Result	Uncert	MDA	Result	Np-237 pCi/L Uncert	MDA
DP above TA-21	WT	7/23/2002	F	CS				0.35	0.605	2.07	2.51	0.758	2.36	1.67	2.01	8.32				2.84	2.13	8.97	-11.4	15.7	54
DP above TA-21	WT	7/23/2002	F	DUP	0.02	0	0.032																		
DP above TA-21	WT	7/23/2002	UF	CS																					
Sandia right fork at Power Plant	WT	7/23/2002	UF	CS																					
Sandia below Wetlands	WT	7/14/2002	UF	CS																					
Pajarito above Starmers	WT	7/25/2002	UF	CS																					
La Delfe above Pajarito	WT	7/14/2002	UF	CS																					
La Delfe above Pajarito	WT	7/14/2002	UF	DUP																					
Canon de Valle above SR-501	WT	7/25/2002	UF	CS																					
Water at SR-4	WT	7/14/2002	F	CS										1.02	2.04	7.07	15	50.4	61.4	1.84	1.75	7.17	-5.24	10.5	36.9
Water at SR-4	WT	7/14/2002	F	DUP	-0.8	7	26.2							2.93	1.77	8.71	73.5	23	103	-1.9	1.71	5.66	-1.5	9.89	35.3
Water at SR-4	WT	7/14/2002	UF	CS																					
Water at SR-4	WT	7/14/2002	UF	DUP																					
Potrillo tributary Study Area	WT	7/26/2002	F	CS				2.65	0.805	2.27	3.84	0.803	2.39	2.03	1.88	7.48	141	47.5	53.2	1.32	1.6	6.41	0.249	12.7	43.2
Potrillo tributary Study Area	WT	7/26/2002	F	DUP				2.84	0.862	2.24	2.69	0.839	2.62												
Potrillo tributary Study Area	WT	7/26/2002	UF	CS				382	64.7	107	614	22.4	33.8	1.5	1.91	7.47				-2.9	2.11	5.75	2.34	11.3	39.2
Potrillo tributary Study Area	WT	7/26/2002	UF	DUP	0.12	0	0.022	495	85.4	117	568	32.8	31.6												
Twomile tributary at TA-3	WT	7/14/2002	F	CS				0.97	0.467	1.58	3.04	0.597	1.91	-2.8	1.88	6.02	15.9	20.5	80.6	1.88	1.81	7.4	8.17	11.2	40
Twomile tributary at TA-3	WT	7/14/2002	F	DUP				-0.1	0.516	2.26	2.3	0.589	2.01												
Twomile tributary at TA-3	WT	7/14/2002	UF	CS				14.7	1.55	2.1	21.6	1.12	1.91	-1.2	2.19	7.61	38.3	24.4	97.8	-0.3	2.2	7.9	12.2	13.8	47.9
Twomile tributary at TA-3	WT	7/18/2002	UF	CS										-0.9	1.89	6.9	2.38	20.5	77.3	-2.8	2.08	5.78	-14.9	11	37.7
Twomile tributary at TA-3	WT	7/18/2002	UF	DUP	0.03	0	0.025																		
Twomile tributary at TA-3	WT	7/25/2002	F	CS				-0.4	0.602	2.21	0.55	0.813	2.73	3.24	1.81	8.01	70.9	22.8	102	0.72	1.95	7.41	21.6	11	40.4
Twomile tributary at TA-3	WT	7/25/2002	UF	CS				5.03	1.09	2.58	6.78	0.863	2.33	0.84	1.74	6.87	79.5	33.8	54.8	0.75	2.07	7.07	-37.3	12.9	35.7
Twomile tributary at TA-3	WT	7/25/2002	F	CS				0.65	0.615	2.03	1.68	0.792	2.57	-1.2	1.3	4.61	50.7	22.7	92.8	0.32	1.52	5.91	2.88	11.2	38.8
Twomile tributary at TA-3	WT	7/25/2002	F	DUP																					
Twomile tributary at TA-3	WT	7/25/2002	UF	CS																					

Metals Analysis in Storm Runoff

Location Name	Hd Matrix Code	Start Date Time	Hd Prep	Lab Sample	Ag ug/L Result	Al ug/L Result	As ug/L Result	Ba ug/L Result	Be ug/L Result	Ca mg/L Result	Cd ug/L Result	Co ug/L Result	Cr ug/L Result	Cu ug/L Result	Fe ug/L Result	Hg ug/L Result	K mg/L Result
Rendija above Guaje	WT	7/31/2002	UF	CS	1.46		61.7				12.4					< 0.0472	
DP above TA-21	WT	7/14/2002	UF	CS	< 0.23		3.71				< 0.964					< 0.0472	
DP below Meadow at TA-21	WT	7/14/2002	UF	CS	< 0.23	<	2.56				1.14					< 0.0472	
Sandia right fork at Power Plant	WT	7/23/2002	UF	CS	< 0.819	574	< 2.35	< 20.7	< 0.172	8.84	< 0.07	< 0.762	< 1.44	< 3.22	307	< 0.0472	3.18
Sandia right fork at Power Plant	WT	7/23/2002	F	CS	< 0.819						< 0.07						
Sandia right fork at Power Plant	WT	7/23/2002	F	DUP													
Sandia Tributary below Sigma	WT	7/23/2002	UF	CS	< 0.914	45500	< 10.3	338	< 2.32		1	9.21	55.7	57.4	34900	0.449	
Sandia Tributary below Sigma	WT	7/14/2002	UF	CS										28			
Sandia below Wetlands	WT	7/14/2002	UF	DUP	< 0.23		8.2				1.52			25.8			
Sandia below Wetlands	WT	7/22/2002	F	CS	< 0.819	447	< 4.44	< 15.8	< 0.172	10.3	< 0.07	< 0.762	< 2.86	7.97	331	< 0.0472	7.08
La Delfe above Pajarito	WT	7/22/2002	UF	CS	11.6	26400	7.57	< 255	< 1.31		1.35	5.65	211	73.6	21600	< 0.0472	
Canon de Valle above SR-501	WT	7/14/2002	UF	CS	< 0.23	<	2.94				3.11					< 0.183	
Canon de Valle above SR-501	WT	7/25/2002	F	CS	< 0.819	13200	< 2.58	< 161	< 0.413	16.5	< 0.235	< 2.93	< 4.88	5.69	5990	< 0.0472	9.32
Water below MDA AB	WT	7/25/2002	UF	CS	< 0.819	700000	99.5	11900	41.2		8.3	221	365	410	478000	< 0.0472	
Potrillo tributary Study Area	WT	7/14/2002	UF	CS	2.01		20				6.24					< 0.0472	
Potrillo tributary Study Area	WT	7/26/2002	F	CS	< 0.819	1890	< 3.22	< 64.8	< 0.172	19.1	< 0.087	< 1.61	< 1.43	5.02	995	< 0.0472	3.92
Potrillo tributary Study Area	WT	7/26/2002	UF	CS	< 0.819	93000	13.8	< 4600	25.9	174	2.99	82.3	33.3	44.6	30600	< 0.0472	22.9
Twomile tributary at TA-3	WT	7/26/2002	UF	DUP	< 0.819	108000	16.7	< 4600	27.2	181	2.85	87.4	41.8	51.5	39400	< 0.0472	24.9
Twomile tributary at TA-3	WT	7/14/2002	F	CS	< 0.819	< 42.6	< 1.67	< 8.83	< 0.172	2.47	< 0.285	< 0.762	< 1.43	18.1	< 38.9	< 0.0472	0.835
Twomile tributary at TA-3	WT	7/14/2002	UF	CS	< 0.819	3010	< 2.74	< 47.4	< 0.18		< 0.715	< 1.12	5.18	50.5	2290	0.217	
Twomile tributary at TA-3	WT	7/14/2002	UF	DUP												< 0.192	
Twomile tributary at TA-3	WT	7/18/2002	F	CS	< 0.819	50	22.2	< 18.3	< 0.172	5.2	< 0.569	< 0.948	< 1.43	60.7	38.6	< 0.0472	1.22
Twomile tributary at TA-3	WT	7/18/2002	F	DUP	< 0.819	< 49.3	21.6	< 18.3	< 0.172	5.18		< 1.1	< 1.43	61.4	< 38.7		1.21
Twomile tributary at TA-3	WT	7/18/2002	UF	CS	< 0.819	1150	22.1	< 30.3	< 0.172		< 0.823	< 0.762	< 1.43	74.3	919	< 0.0472	
Twomile tributary at TA-3	WT	7/18/2002	UF	DUP	< 0.819	1130	23.1	< 30.4	< 0.172	6.4		< 0.762	< 1.75	74.3	865		1.61
Twomile tributary at TA-3	WT	7/25/2002	F	CS	< 0.819	52.3	< 6.77	11.4	< 0.172	2.89	< 0.433	< 0.762	< 1.43	24.3	< 28.8	< 0.0472	0.833
Twomile tributary at TA-3	WT	7/25/2002	UF	CS	< 0.819	2730	< 8.34	36.5	< 0.172		< 0.821	< 0.762	< 3.1	59.3	1960	< 0.0472	

Metals Analysis in Storm Runoff continued

Location Name	Hd Matrix	Start Date Time	Hd Prep Code	Lab Sample	Mg mg/L Result	Mn ug/L Result	Mo ug/L Result	Na mg/L Result	Ni ug/L Result	Pb ug/L Result	Sb ug/L Result	Se ug/L Result	Sr ug/L Result	Tl ug/L Result	V ug/L Result	Zn ug/L Result
Rendija above Guaje	WT	7/31/2002	UF	CS	53.1					572		12.6				
DP above TA-21	WT	7/14/2002	UF	CS	2.58					26.5	<	1.03				
DP below Meadow at TA-21	WT	7/23/2002	UF	CS	1.76					64.2	<	1				
Sandia right fork at Power Plant	WT	7/23/2002	F	CS	1.06 <	4.2 <	2.07	16.2 <	3.6 <	0.421 <	0.673 <	2.29 <	33.8 <	0.058 <	3.94	11.4
Sandia right fork at Power Plant	WT	7/23/2002	F	DUP					<	0.442 <	0.691		<	0.032		
Sandia right fork at Power Plant	WT	7/23/2002	UF	CS		727 <	3.17		22.5	44 <	0.508 <	2.29 <	95.7 <	0.305	53.7	566
Sandia Tributary below Sigma	WT	7/14/2002	UF	CS												97.4
Sandia Tributary below Sigma	WT	7/14/2002	UF	DUP	2.12					37.4 <	0.617 <	1.25	<	0.118		92.2
Sandia below Wetlands	WT	7/22/2002	F	CS	2.07	25.2	25.1	34.4 <	3.6 <	0.87 <	0.566 <	2.29 <	36.4 <	0.064	6.74	28
Sandia below Wetlands	WT	7/22/2002	UF	CS		1140	34.2		16.8	49.5 <	1.07 <	2.29 <	83.4 <	0.306	38.2	542
La Delfe above Pajarito	WT	7/14/2002	UF	CS	4.67					32	<	1				
Canon de Valle above SR-501	WT	7/25/2002	F	CS	3.87	313 <	1.06	1.7 <	4.19	3.79 <	0.522 <	2.29 <	105 <	0.044	10	23.1
Canon de Valle above SR-501	WT	7/25/2002	UF	CS		35000 <	8.02		336	26.4 <	0.296	11.5 <	2430 <	0.428	637	1970
Water below MDA AB	WT	7/14/2002	UF	CS	34.4					149		5.87				
Potrillo tributary Study Area	WT	7/26/2002	F	CS	2.01	46.3 <	1.76	2.43 <	3.6 <	0.828 <	0.306 <	2.53 <	80.1 <	0.078	9.81 <	3.91
Potrillo tributary Study Area	WT	7/26/2002	UF	CS	31.3	6720 <	0.948	3.43	115	17.4 <	0.207 <	2.29 <	854 <	0.081	108	184
Potrillo tributary Study Area	WT	7/26/2002	UF	DUP	34	7040 <	1.87	3.59	123	17.4 <	0.2 <	2.42 <	889 <	0.108	124	209
Twomile tributary at TA-3	WT	7/14/2002	F	CS	0.154	31 <	0.948	1.94 <	3.6 <	0.61	14.3 <	2.29 <	8.92 <	0.02 <	0.732	162
Twomile tributary at TA-3	WT	7/14/2002	UF	CS		110 <	1.22	<	3.79	14.8	16.3 <	2.29 <	17.2 <	0.039 <	4.03	358
Twomile tributary at TA-3	WT	7/14/2002	UF	DUP												
Twomile tributary at TA-3	WT	7/18/2002	F	CS	0.339	66.4 <	1.42	3.74 <	3.6 <	0.438	97.5 <	2.29 <	19 <	0.187 <	1.35	738
Twomile tributary at TA-3	WT	7/18/2002	F	DUP	0.336	66.3 <	1.1	3.75 <	3.6		<	2.29 <	18.9	<	1.36	737
Twomile tributary at TA-3	WT	7/18/2002	UF	CS		81.7 <	1.73	<	3.6	4.91	109 <	2.29 <	24.5 <	0.044 <	2.12	828
Twomile tributary at TA-3	WT	7/18/2002	UF	DUP	0.598	81.1 <	1.67	4.3 <	3.6		<	2.29 <	24.6	<	2.58	827
Twomile tributary at TA-3	WT	7/25/2002	F	CS	0.187	26.2 <	0.948	2.2 <	3.6 <	0.307	53.1 <	2.29 <	10.4 <	0.02 <	0.979	349
Twomile tributary at TA-3	WT	7/25/2002	UF	CS		76.1 <	0.97	<	3.6	14.4	50.5 <	2.29 <	15.5 <	0.047 <	3.72	503

General Analysis in Storm Runoff

Location Name	Fld Matrix Code	Start Date Time	Fld Prep Code	Lab Sample Type Code	CN (amen) mg/L Result	CN(TOTAL) mg/L Result	COD mg/L Result	ClO4 ug/L Result	HARDNESS mg/L Result	NH3-N mg/L Result	NO3+NO2-N mg/L Result	SSC mg/L Result
Rendija above Guaje	WT	7/31/2002	UF	CS		0.0508	444			1.25		
DP above TA-21	WT	7/14/2002	UF	CS		0.0037	402					
DP above TA-21	WT	7/23/2002	UF	CS						0.16		
DP below Meadow at TA-21	WT	7/23/2002	UF	CS		0.0019	86.8			0.09		
DP below Meadow at TA-21	WT	7/23/2002	UF	DUP		< 0.0017						
Sandia right fork at Power Plant	WT	7/23/2002	F	CS					26.4			
Sandia right fork at Power Plant	WT	7/23/2002	UF	DUP								1610
Sandia below Wetlands	WT	7/14/2002	UF	CS		0.0059	<	1.45				
Sandia below Wetlands	WT	7/22/2002	F	CS					34.2			
Sandia below Wetlands	WT	7/22/2002	UF	CS	0.0029	0.0029	67.1	< 1.45		< 0.024	0.66	770
Sandia below Wetlands	WT	7/22/2002	UF	DUP				< 1.45				815
Sandia below Wetlands	WT	7/22/2002	UF	TRP								762
Pajarito above Starmers	WT	7/25/2002	UF	CS				< 1.45				
La Delfe above Pajarito	WT	7/14/2002	UF	CS		0.0024	376			0.04		
La Delfe above Pajarito	WT	7/14/2002	UF	DUP		0.0024				< 0.024		937
Canon de Valle above SR-501	WT	7/25/2002	F	CS					57.2			
Water above S Site Canyon	WT	7/14/2002	UF	CS			194					
Water below MDA AB	WT	7/14/2002	UF	CS		0.0061	309			0.53		
Potrillo tributary Study Area	WT	7/26/2002	F	CS					53.4			
Potrillo tributary Study Area	WT	7/26/2002	UF	CS	< 0.0017	0.002	<	1.45				18100
Potrillo tributary Study Area	WT	7/26/2002	UF	DUP	0.002	0.002	<	1.45				18700
Potrillo tributary Study Area	WT	7/26/2002	UF	QUD								14600
Potrillo tributary Study Area	WT	7/26/2002	UF	TRP								19000
Twomile tributary at TA-3	WT	7/14/2002	F	CS				<	8.23			
Twomile tributary at TA-3	WT	7/14/2002	UF	CS	< 0.0017	< 0.0017	103	< 1.45		0.12	0.39	221
Twomile tributary at TA-3	WT	7/14/2002	UF	DUP	< 0.0017	< 0.0017						265
Twomile tributary at TA-3	WT	7/14/2002	UF	TRP								244
Twomile tributary at TA-3	WT	7/18/2002	F	CS					14.4			
Twomile tributary at TA-3	WT	7/18/2002	UF	CS	< 0.0017	< 0.0017	59.6	< 1.45		0.14	0.76	33.3
Twomile tributary at TA-3	WT	7/18/2002	UF	DUP	< 0.0017	< 0.0017						34.7
Twomile tributary at TA-3	WT	7/18/2002	UF	TRP								34.7
Twomile tributary at TA-3	WT	7/25/2002	F	CS					7.99			
Twomile tributary at TA-3	WT	7/25/2002	UF	CS	< 0.0017	< 0.0017	44.8	< 1.45		< 0.024	0.28	80.8
Twomile tributary at TA-3	WT	7/25/2002	UF	DUP		< 0.0017				< 0.024		75
Twomile tributary at TA-3	WT	7/25/2002	UF	TRP								75.8

Number of Samples Collected for Each Suite of Organic Compounds in Runoff Samples

Location Name	Sample Date	Fld Qc Type Code	Lab Sample Type Code	DIOX/FUR	HEXP	PEST/PCB	SVOA	VOA
Los Alamos below Ice Rink	06/21/02		CS			1	1	
Sandia below Wetlands	07/04/02		CS			1	1	
Sandia below Wetlands	07/14/02		CS			1		
Sandia below Wetlands	07/22/02		CS				1	
Sandia below Wetlands	08/07/02		CS			1	1	
MDA L	09/07/02		CS	1	1	1	1	
MDA L	10/22/02		CS			1	1	1
Canada del Buey above SR-4	08/28/02		CS		1	1	1	
La Delfe above Pajarito	07/14/02		CS		1			
MDA G-2	09/09/02		CS				1	
Pajarito above SR-4	06/22/02		CS		1	1	1	
Canon de Valle above SR-501	06/22/02		CS		1			
Water below SR-4	07/14/02		CS		1			

Organic Compounds Detected in Runoff

Location Name	Sample Date	Fld Qc Type Code	Lab Sample Type Code	Anyl Suite	Analyte Desc	Symbol	Std Result	Std Uom	Lab Qual Code	Valid Flag Code
Los Alamos below Ice Rink	6/21/2002		CS	SVOA	Di-n-butylphthalate		3.2	ug/L	J	
Sandia below Wetlands	7/4/2002		CS	PEST/PCB	Aroclor-1254		0.08	ug/L	J	
Sandia below Wetlands	7/4/2002		CS	PEST/PCB	Aroclor-1260		0.11	ug/L	J	
Sandia below Wetlands	7/14/2002		CS	PEST/PCB	Aroclor-1260		0.11	ug/L		
Sandia below Wetlands	8/7/2002		CS	SVOA	Naphthalene		0.19	ug/L	J	
MDA L	9/7/2002		CS	HEXP	Amino-4,6-dinitrotoluene[2-]		0.12	ug/L	X	J+
MDA L	9/7/2002		CS	HEXP	Nitrotoluene[3-]		0.75	ug/L	X	R
MDA L	9/7/2002		CS	HEXP	Nitrotoluene[2-]		0.4	ug/L	X	R
MDA L	9/7/2002		CS	HEXP	Nitrotoluene[4-]		0.17	ug/L	X	
MDA L	9/7/2002		CS	SVOA	Di-n-butylphthalate		1	ug/L	J	
MDA L	9/7/2002		CS	SVOA	Bis(2-ethylhexyl)phthalate		3.7	ug/L	J	J
MDA L	9/7/2002		CS	SVOA	Di-n-octylphthalate		4.3	ug/L	J	J
MDA L	10/22/2002		CS	SVOA	Bis(2-ethylhexyl)phthalate		4.2	ug/L	J	
MDA L	10/22/2002		CS	VOA	Butanone[2-]		5	ug/L		
MDA L	10/22/2002		CS	VOA	Acetone		31.6	ug/L		
Canada del Buey above SR-4	8/28/2002		CS	HEXP	Tetryl		0.27	ug/L	P	R
Canada del Buey above SR-4	8/28/2002		CS	HEXP	Dinitrotoluene[2,4-]		0.56	ug/L	P	R
Canada del Buey above SR-4	8/28/2002		CS	HEXP	Trinitrotoluene[2,4,6-]		0.09	ug/L	JX	R
La Delfe above Pajarito	7/14/2002		CS	HEXP	Dinitrobenzene[1,3-]		0.12	ug/L	X	R
La Delfe above Pajarito	7/14/2002		CS	HEXP	Trinitrobenzene[1,3,5-]		0.22	ug/L	X	R
La Delfe above Pajarito	7/14/2002		CS	HEXP	HMX		1.2	ug/L	P	R
La Delfe above Pajarito	7/14/2002		CS	HEXP	RDX		1.1	ug/L	P	JN+
La Delfe above Pajarito	7/14/2002		CS	HEXP	Dinitrotoluene[2,4-]		0.19	ug/L	P	R
Pajarito above SR-4	6/22/2002		CS	HEXP	Nitrotoluene[3-]		0.28	ug/L		
Pajarito above SR-4	6/22/2002		CS	HEXP	Nitrotoluene[4-]		0.27	ug/L		
Pajarito above SR-4	6/22/2002		CS	HEXP	Nitrotoluene[2-]		0.82	ug/L	P	
Pajarito above SR-4	6/22/2002		CS	HEXP	HMX		0.29	ug/L	P	
Pajarito above SR-4	6/22/2002		CS	HEXP	Dinitrotoluene[2,6-]		2.1	ug/L		
Pajarito above SR-4	6/22/2002		CS	HEXP	Dinitrobenzene[1,3-]		0.05	ug/L	JP	NJ
Pajarito above SR-4	6/22/2002		CS	HEXP	Dinitrotoluene[2,4-]		1.4	ug/L	P	J
Pajarito above SR-4	6/22/2002		CS	HEXP	RDX		2.7	ug/L	P	R
Pajarito above SR-4	6/22/2002		CS	SVOA	Methylphenol[4-]		2.4	ug/L	J	J-
Pajarito above SR-4	6/22/2002		CS	SVOA	Methylphenol[2-]		13.4	ug/L	J	
Pajarito above SR-4	6/22/2002		CS	SVOA	Phenol		0.64	ug/L	J	J
Canon de Valle above SR-501	6/22/2002		CS	HEXP	Dinitrotoluene[2,6-]		0.33	ug/L	P	J-
Canon de Valle above SR-501	6/22/2002		CS	HEXP	Amino-4,6-dinitrotoluene[2-]		0.31	ug/L		J-
Canon de Valle above SR-501	6/22/2002		CS	HEXP	Amino-2,6-dinitrotoluene[4-]		0.33	ug/L		J-
Water below SR-4	7/14/2002		CS	HEXP	Trinitrotoluene[2,4,6-]		0.35	ug/L	P	JN+
Water below SR-4	7/14/2002		CS	HEXP	Amino-2,6-dinitrotoluene[4-]		0.05	ug/L	JP	R
Water below SR-4	7/14/2002		CS	HEXP	HMX		2	ug/L	P	J
Water below SR-4	7/14/2002		CS	HEXP	RDX		1.5	ug/L	P	J

Laboratory Qualifiers

Lab Qual Code	Lab Qual Desc
UJ	(Inorganic) - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. (Organic) -The material was analyzed for, but was not detected. Quantitation limit is an estimated quantity.
BE	Low surrogate recovery; analyzed twice
BN	(Organic) - Analyte present in the blank and the sample. (Inorganic) - reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). (Organic) -Presumptive evidence of presence of material. (Inorganic) - Spiked sample recovery not within control limits.
E	(Inorganic) Paragon- Reported value is estimated because of the presence of interference. GEL- Percent difference between the parent sample and its serial dilution's concentration exceeds 10%. (Organic) - Analyte concentration exceeded the upper level of
UN	(Inorganic) - Compound was analyzed for,but was not detected. - Spiked sample recovery not within control limits.
UN*	(Inorganic) - Compound was analyzed for,but was not detected. - Spiked sample recovery not within control limits. - Duplicate Analysis not within control limits.
J*	(Inorganic) -The associated numerical value is an estimated quantity. - Duplicate Analysis not within control limits.
*	(Inorganic)- Duplicate analysis not within control limits. (Organic) - Spike recovery is equal to or outside the control criteria used.
+	(Inorganic) GEL- Correlation coefficient the Method of Standard Addition (MSA) is less than 0.095. Paragon- no meaning (Organic) - Duplicate Analysis (relative percent difference) not within control limits.
B	(Inorganic) - reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). (Organic) - Analyte present in the blank and the sample.
J	(Inorganic) -The associated numerical value is an estimated quantity. (Organic) - The associated numerical value is an estimated quantity.
N	(Inorganic) - Spiked sample recovery not within control limits. (Organic) -Presumptive evidence based on a mass spectral library search to make a tentative identification of the analyte.
NJ	(Organic) -Analyte has been tentatively identified and the associated numerical value is estimated based upon 1:1 response factor to the nearest eluting internal standard
R	(Inorganic) -The data are not useable. (Organic) -The data are unusable (compound may or may not be present.) Resampling and reanalysis is necessary for verification.
U	(Inorganic) -The material was analyzed for, but was not detected above the level of the associated numeric value. The associated numerical value is either the sample quantitation limit or the sample detection limit. (Organic) -The material was analyzed
P	(Organic) - > 25% difference for detected concentrations between two columns
JB	(Inorganic)-The associated numeric value is an estimated quantity. The reported value was obtained from a reading that was less the Contract Required Detection Limit.
EB	(Organic)--Analyte concentration exceeded the upper level of calibration range of the instrument. Analyte present in the blank and the sample.
U*	(Inorganic) - Compound was analyzed for, but was not detected. Duplicate analysis not within control limits.

D	(Organic) - Analytes analyzed at a secondary dilution.
JD	(Organic) - Estimated value. Analytes analyzed at a secondary dilution.
UE	(Inorganic) - Compound was analyzed for, but was not detected. Reported value is estimated because of the presence of interference.
N*	(Inorganic) - Spiked sample recovery not within control limits. Duplicate analysis not within control limits.
**	(Inorganic) and (Organic) GEL- Laboratory Control Sample recovery outside of acceptance limit.
J*+	(Inorganic) -The associated numerical value is an estimated quantity. - Duplicate Analysis not within control limits. (Inorganic) GEL- Correlation coefficient the Mehtod of Standard Addition (MSA) is less than 0.095. Paragon- no meaning (Organic) - Duplicate Analysis (relative percent difference) not within control limits.
B*	(Inorganic) - reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). (Inorganic)- Duplicate analysis not within control limits.
JP	(Organic) - The associated numerical value is an estimated quantity. > 25% difference for detected concentrations between two columns.
X	Reported concentration is a false positive
E*	(Inorganic) Paragon- Reported value is estimated because of the presence of interference. GEL- Percent difference between the parent sample and its serial dilution concentration exceeds 10%. - Duplicate analysis not within control limits. (Organic) -
BEN	(Inorganic) - The value is between the instrument detection limit and the contract required detection limit., The qualifier that is used when the percent difference between the parent sample and its serial dilution?s concentrations exceeds 10%., Spiked sample recovery not within control limits.
UEN	(Inorganic) - The value of the analyte was below the instrument detection limit., The qualifier that is used when the percent difference between the parent sample and its serial dilution?s concentrations exceeds 10%., Spiked sample recovery not within control limits.
UI	denotes uncertain identification for gamma spectroscopy
H	Holding time exceeded
HJ	(Inorganic) - This qualifier is used to indicate the holding time expired for a particular parameter., J
UH	(Inorganic) - The value of the analyte was below the instrument detection limit., This qualifier is used to indicate the holding time expired for a particular parameter.
UUI	compound analyzed for, but not detected above detection limit; uncertain identification for gamma spectroscopy

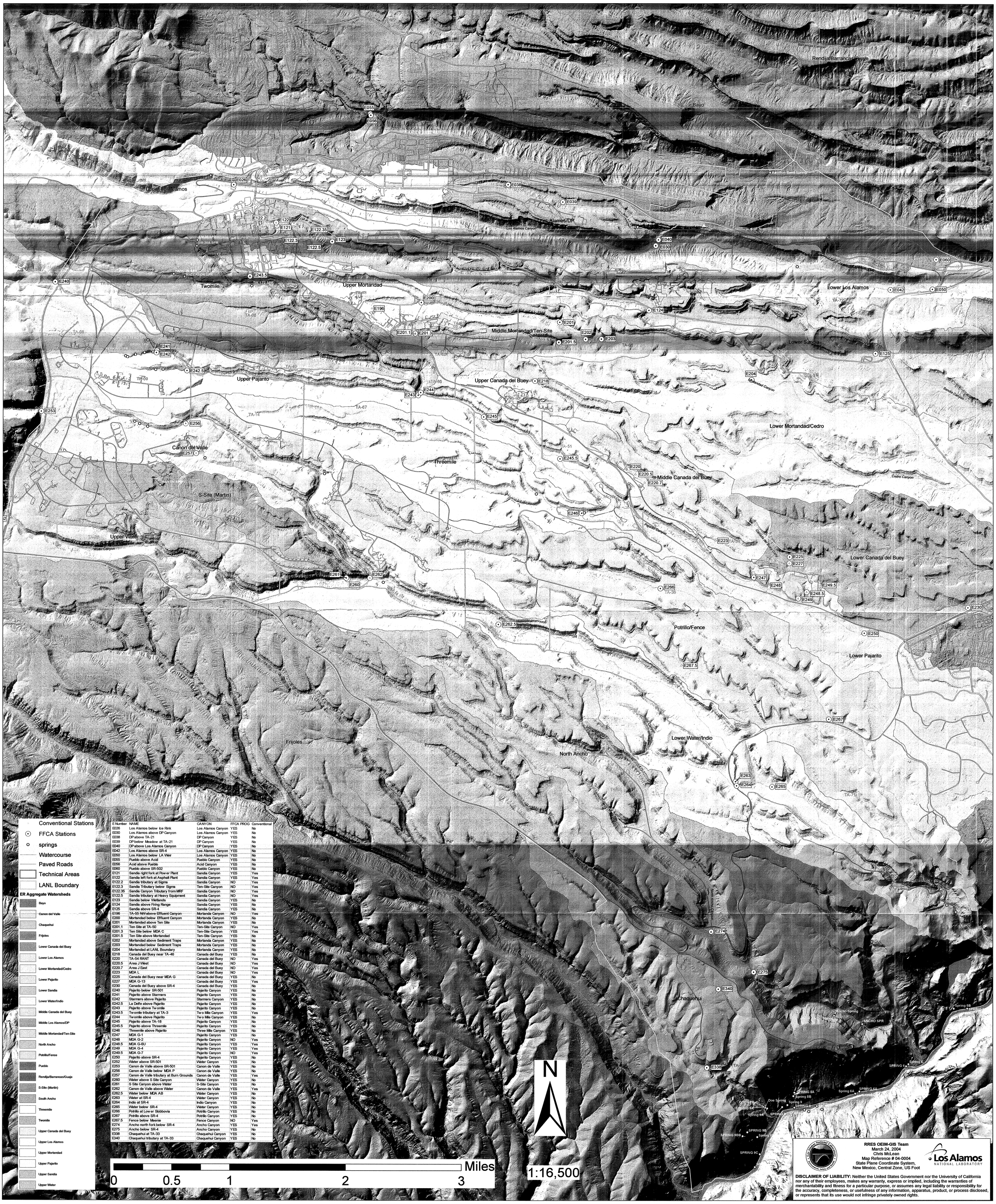
Validation Flag Codes

Valid Flag Code	Valid Flag Desc
R	The reported sample result is classified as rejected due to serious noncompliances regarding quality control acceptance criteria. The presence or absence of the analyte cannot be verified based on routine validation alone
A	The contractually-required supporting documentation for this datum is absent.
J	The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual.

J-	The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential negative bias.
J+	The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential positive bias.
PM	Manual review of raw data is recommended to determine if the observed non-compliances with quality acceptance criteria adversely impacts data use.
RPM	The reported sample result is classified as rejected due to serious noncompliances regarding quality control acceptance criteria. The presence or absence of the analyte cannot be verified based on routine validation alone.
UJ	The analyte is classified as not detected, with an expectation that the reported result is more uncertain than usual.
U	The analyte is classified as not detected.
NJ	(Organic) -Analyte has been tentatively identified and the associated numerical value is estimated based upon 1:1 response factor to the nearest eluting internal standard
JPM	The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual. Manual review of raw data is recommended to determine if the observed noncompliances with quality acceptance criteria adversely impacts data use.
MS	Invalid validation flag. MS indicates a laboratory matrix spike sample.
MSD	Invalid validation flag. MSD indicates a laboratory matrix spike duplicate sample.
NQ	No validation qualifier flag is associated with this result, and the analyte is classified as detected.
P	Use professional judgement based on data use. A decision must be made by the project manager or a delegate with regard to the need for further review of the data. This review should include some consideration of potential impact that could result from using the P-qualified data.
UA	Invalid validation flag of unknown meaning.
JN+	Presumptive evidence of the presence of the material at an an estimated quantity with a suspected positive bias.
JN-	Presumptive evidence of the presence of the material at an an estimated quantity with a suspected negative bias.
LIMIT	The limit type is uncertain.
DJ	Analyte quant in an anal perf at a sec dilution factor; an est val concerning either, (1) est a conc for a TIC or (2) analyte det at a level < the RDL or PQL & >= MDL

NPDES SWMU Conventional and FFCA Stormwater Stations
(Supporting Individual Permit Application)

16177



E Number	NAME	CANYON	FFCA PROG	Conventional
E026	Los Alamos below Ice Rink	Los Alamos Canyon	YES	No
E030	Los Alamos above DP Canyon	Los Alamos Canyon	YES	No
E038	DP above TA-21	DP Canyon	YES	No
E039	DP below Meadow at TA-21	DP Canyon	YES	No
E040	DP above Los Alamos Canyon	DP Canyon	YES	No
E042	Los Alamos above SR-4	Los Alamos Canyon	YES	No
E050	Los Alamos below LA Weir	Los Alamos Canyon	YES	No
E055	Pueblo above Acid	Pueblo Canyon	YES	No
E056	Acid above Pueblo	Acid Canyon	YES	No
E060	Pueblo above SR-502	Pueblo Canyon	YES	No
E121	Sandia right fork at Power Plant	Sandia Canyon	YES	Yes
E122	Sandia left fork at Asphalt Plant	Sandia Canyon	YES	Yes
E122.2	Sandia tributary at Sigma	Sandia Canyon	NO	Yes
E122.3	Sandia Tributary below Sigma	Ten-Site Canyon	NO	Yes
E122.35	Sandia Canyon Tributary from MRF	Sandia Canyon	NO	Yes
E122.5	Sandia tributary at Heavy Equipment	Sandia Canyon	NO	Yes
E123	Sandia below Wetlands	Sandia Canyon	YES	No
E124	Sandia above Firing Range	Sandia Canyon	YES	No
E125	Sandia above SR-4	Sandia Canyon	YES	No
E196	TA-55 NW above Effluent Canyon	Mortanda Canyon	NO	Yes
E200	Mortandad below Effluent Canyon	Mortanda Canyon	YES	No
E201	Mortandad above Ten Site	Mortanda Canyon	YES	No
E201.1	Ten Site at TA-50	Ten-Site Canyon	NO	Yes
E201.3	Ten Site below MDA C	Ten-Site Canyon	YES	Yes
E201.5	Ten Site above Mortandad	Ten-Site Canyon	YES	No
E202	Mortandad above Sediment Traps	Mortanda Canyon	YES	No
E203	Mortandad below Sediment Traps	Mortanda Canyon	YES	No
E204	Mortandad at LANL Boundary	Mortanda Canyon	YES	No
E218	Canada del Buey near TA-46	Canada del Buey	YES	No
E220	TA-54 RANT	Canada del Buey	NO	Yes
E220.5	Area J West	Canada del Buey	NO	Yes
E220.7	Area J East	Canada del Buey	NO	Yes
E223	MDA L	Canada del Buey	NO	Yes
E225	Canada del Buey near MDA G	Canada del Buey	YES	No
E227	MDA G-13	Canada del Buey	YES	Yes
E230	Canada del Buey above SR-4	Canada del Buey	YES	No
E240	Pajarito below SR-501	Pajarito Canyon	YES	No
E241	Pajarito above Starmers	Pajarito Canyon	YES	No
E242	Starmers above Pajarito	Starmers Canyon	YES	No
E242.5	La Delfe above Pajarito	Pajarito Canyon	YES	No
E243	Pajarito above Twomile	Pajarito Canyon	YES	No
E243.5	Twomile tributary at TA-3	Two Mile Canyon	YES	Yes
E244	Twomile above Pajarito	Two Mile Canyon	YES	No
E245	Pajarito above TA-18	Pajarito Canyon	YES	No
E245.5	Pajarito above Threemile	Pajarito Canyon	YES	No
E246	Threemile above Pajarito	Three Mile Canyon	YES	No
E247	MDA G-1	Pajarito Canyon	YES	No
E248	MDA G-2	Pajarito Canyon	NO	Yes
E248.5	MDA G-6U	Pajarito Canyon	YES	Yes
E249	MDA G-4	Pajarito Canyon	YES	Yes
E249.5	MDA G-7	Pajarito Canyon	NO	Yes
E250	Pajarito above SR-4	Pajarito Canyon	YES	No
E252	Water above SR-501	Water Canyon	YES	No
E253	Canon de Valle above SR-501	Canon de Valle	YES	No
E256	Canon de Valle below MDA P	Canon de Valle	YES	No
E257	Canon de Valle tributary at Burn Grounds	Canon de Valle	YES	Yes
E260	Water above S Site Canyon	Water Canyon	YES	No
E261	S Site Canyon above Water	S-Site Canyon	YES	No
E262	Canon de Valle above Water	Canon de Valle	YES	Yes
E262.5	Water below MDA AB	Water Canyon	YES	No
E263	Water at SR-4	Water Canyon	YES	No
E264	Indio at SR-4	Indio Canyon	YES	No
E265	Water below SR-4	Water Canyon	YES	No
E266	Potrillo at Lower Slobbovia	Potrillo Canyon	YES	No
E267	Potrillo above SR-4	Potrillo Canyon	YES	No
E267.5	Fence below Meenie	Fence Canyon	NO	Yes
E274	Ancho north fork below SR-4	Ancho Canyon	YES	Yes
E275	Ancho below SR-4	Ancho Canyon	YES	No
E338	Chaquehui at TA-33	Chaquehui Canyon	YES	No
E340	Chaquehui tributary at TA-33	Chaquehui Canyon	YES	No

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