

Identifier: SOP-5213 (Supersedes ENV-WQH-SOP-011, R0)	Revision: 0	
Effective Date: October 20, 2008	Next Review Date: August 11, 2013	

Environmental Programs Directorate

Standard Operating Procedure

for **COLLECTING STORM WATER RUNOFF SAMPLES AND INSPECTING SAMPLERS**

APPROVAL SIGNATURES:

Process Owner:	Organization	Signature	Date
Steve Veenis	EP-LWSP	Signature on File	8/11/08
Quality Assurance Specialist:	Organization	Signature	Date
Lynn Wallace	QA-IQ	Signature on File	9/10/08
Responsible Line Manager:	Organization	Signature	Date
Paul Huber	EP-LWSP	Signature on File	8/18/08

1.0 PURPOSE AND SCOPE

This procedure describes the process for collecting storm water runoff samples from single-stage ISCO and bottle samplers and conducting a sampling station inspection in all areas at Los Alamos National Laboratory (LANL). It is applicable to all LANL personnel who collect storm water samples and perform station inspections and any subcontractors, who provide support to LANL.

2.0 BACKGROUND INFORMATION

2.1 Background

The Federal Facilities Compliance Agreement (FFCA) requires LANL to collect storm water runoff from Solid Waste Management Units (SWMUs), Potential Release Sites (PRs), and Areas of Concern (AOC's) that could impact waters of the United States. In instances where SWMUs, PRs, and/or AOCs are in close proximity and along the same drainage, they are grouped into a Site Monitoring Area (SMA) for sampling at a single station. During sample collection, field personnel are also required to inspect the sampling station and reset it for the next rain event.

The Laboratory collects storm water runoff samples at sampling stations using a gage system, an ISCO automated sampling system and gravity-fed bottle single stage samplers. The samplers are designed to collect water when the water surface is high enough to cover the actuator (ISCO's and gages) or high enough to cover the intake tubing and gravity fill the bottles. Surface water runoff samples are collected automatically and do not need immediate attention.

A LANL Project Leader is the primary person with responsibility for the steps in this procedure. Several Route Leads will be appointed with responsibility for a subset of sampling stations.

2.2 Precautions

This procedure is used with an approved Integrated Work Document (IWD) if needed and/or other safety documents as required.

If subsequent rain events occur before all sites have been visited after the first rain event, finish the route to collect the first-event samples.

3.0 TRAINING

Reference the latest LANL Water Stewardship Program training matrices for prerequisite training for field personnel. Training to this SOP is by self-study and desk-top review, documented by signatures.

4.0 EQUIPMENT AND TOOLS

LANL Provides

- Copy of Integrated Work Document (IWD)
- Copy of this procedure
- Excavation permits (if soil will be disturbed or stakes driven)
- Coolers with ice or Blue Ice® blocks
- Maps
- Global Positioning System (GPS) unit
- Radio
- Pager
- Necessary keys

Subcontractor Provides

- Replacement sample bottles (glass and plastic) with lids
- Marker pen (permanent, waterproof)

- Ball point pen
- Digital camera (w/ Photo Authorization Approval form)
- White erasable board
- Zip lock bags
- Cell phone (Government cell phone only in secure areas)
- Voltage meter
- Spare batteries
- Nitrile gloves
- Leather gloves
- De-ionized water
- Paper towels
- Shovels
- Spare tubing: tygon and Teflon®
- Backpacks (if needed)
- Safety glasses with side shields
- Leatherman type tool

5.0 STEP-BY-STEP PROCESS DESCRIPTION

5.1 Prepare for Fieldwork

Hydrology Team	1.	Following a qualifying rain event, prepare a precipitation report.
Field Data Manager	2.	Prepare a list of Stations to be inspected and sampled. Send a copy to Sample Data Manager and Shift Operations Manager.
	3.	Generate "Station Inspection and Sample Collection Field Form" (5213-2) for each Station. Generate and fill-in Field Custody Number.
Sample Data Manager	4.	Generate "Sample Collection Log/Reference Form" (5213-1) for each Station. Determine total volume of sample to collect for each container type.
Shift Operations Manager	5.	Prepare "Station Inspection/Maintenance Tracking Log" (5213-3)
	6.	Provide to Contractor Project Manager within 48 hours of the rain event: <ul style="list-style-type: none"> • Form 5213-1 and Form 5213-2 for each Station to be inspected • Tracking Log (5213-3) • Peel-off labels of the Field Custody Numbers
Contractor Project Manager	7.	Pick up Forms and labels. Sign and date Tracking Log (5213-3), indicating receipt of Forms. Give a copy of signed Tracking Log to Shift Operations Manager.
	8.	Distribute Forms and labels to Route Leads
	9.	Assemble the required equipment for the work.

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10. Two people are required for field work. Work should only be done during daylight hours. Extended work hours, if needed, must be approved by a supervisor. Conduct pre-job briefing with field personnel using the current Integrated Work Document. Obtain worker signatures on new or newly-revised IWDs.

Conduct tailgate safety meetings and obtain all worker signatures on tailgate meeting form.

11. For work at sites operated by Weapons Facility Operations, the appropriate access control should be notified before traveling to those sites. The IWD Part II will address specific requirements and training for these sites.
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12. Set your watch to the precise time. This can be done by calling the Laboratory's time system (667-TIME or 667-8463) or by going to the time page at www.time.gov (or click on the clock icon on the lab's internal home page). This is so the ISCO time can be set to the current standard time.

5.2 Inspect the Station

- Inspector
1. Complete the "Inspection Details" and "Station Details" sections on Form 5213-2.

 2. If the Station is damaged and can be fixed at this time, then fix the sampler and document your work in the "Station Maintenance Form" (Form 5214-2).

 3. If the sampler is damaged and cannot be fixed at this time, check "Maintenance Required" on Form 5213-2 and briefly describe the maintenance required in the "Station Maintenance Form" (Form 5214-2).

5.3 Collect Samples from Single Stage and ISCO Sampler Locations

- Field Team
1. If the rain event resulted in enough runoff to collect, initiate sample collection.

 2. Complete "Visual Observation of Collected Sample" section, as applicable (Form 5213-2).

 3. Check Sample Collection Log/Reference Form (Form 5213-1) for volume of water needed to complete suites of sample analyses.

 4. Record the number of bottles collected according to container description and sign "Retrieved By:"(Form 5213-2).
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5. For single-stage bottle samplers:

- Remove buried bottles using a shovel or hands. **Caution:** Be careful to not break glass bottles.
- If water samples are present, continue with the next step. If no samples are collected, replace the existing bottles and jump to section 5.4.
- Wear nitrile gloves.
- Remove sample bottles from sampling lids (caps with tubes) by grasping bottom of bottle and turning while holding lid still. Be careful to not twist tubing – if necessary, temporarily pull tubing from lid.
- Place lids onto the sample bottles.
- Sequentially number each bottle: start numbering the glass bottles first, then the poly bottles, and lastly the SSC bottle. Write the number on the bottle lid.
- Apply Field Custody Number label to each bottle.
- Record sample information on Form 5213-2, page 2. Put Not Applicable (NA) in the Date and Time columns for bottle samplers.
- **Return water not needed for sample analysis to the ground.**

6. For ISCO samplers:

- Remove lid and remove bottles from cassette.
- If water samples are present, continue with the next step. If no samples were collected, replace the existing bottles and jump to section 4.3.
- Wear nitrile gloves.
- Place replacement lids onto the sample bottles.
- Write the date and time retrieved, SS Number, and the corresponding carousel number on the bottle.
- Apply Field Custody Number label to each bottle.
- Record sample information on Form 5213-2, page 2.
- **Return water not needed for sample analysis to the ground.**

7. Place samples in cooler with blue ice (or equivalent).

5.4 Reset Samplers

Field Team

1. For bottle samplers:

- Install new sample bottles for the next sampling event.
 - Add additional bottles if needed to collect samples.
 - Clean sediment from the intake tubing to make ready for next flow event.
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2. For ISCO samplers:
 - o Install new sample bottles for the next sampling event.
 - o Reset the sampler for the next sampling event:
 - o Press the “Start sampling” button.
 - o Press the “Enter” button twice.
 - o Ensure the unit displays “sampler inhibited”
 - o If an error occurs, reconfigure the sampler. Reference SOP-5214 for settings.
 - o Secure the sampler shelter.
3. If photos are taken in a secure area, follow the secure area’s guidance regarding the need for Derivative Classifier (DC) review of the photos before the camera leaves the secure area. Requirements may vary.

5.5 Deliver Samples

- | | |
|---------------------|---|
| Inspector | <ol style="list-style-type: none"> 1. On Tracking Log (5213-3): <ul style="list-style-type: none"> o Add date of Station inspection o Indicate if maintenance is required o If maintenance was completed in the field insert date of completion (in final column). 2. Conduct a technical Quality Assurance review of Form 5213-2 and sign “Reviewed By” on Form 5213-2, page 2. 3. Relinquish samples to Storm Water Lab sample processor and sign “Relinquished By” on Form 5213-2, page 2. 4. Deliver the samples, contact waste (e.g., nitrile gloves), Form 5213-1 (signed), Form 5213-2 (signed), Form 5213-3, and Form 5214-2 (signed), if applicable, to the TA-59 Storm Water Laboratory |
| Sample Custodian | <ol style="list-style-type: none"> 5. On Form 5213-2, page 2, sign “Received By” indicating acceptance of samples. 6. On Form 5213-1, record volume accepted, review form for completeness and accuracy, and sign. 7. Provide Form 5213-1 to Sample Data Manager. 8. Follow guidance in ENV-WQH-SOP-066.0 for handling contact waste. |
| Sample Data Manager | <ol style="list-style-type: none"> 9. Assign COC ID, generate Field Parameter Sheet, generate Request for Analytical Services. Provide to Sample Custodian. |
| Sample Custodian | <ol style="list-style-type: none"> 10. Add COC ID to Form 5213-2. |

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11. Send samples to shipping according to ENV-WQH-SOP-066.0,
-
12. Relinquish the following forms to the Shift Operations Manager, by signing the Tracking Log (Form 5213-3):
- o Form 5213-2s
 - o Form 5214-2s
-
13. When sample analyses are received from the analytical laboratory, provide Form 5213-1 to the Shift Operations Manager.

5.6 Collect Field Forms and Monitor Maintenance Follow-through.

- | | |
|--------------------------|--|
| Shift Operations Manager | <p>1. Acknowledge receipt of forms by signing the Tracking Log (Form 5213-3).</p> <hr/> <p>2. Date stamp Forms received from the sampling custodian.</p> <hr/> <p>3. If sampling station maintenance is required, provide Form 5214-2s to the Field Team.</p> |
| Field Team | <p>4. Conduct Station maintenance within 5 work days of inspection finding.</p> <hr/> <p>5. Summarize repairs completed on Form 5214-2. Certify that information is:"true, accurate, and complete".</p> <hr/> <p>6. Give maintenance form(s) to Shift Operations Manager.</p> |
| Shift Operations Manager | <p>7. Add date of maintenance completion to Tracking Log (5213-3)</p> <hr/> <p>8. Verify using the Tracking Log that all Forms generated for a particular rain event are turned in to LANL.</p> <hr/> <p>9. Provide forms to Records Coordinator, and sign Tracking Log (5213-3) to show relinquishment.</p> |

5.7 Records

- | | |
|---------------------|--|
| Records Coordinator | <p>1. Verify forms that you are receiving by signing the Tracking Log (5213-3).</p> <ul style="list-style-type: none"> • Note: If the inspection/collection Station is both an SMA and gage, then the original stays at TA-64, and a copy goes to Storm Water Records. • Note: The 5213-1 forms, Field Parameter Sheets, and Request for Analytical Services will be provided by the Sample Custodian when they become available (ENV-WQH-SOP-066.0) |
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2. Scan original forms. File electronic and hard copy forms.

Route lead 3. Download any photo(s) within 2 days of taking them. Label photos with site number, date, and purpose. Print out hard copies for review by Project Leader.

Project Leader 4. Select photos that are to be submitted for DC review.

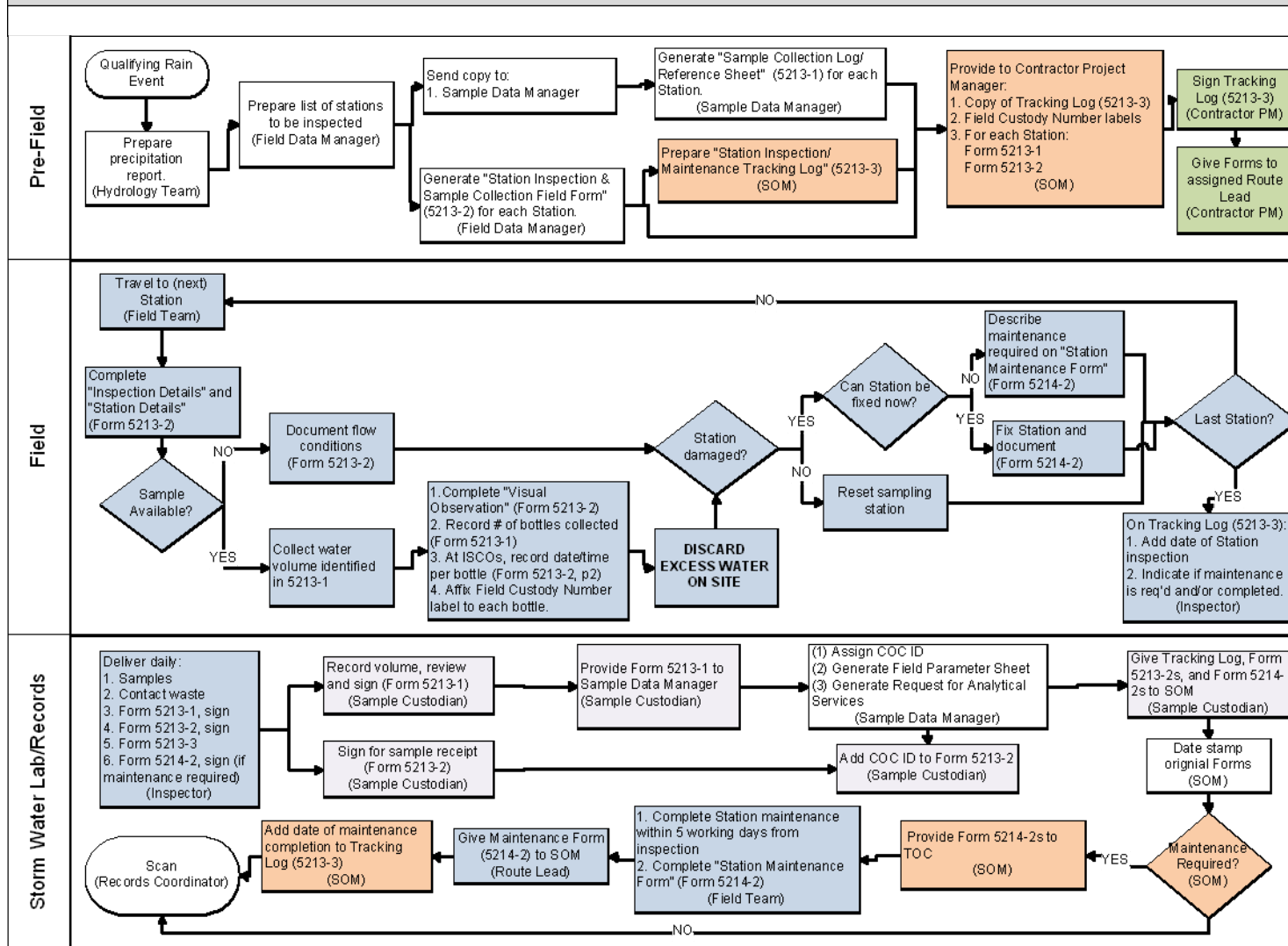
Task Order Contractor 5. Following DC approval, save photos to a Project designated file on a LANL server or submit to Storm Water Permit Compliance Records Manager by CD.

6.0 RESULTING RECORDS

The following records are generated as a result of this procedure and are to be maintained in accordance with the applicable records management procedure:

- Form 5213-1 Sample Collection Log/Reference Form
- Form 5213-2 Station Inspection and Sample Collection Field Form
- Form 5213-3 Station Inspection/Maintenance Tracking Log
- Form 5214-2 Station Maintenance Form
- Photos
- Field Parameter Sheet
- Request for Analytical Services

7.0 Process Flow Chart for Station Inspection and Sample Collection



7.0 ATTACHMENTS

Attachment 1: Form 5213-1 Sample Collection Log/Reference Form

Attachment 2: Form 5213-2 Station Inspection and Sample Collection Field Form

Attachment 3: Form 5213-3 Station Inspection/Maintenance Tracking Log

Attachment 4: Form 5214-2 Station Maintenance Form

8.0 REVISION HISTORY

Revision No. <i>[Enter current revision number, beginning with Rev.0]</i>	Effective Date <i>[DCC inserts effective date for revision]</i>	Description of Changes <i>[List specific changes made since the previous revision]</i>	Type of Change <i>[Technical (T) or Editorial (E)]</i>
0	10/01	New document	T
1	8/03	Annual review	T
2	5/05	Added safety precautions and excavation permit requirements.	T
3	1/06	New procedure; supersedes sample collection steps in ENV-WQH-SOP-009.2	T
0	10/20/08	New procedure. Supersedes ENV-WQH-SOP-011, R0.	T

[Using a CRYPTOCard, click here to record "self-study" training to this procedure.](#)

If you do not possess a CRYPTOCard or encounter problems, contact the ERSS training specialist.

ATTACHMENT 1

SOP-5213, R0

Form 5213-1 (7/2008)

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SAMPLE COLLECTION LOG/REFERENCE FORM

Field Custody Number	COC ID
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SMA ID:	ACID-SMA-2	Rain Event Date/Time:
SMA Name:	E056	Retrieval Date/Time:
Loc Name:	Acid above Pueblo	Retrieved By:
Station Type:	Gage	

Cont. Desc.	Total Volume (L)	Bottles Collected	Confirmed Volume (L)	Comments
glass	5			
poly	8.25			

Reviewed By:

EXAMPLE

ATTACHMENT 2

Station Inspection and Sample Collection Field Form			
SOP-5213		Form 5213-2 (7/2008)	
Inspection Details			
SMA Number:		Inspector Name:	
Station Number:		Inspector Z#:	
Rain Gage:		Date of Inspection: Time:	
Inspector Signature:			
Station Type:	<input type="checkbox"/> ISCO <input type="checkbox"/> Bottle <input type="checkbox"/> Grab		Date of Rain Event: inches
Inspection Type:	<input type="checkbox"/> Install <input type="checkbox"/> Initiate <input checked="" type="checkbox"/> Precipitation <input type="checkbox"/> Shut-Down		GPS Coordinates: X: Y: Photo Number:
Station Details			
Station operational upon arrival?		<input type="checkbox"/> Yes <input type="checkbox"/> No If no, describe:	
Bottles present upon arrival?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Describe bottles present:		<input type="checkbox"/> 1 L Poly <input type="checkbox"/> 300 ml Glass <input type="checkbox"/> 1 L.Poly SSC <input type="checkbox"/> 1 Gal Glass <input type="checkbox"/> 1 Gal Poly <input type="checkbox"/> Other	
Sample/vent tubing clear upon arrival?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Diversion/damming material functioning?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
If ISCO, was the battery cable functional upon arrival?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
ISCO programming correct?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Correct date and time on ISCO?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
If ISCO, record battery voltage under load _____ Volts			
Were Samples Collected?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
If no, describe		<input type="checkbox"/> No Evidence of Flow. <input type="checkbox"/> Insufficient Flow. <input type="checkbox"/> Maintenance Required. Maintenance Request No. _____	
Visual Observation of Collected Sample (complete as applicable)			
Odor:	<input type="checkbox"/> Organic <input type="checkbox"/> Sulfur <input type="checkbox"/> Sewage <input type="checkbox"/> Other: Color (describe):		
Clarity:	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy		
Oil Sheen:	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Foam:	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Floating Solids:	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Suspended Solids:	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Settled Solids:	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Ice Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No Thickness _____ Inches		
Other Observations:			
Page 1 of 2		Field Custody Number: 080729110310-0	

Station Inspection and Sample Collection Field Form

SOP-5213

Form 5213-2 (7/2008)

Station Number:	SMA Number:	COC ID:
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ISCO Sampler/Bottle Sampler

Glass Bottles				Poly Bottles			
Bottle #	Date	Time	Comments	Bottle #	Date	Time	Comments
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
8				8			
9				9			
10				10			
11				11			
12				12			
13				13			
14				14			
15				15			
16				16			
17				17			
18				18			
19				19			
20				20			
21				21			
22				22			
23				23			
24				24			
Total Volume (liters):				Total Volume (liters):			

Example

Relinquished by Signature					Date:	Time:	Received by Signature		Date:	Time:

ATTACHMENT 3

SOP-5213

Form 5213-3 (7/2008)

Date of Rain Event: 8/4/08

Station Inspection/Maintenance Tracking Log

SMA	SS #	Precip Amount	Form Pick-Up?	Stations Inspected (Date)	Maintenance Required?	Maintenance Completed (Date)	Original Forms to LANL
CHQ-SMA-5	SS3376	1.37					
CHQ-SMA-6	SS3377	1.37					
CHQ-SMA-1	SS3397	1.37					
CHQ-SMA-3	SS33971	1.37					
CHQ-SMA-4.5	SS341	1.37					
CHQ-SMA-7	SS342	1.37					
Site Count = 6							

1. FORM PICK-UP BY FIELD TEAM	Relinquishing Forms (LANL) _____ Signature/Z#/Date	Receiving Forms (Task Order Contractor) _____ Signature/Z#/Date
2. FORMS RETURNED TO LANL TECHNICAL	Relinquishing Forms (Sample Custodian) _____ Signature/Z#/Date	Receiving Forms (LANL Technical) _____ Signature/Z#/Date
3. FORMS SUBMITTED TO LANL RECORDS	Relinquishing Forms (LANL TECHNICAL) _____ Signature/Z#/Date	Receiving Forms (LANL Records) _____ Signature/Z#/Date

ATTACHMENT 4

SOP 5214

Form 5214-2 (7/2008)

Page 1 of 1

Station Maintenance Form

SMA ID _____

Station Inspection Date: _____

Sampler Type: Bottle ISCO

Repairs Needed:

All repairs will be completed within 5 working days of finding date

Inspector: _____ Date: _____
(Name / Z#/Signature)

Summary of Repairs Completed:

Inspector: _____ Date: _____
(Name / Z#/Signature)

Sampler ready to sample within 5 working days Yes No - Why:

Sampler operational as of (date) _____

Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name/Z Number

Signature

Date

SAVE

PRINT

Section 16.1 Attachment 3 - Procedure Change Request

Procedure Change Request			
Section #1- Type of Request			
Manual/Procedure No. (if known): EP-WES-SOP-5175 (was SOP-011.0)		Revision: 0	
Title: Collecting Storm Water Runoff Samples ⁵²¹³ and Inspecting Samplers ^{SC 10/20/08}			
Detailed description of requested change (Attach additional sheets if needed. Number additional sheets): Revise so that the correct amount of water is collected for sample analysis, thereby reducing hazardous waste taken to the lab. Replace Call-in sheet.			
Requestor Signature: <i>Paul Mark</i>	Print Name: Paul Mark	Phone: 665-5029	Date: 7/1/08
Section #2 - Procedure Owner Supervisor Approval For Processing			
<input type="checkbox"/> New Procedure <input checked="" type="checkbox"/> Major Revision <input type="checkbox"/> Minor Revision <input type="checkbox"/> Special Procedure <input type="checkbox"/> IPC <input type="checkbox"/> Deactivation <input type="checkbox"/> Cancellation <input type="checkbox"/> IPC Rollup			
<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved (Return to originator)		Priority: High	
Procedure Owner Supervisor Signature: <i>Paul Huber</i>	Print Name: Paul Huber	Date: 7/1/08	
Section #3 - Review and Concurrence			
IPC # N/A	IPCs Incorporated: N/A	Affected Pages: N/A	
Other affected facilities or N/A: N/A Obtain Concurrence all facilities/organizations affected by this change			
Review and Concurrence: Review organizations (N/A if not required); document additional review organizations, if needed on continuation sheet. CSE approval required for all technical procedures except minor revisions, IPC Rollup, and non-AB related cancellations/deactivations. CSE approval always required for changes affecting safety basis steps.			
Department: QA-IQ	Print Name: Lynn E. Wallace	Signature: <i>Lynn E. Wallace</i>	Date: 7/2/08
CSE USQ Number (as applicable): <i># ML 07/2/08</i>			
ADC: <input checked="" type="checkbox"/> Unclassified <input type="checkbox"/> OOU <input type="checkbox"/> UCNI <input type="checkbox"/> Classified		Print Name Catherine Smith Signature <i>Catherine Smith</i>	
Section #4 - Final Approval By Procedure Owner			
Validation Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Document is Authorized to serve as Part 1 of the IWD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Periodic Review Requirements Satisfied? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Training Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Classroom/Briefing <input type="checkbox"/> On the Job	<input checked="" type="checkbox"/> Just-in-Time <input checked="" type="checkbox"/> Required Reading	<input type="checkbox"/> Hold for Completion of Training <input type="checkbox"/> Release Procedure to field
Approval Signature: <i>Steven J. Veenis</i>	Print Name: Steven J. Veenis	Z Number: 109949	Date: 8-11-08
		Phone: 667-0013	

Course # assigned
47805

→ Procedure will require USQ evaluation for use @ nuclear facilities as part of a work package defining specific work (hazard, location, etc) prior to implementation

LANL
ISD 315-1.0

Training Review Completed RR approved at this time. Procedure should have performance demonstration in the future through a briefing
10/16/08 Pam Flores