

Identifier: **SOP-02.01**

Revision: **1**

Effective Date: **03/22/2004**

Document Catalog Number: **ER2004-0084**

Author: **Steve Veenis**



## **Risk Reduction and Environmental Stewardship— Remediation Services**

### **Standard Operating Procedure**

# **for Surface Water Site Assessments**

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the United States Department of Energy under contract W-7405-ENG-36.

## Revision Log

<b>Revision No.</b>	<b>Effective Date</b>	<b>Prepared By</b>	<b>Description of Changes</b>	<b>Affected Pages</b>
0	09/21/99	Steve Veenis	New Procedure	All
1	03/22/2004	Steve Veenis	Minor changes, e.g., organizational and new template.	All

# Surface Water Site Assessments

## Table of Contents

1.0	PURPOSE .....	4
2.0	SCOPE.....	4
3.0	TRAINING .....	4
4.0	DEFINITIONS.....	5
5.0	RESPONSIBLE PERSONNEL.....	6
6.0	BACKGROUND AND PRECAUTIONS .....	7
7.0	EQUIPMENT .....	7
8.0	PROCEDURE .....	8
8.1	RRES-WQH Oracle Database.....	8
8.2	Evaluation Process.....	8
8.3	Evaluate a SWMU or AOC .....	9
8.4	Perform Part B Re-assessment.....	10
8.5	Prioritize Evaluated SWMU/AOCs for Site Actions .....	10
8.6	Implement Site Actions and Track RRES-RS Recommendations .....	11
9.0	LESSONS LEARNED.....	12
10.0	RECORDS.....	12
11.0	REFERENCES.....	12
12.0	ATTACHMENTS .....	13
	Attachment A: Constituent Assessment (Part A).....	14
	Attachment A: Instructions for Completing a Constituent Assessment Form (Part A) .....	15
	Attachment B: Surface Water Site Assessment Form.....	17
	Attachment B: Instructions for Completing a Surface Water Site Assessment Form (Part B).....	19
	Attachment B: Instructions for Completing a Surface Water Site Assessment Form (Part B).....	20
	Attachment C: RRES-RS List of Potential Bioaccumulation Compounds.....	23
	Attachment D: List of Acronyms and Abbreviations .....	24

# Surface Water Site Assessments

## 1.0 PURPOSE

- 1.1 This standard operating procedure (SOP) states the responsibilities and describes the process for determining whether a Los Alamos National Laboratory (LANL) RRES-RS project site has the potential to adversely effect surface-water quality. The success of this process directly ties to the participation of each employee within the LANL, Risk Reduction and Environmental Stewardship, Remediation Services (RRES-RS) project.
- 1.2 The LANL, RRES-RS project is responsible for the investigation and remediation of Solid Waste Management Units (SWMUs) under the Resource Conservation and Recovery Act (RCRA) and areas of concern (AOCs) under the direction of the U.S. Department of Energy (DOE). During the investigation and remediation phases, information may be gathered that indicates that contaminant conditions that might affect surface-water quality may be present at the site. Depending on the contaminant found, the concentration, and the erosion/sediment transport potential, the development of an action plan to mitigate the problem may be necessary. The mitigation could include site restoration and/or stabilization.

## 2.0 SCOPE

- 2.1 All **RRES-RS project participants** shall implement this mandatory SOP.
- 2.2 **Subcontractors** performing work under the RRES-RS project's quality program shall follow this SOP.

OR

- 2.3 **Subcontractors** may use the subcontractor's procedure as long as the substitute meets the requirements prescribed by the RRES-RS Quality Management Plan, and the RRES-RS quality program project leader (QPPL) and a RRES-RS technical staff person approve the procedure before the subcontractor begins the designated activity.

## 3.0 TRAINING

- 3.1 **RRES-RS project participants** shall train to and use the current version of this SOP; contact the author or the Water Quality and Hydrology Group (RRES-WQH) if the SOP text is unclear.
- 3.2 **RRES-RS project participants** using this SOP shall document training in accordance with QP-2.2.

- 3.3 The responsible **project leader (PL)** shall monitor the proper implementation of this procedure and ensure that the appropriate personnel complete all applicable training assignments, including training to the Integrated Work Document (IWD) form no. 2067.
- 3.4 **RRES-RS project participants** may request any needed assistance with implementation of this procedure from RRES-RS Quality Integration and Improvement (QII).

## 4.0 DEFINITIONS

- 4.1 *Area of concern (AOC)*—Any suspected release of hazardous waste or hazardous waste constituent, which is not directly associated with a SWMU (U.S. Environmental Protection Agency, EPA, 1986).
- 4.2 *Best management practices (BMPs)* — BMPs can be schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw-material storage areas.
- 4.3 *Canopy* —The canopy is the uppermost layer of vegetation in a forest, consisting of the tops of trees forming a kind of ceiling.
- 4.4 *Chemical of potential concern (COPC)*—A chemical detected at a specific site that has the potential to adversely affect human or animal receptors due to its concentration, distribution, and mechanism of toxicity. The chemical remains a concern until the evaluation of exposure pathways and receptors in a site-specific risk assessment.
- 4.5 *Ground cover* —The covering of naturally occurring soils by either natural or man-made mechanisms (e.g., grasses, pine needles, asphalt, concrete, etc.).
- 4.6 *Gully erosion*—The erosion process whereby water accumulates in narrow channels and, over short periods, removes the soil from this narrow area to considerable depths, which can range from one foot or more.
- 4.7 *Potential release site (PRS)*—A site suspected of releasing or having the potential to release contaminants into the environment. A PRS is a generic term that includes SWMUs, hazardous-waste sites listed as Module VIII of LANL's Hazardous Waste Facility Permit, and sites identified as radioactive AOCs. The RRES-RS project is responsible for investigating and, if necessary, cleaning up such sites on and around LANL.
- 4.8 *Refuse* —Refuse includes food, swill, carrion, slops, and all substances from the preparation, cooking, and consumption of food. It also includes all

substances that result from the handling, storage, and sale of food products, the carcasses of animals, junked parts of automobiles and other machinery, oil, discarded furniture, paper cartons, cans, bottles, tree branches, yard trimmings, ash, and all unwholesome material.

- 4.9 *Rill erosion*—An erosion process in which numerous small channels only several inches deep are formed by concentrated runoff that flows during and immediately following rain storms.
- 4.10 *Runoff*—The portion of the precipitation on a drainage area that is discharged from the area by either sheet flow or adjacent erosion channels.
- 4.11 *Run-on*—Surface water flowing onto an area because of runoff occurring higher up the slope.
- 4.12 *Site-specific health and safety plan (SSHASP)*—Health and safety plan that is specific to a site or RRES-RS-related field activity that has been approved by an RRES-RS health and safety representative. This document contains information specific to the project including scope of work, relevant history, descriptions of hazards by activity associated with the project site(s), and techniques for exposure mitigation (e.g., personal protective equipment [PPE]) and hazard mitigation.
- 4.13 *Slope*—A slope is a ratio of units of elevation change to units of horizontal change usually expressed in degrees.
- 4.14 *Solid waste management unit (SWMU)*—Any discernible unit where solid wastes were or may have been placed at any time, regardless of whether the unit was intended for the management of solid or hazardous wastes. These areas include anywhere solid wastes were routinely and systematically released. Module VIII of the Hazardous Solid Waste Amendment (HSWA) Permit lists all SWMUs.
- 4.15 *Watercourse*—Any river, creek, arroyo, canyon, draw, wash, or other channel possessing definite banks and beds with visual evidence of occasional flow of water.
- 4.16 *Water pollution*—Either introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as may, with reasonable probability, injure human health, animal or plant life, or property, or to unreasonably interfere with the public welfare or the use of the property.

## 5.0 RESPONSIBLE PERSONNEL

The following personnel are responsible for activities identified in this procedure:

- Field team leader (FTL)

- PL
- QPPL
- RRES-WQH personnel/representative
- RRES-RS project personnel/participant/representative
- Site owner
- Surface water assessment team (SWAT)
- User

## **6.0 BACKGROUND AND PRECAUTIONS**

- 6.1 **RRES-RS project participants** shall use this SOP in conjunction with an approved SSHASP.
- 6.2 Members of RRES-WQH perform a variety of fieldwork around LANL. All fieldwork conducted as part of this SOP shall follow the group-specific Activity Hazard Analysis (AHA) , additional requirements set forth by the Facility Management Unit (FMU), the IWD, and other site-specific documents.

## **7.0 EQUIPMENT**

- 7.1 Equipment used when going into the field depends on the distance from the group office and the distance the field technician is from the vehicle. Field personnel must have current certifications in First Aid and CPR. Additional training or specific PPE may be required, depending on the work location.
- 7.2 For this procedure the following equipment is needed before going into the field to perform any work:
- First aid kit in vehicle
  - Radio or cellular phone communication
  - Drinking water
  - Camera for photo documentation
  - Clipboard, pencils, markers, and/or white board
  - Part B of this SOP, Surface Water Site Assessment
  - Supporttiing documents, e.g., permits and IWD forms

## 8.0 PROCEDURE

(Make any deviations from this SOP in accordance with QP-5.7 and/or SOP-01.01.)

New Mexico Water Quality Control Commission (WQCC) Regulations regulate streams, watercourses, and groundwater quality. The New Mexico Environment Department (NMED), Surface and Ground Water Quality Bureaus (SWQB and GWQB, respectively) enforce developed water-quality standards. A surface-water site assessment is performed at a site using a checklist developed to assess the erosion potential of each site. This evaluation checklist aids in the prioritization of water-quality corrective actions and the BMPs necessary to protect surface-water quality. The web-based RRES-WQH Oracle database (DB) at [www.wqdbforms.lanl.gov/swts.html](http://www.wqdbforms.lanl.gov/swts.html) stores all information regarding a site assessment. Obtain information in the DB by contacting a RRES-WQH representative.

### 8.1 RRES-WQH Oracle Database

The surface water, web-based RRES-WQH Oracle database (DB) provides access to all information regarding a SWMU/AOC. Major components of this database include

- surface water assessment team (SWAT) evaluations,
- initial surface water assessments,
- surface water re-assessments,
- corrective actions,
- chemical/pollutant constituent,
- watershed aggregates,
- BMP maintenance tasks,
- storm water pollution prevention plan information,
- canyon information, and
- site contacts.

### 8.2 Evaluation Process

Sites are investigated at LANL to determine if they present a threat to human health or the environment. As information becomes available, water-quality concerns associated with a SWMU or AOC may become evident. If contaminants above DOE/LANL screening levels exist at the site in soil samples or above WQCC standards in surface-water samples collected at the site and the topographic and vegetative state of the site



suggests that migration of those contaminants could occur, a corrective action shall be implemented.

### 8.3 Evaluate a SWMU or AOC

8.3.1 The **PL** shall ensure the application of the two-part evaluation process to all RRES-RS project sites recommended for “no further action” (NFA) criteria listed below as described in the March 2001, IWP.

- The site could not be located or did not exist.
- No waste or contamination is associated with the site.
- No release to the environment from the site occurred (e.g. the unit is inside of a building and no pathways to the environment exist (i.e., no floor drains exist).
- a release from the SWMU/AOC to the environment occurred, but the SWMU/AOC was characterized and/or remediated under another authority, which adequately addressed RCRA corrective action, and documentation, such as a closure letter, is available.
- The SWMU/AOC was characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

8.3.2 Because of the large number of sites remaining in the project that do not fit the NFA criteria described above, the **PL** shall prioritize sites for Part A (Attachment A) evaluations based on an erosion matrix score, found in the RRES-WQH Oracle DB.

8.3.3 The **PL** shall ensure that the first sites requiring a Part A evaluation are those adjacent to drainages and canyon systems or with a score >40 on Part B (Attachment B).

8.3.4 After completion, the **PL** shall ensure the evaluation of other sites on an “as needed” basis.

8.3.5 The **FTL** shall initiate and complete Part A of the evaluation, which consists of compiling existing SWMU/AOC analytical data, site maps, and knowledge of process information.

8.3.6 **RRES-WQH personnel** shall complete Part B of the evaluation, which involves assessing the erosion/sediment transport potential at each SWMU/AOC.

#### 8.4 Perform Part B Re-assessment

The following factors trigger a modification or re-evaluation of the Surface Water Site Assessment, Part B:

- Corrective actions and/or restoration activities that take place at the SWMU/AOC.
- Request for document/proposal preparation regarding the site.
- Site overlooked or assessment conducted at wrong SMWU/AOC.
- Change in environmental conditions at the site
- Stormwater permit changes.
- Verification of stability after closeout inspection.

#### 8.5 Prioritize Evaluated SWMU/AOCs for Site Actions

8.5.1 Parts A and B, when completed, shall provide a basis for prioritizing and scheduling site actions needed to control undesirable, constituent surface-water runoff and constituent-laden sediments that are eroding from SWMU/AOCs.

8.5.2 A **SWAT** comprised of RRES-RS, RRES-WQH, DOE Oversight Bureau (DOE-OB), NMED SWQB, and facility representatives shall evaluate the completed assessments.

**Note:** The RRES-WQH representatives are responsible for making modifications to surface-water site assessments, management of the RRES-WQH Oracle DB, and decisions associated with BMP installations at the sites.

8.5.3 To ensure that the worst sites are evaluated first, the **SWAT** shall prioritize sites identified as having bioaccumulators present (see Attachment D for bioaccumulator list).

**Note:** SWAT evaluations shall use only existing information and/or data for the SWMU/AOC of interest as reported in Parts A and B of SOP-02.01 site assessment (Attachments A and B). The ability of the SWAT to evaluate efficiently a site is directly dependent upon the site documentation to date.

8.5.4 For sites where the Part B Surface Water Site Assessment score is higher than 40, the **SWAT** shall complete an evaluation to assess the site for potential contaminant migration and to prioritize potential corrective actions for the site.

8.5.5 For sites where the Part B Surface Water Site Assessment score is equal to or less than 40, the **SWAT** shall defer making any recommendations.

**Note:** The rationale for this decision is based on the concept that the score represents a low potential for constituents in surface water and/or sediment to migrate off the site. Evaluation at these sites may continue, as necessary, for changing regulatory requirements or other possible unacceptable environmental risks, such as human health and ecological risks and be documented in the RRES-WQH Oracle DB.

## 8.6 Implement Site Actions and Track RRES-RS Recommendations

8.6.1 The **RRES-WQH and RRES-RS representatives** shall make final recommendations or appropriate actions associated with management of erosion at a SWMU/AOC.

**Note:** These actions can be minimal activities such as annual review of erosion matrix scores to design effective erosion controls (e.g. BMPs). The RRES-WQH Oracle DB references all activities at each SWMU/AOC.

8.6.2 The **site owner** shall perform routine inspections and maintain temporary solutions to ensure effectiveness.

**Note:** Final remedies may include contaminant removal and/or the application of an engineered solution to inhibit contamination migration while protecting state surface waters.

8.6.3 Upon completion of corrective activities at a SWMU/AOC, the FTL shall coordinate the completion of a surface water re-assessment in order to provide current information and to support the NFA criteria.

8.6.4 **RRES-RS personnel** shall use this information to generate a NFA report that describes the results of the actions performed at the site.

8.6.5 **RRES-RS personnel** shall document all information in the RRES-WQH Oracle DB. (Refer to section 8.4 for modifications or re-evaluations to the surface-water site assessments for closed sites.)

8.6.6 **RRES-WQH personnel** shall review these written summaries in order to ensure the compliance with all water-protection requirements.

8.6.7 **RRES-WQH personnel** shall submit copies of these final reports to NMED and DOE-OB upon completion.

- 8.7 Ensure Financial Responsibility for Corrective Actions
- 8.7.1 The **RRES-RS project** shall ensure that historic, inactive sites do not adversely affect the State's surface-water quality.
- 8.7.2 **RRES-RS project** shall fund all corrective actions and stormwater BMPs at those sites.
- 8.7.3 For inactive sites created since 1988 and active sites that might currently affect water quality, the **site owner** or **Facilities and Waste Operations (FWO)** fund the actions.
- 8.7.4 **RRES-WQH**, shall coordinate the implementation of corrective actions necessary at non-RRES-RS owned sites.

## 9.0 LESSONS LEARNED

- 9.1 Before performing work described in this SOP, **RRES-RS project personnel** should go to the Department of Energy Lessons Learned Information Services home page, located at <http://www.tis.eh.doe.gov/II/II.html>, and/or to the LANL Lessons Learned Resources web page, located at [http://www.lanl.gov/projects/lessons\\_learned/](http://www.lanl.gov/projects/lessons_learned/), and search for applicable lessons.
- 9.2 During work performance and/or after the completion of work activities, **RRES-RS project participants**, as appropriate, shall identify, document, and submit lessons learned in accordance with the LANL, Lessons Learned System located at [http://www.lanl.gov/projects/lessons\\_learned/](http://www.lanl.gov/projects/lessons_learned/).

## 10.0 RECORDS

All records concerning LANL SWMU/AOCs are located on the RRES-WQH Oracle DB, [www.wqdbforms.lanl.gov/swts.html](http://www.wqdbforms.lanl.gov/swts.html). Stewardship of the database is held by RRES-WQH.

## 11.0 REFERENCES

To implement properly this SOP, **RRES-RS project participants** should become familiar with the contents of the following documents located at [http://erinternal.lanl.gov/home\\_links/Library\\_proc.shtml](http://erinternal.lanl.gov/home_links/Library_proc.shtml):

- RRES-RS, Quality Management Plan
- QP-2.2, Personnel Orientation and Training
- QP-4.4, Record Transmittal to the Records Processing Facility
- QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities

- SOP-01.01, General Instructions for Field Investigations
- EPA, "RCRA Facility Assessment Guidance," (OSWER, Washington, DC, 1986).
- New Mexico Water Quality Control Commission, "State of New Mexico Ground and Surface Water Quality Protection Regulations," (New Mexico Water Quality Control Commission, Santa Fe, NM, 1995).

## 12.0 ATTACHMENTS

The **user** of this SOP may locate all forms associated with this procedure at <http://erinternal.lanl.gov/Quality/user/forms.asp>.

Attachment A: Constituent Assessment (Part A) (form and completion instructions) (3 pages)

Attachment B: Surface Water Site Assessment (Part B), web-based interface, (form and completion instructions) (6 pages)

Attachment C: RRES-RS Project List of Potential Bioaccumulation Compounds (1 page)

Attachment D: List of Acronyms and Abbreviations (1 page)

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

If you do not possess a token card or encounter problems, contact the RRES-ECR training specialist.

## Attachment A: Constituent Assessment (Part A)

### Site Information

1. SWMU/AOC Number: \_\_\_\_\_ 2. Date/Time: \_\_\_\_\_  
 3. RRES-RS Point of Contact: \_\_\_\_\_ 4. FMU/Point of Contact: \_\_\_\_\_ / \_\_\_\_\_

5. Description of the historical operations of this SWMU/AOC:

6. Description of the current operations of this SWMU/AOC (if any):

### SWMU/AOC Status

7. Action/Status to Date (check all that apply) Date Completed  
or Anticipated

None

Field Investigation  Phase I  Phase II ..... \_\_\_\_\_

Interim Measures  IM  BMPs ..... \_\_\_\_\_

Accelerated Cleanup  VCA  VCM ..... \_\_\_\_\_

Other  Monitoring  CMS ..... \_\_\_\_\_

Report Status  RFI Report  SAP ..... \_\_\_\_\_

NFA/DOU — If checked, supply criteria number(s): ..... \_\_\_\_\_

Comments:

### Sample Information

Y	N	
<input type="checkbox"/>	<input type="checkbox"/>	8. Have surface/sediment (depth less than 12 in.) samples been collected that reflect current site conditions? If yes: 1) Attach data. 2) Include analyte name, value, units, location ID, sample ID, SAL, depth, and media (soil, tuff, etc.). 3) Please attach existing map that shows where samples were taken, if available.
<input type="checkbox"/>	<input type="checkbox"/>	9. Have surface water samples been collected that reflect site conditions? If yes: 1) Attach data. 2) Include analyte name, value, units, location ID, filtered/nonfiltered, and flow data (if available). 3) Please attach existing map that shows where samples were taken, if available.
<input type="checkbox"/>	<input type="checkbox"/>	10. Is data pending? If yes: 1) List anticipated date data: _____ 2) Provide as an attachment a list of COPCs identified in RFI Work Plan.

11. RRES-WQH Representative: \_\_\_\_\_  
 (Print name and title, then sign)

**SOP-02.01, R1**

**Los Alamos National Laboratory  
RRES-Remediation Services**

## Attachment A: Instructions for Completing a Constituent Assessment Form (Part A)

Part A of the procedure addresses both current and historic Laboratory operations that occurred at the SWMU/AOC, the potential or probable constituents of concern for this site, and the status of work or actions taken at the site. The Part A form is required only for sites that scored >40 on the Part B evaluation.

Completion of Part A shall use only existing information and/or available data for the site of interest. Complete the form electronically or manually by attaching the historic and current operations description from an RFI Work Plan or RFI Report. Copy available data tables from a work plan/report or queried from Environmental Restoration Database (ERDB) and submit as an attachment to the completed form. The ability to complete efficiently Part A is directly dependent upon the knowledge about the site of interest and the documentation to date.

The FTL is responsible for the initiation and completion of the constituent-assessment process. Use an indelible dark-ink pen. Make an entry in each blank. For entry blanks for which no data are obtained, enter “UNK” for unknown, “N/A” for not applicable, or “ND” for not done, as appropriate; do not leave spaces blank. To change an entry, draw a single line through it, add the correct information above it, and date and initial the change. For all forms, complete the following information:

### Site Information:

1. SWMU/AOC Number — Use the SWMU/AOC identification assigned by the RRES-RS project for each site. If a map of the site and adjacent buildings within the Technical Area (TA) is available, please attach to the Part A form.
2. Date— The date and time when the measurement was made, in the following formats: DD-MMM-YY (e.g., 01-JAN-91).
3. RRES-RS Point of Contact — Provide the name of the individual who completed Part A or another individual knowledgeable about the site and the information/data requested for Part A.
4. Facility Management Unit (FMU)/Responsible Party Contact — Provide the name of the individual who represents the facility where the site is located, and when coordination is necessary, is the point of contact for complying with LANL safety, security, or work-activity restrictions for the site.
5. Description of the historic operations of this SWMU/AOC — Provide information regarding past site activities typically found in the SWMU/AOC report, an RFI Work Plan and/or RFI Report. Include the identification of all constituents used at the site as raw materials, known constituent product intermediates, and product constituents for other known processes. If available, attach previous information not collected by the RRES-RS project to Part A.
6. Description of current operations of this SWMU/AOC (if any): Provide information on proposed, completed, or ongoing field actions at a site. Also, provide information on the report/plan status of the site (e.g. RFI Work Plan, Sampling Analysis Plan, etc.)

Check the appropriate fields on the form and provide the action completion date or anticipated completion date. Include the identification of all constituents used at the SWMU/AOC as raw materials, known constituent-product intermediates, and product constituents for other known processes.

Sample Information:

7. Soil/sediment sample descriptor information and sample data — Provide information/data that reflect only current ambient site field conditions above detection limits or background UTL values. Do not provide information/data with regard to past site conditions that no longer exist due to an action taken at the site. Information/data are only for surface soils and sediments of less than 12 inches in depth.

Sites which score above 40 on Part B of the Surface Water Site Assessment may require additional information to support SWMU/AOC data, (e.g., sample date; sample number; sample location coordinates' site map with sample locations; media — soil, sediment, tuff, etc.); data qualifiers; DOE/LANL screening levels; data detection/reporting limits; and supporting background data for the media where data is available). Editing or screening the data is not necessary at this time. Report all available data that meet the above-specified identifiers.

8. Surface water sample descriptor information — If surface water sample information is available, provide information regarding sample date, location, whether sample was filtered/nonfiltered, and flow information, if available. If surface water samples represent runoff from more than one site, identify other involved SWMU/AOCs and the constituents.
9. If samples were collected but data are not available, provide the anticipated date data availability. Attach knowledge of process COPCs from RFI Work Plan.
10. RRES-WQH Representative Identification — Print your name and position title, then sign.



# Attachment B: Surface Water Site Assessment Form

Los Alamos National Laboratory

Page: 1 of 3

## Surface Water Site Assessment Form

White-background items must always be filled in if site is found. Gray-background items are optional under certain conditions. Gray-background items labeled "(Opt)" are always optional.

### Site Information

Site ID	PRS ID (If Site is PRS)	Nearest Struct (TA-Bldg)
		-

### Setting

Topography (Check all that apply)

On Mesa Top    
  On Bench in Canyon    
  On Canyon Floor, Not in Channel    
  In Channel on Canyon Floor

Topography Explanation

Ground/Canopy Cover -- Leaves, Needles, Rocks, Vegetation, Trees, Structures (Check all that apply)

Sparse (<25%)    
  Sparse (<25%)    
  Medium (25-75%)    
  Medium (25-75%)    
  Thick (>75%)    
  Thick (>75%)

Ground/Canopy Cover Explanation

Slope at Area Impacted (Check all that apply)

Flat (<10%)    
  Gradual (10-30%)    
  Steep (>30%)

Slope Explanation

### Run-off

Is There Visible Evidence of Run-off Discharging from Site?

Yes    
  No    
 (If "No" visible evidence, skip to Run-On section)

Is Run-off Channelized? (Skip if "No" above)

Yes    
  No    
 Channel Type (Check just one. Skip if "No" above or at left)

Man-Made    
  Natural

Channelization Explanation (Entry required if Run-off Channelized = "Yes")

Where Does Evidence of Run-off Terminate? (Check just one. Skip if Visible Evidence of Run-off = "No")

Drainage/Canyon    
  On Bench in Canyon    
  Other (i.e., Retention Pond, Meadow, Mesa Top)

Terminus Explanation (Entry required if Visible Evidence of Run-off = "Yes")

**Surface Water Site Assessment Form**

**Run-off (Continued. Skip if Visible Evidence of Run-off = "No")**

Has Run-off Caused Visible Erosion? (Skip if no run-off visible)	Erosion Type (Check just one. Skip if no run-off or erosion visible)
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Sheet <input type="checkbox"/> Rill <input type="checkbox"/> Gully
Erosion Explanation (Entry required if Has Run-off Caused Visible Erosion = "Yes")	

**Run-On**

Structural Run-On. Are Structures Creating Run-On to the Site? (Must not be "Yes" if Natural Run-On is "Yes")
<input type="checkbox"/> Yes <input type="checkbox"/> No
Structural Run-On Explanation

Natural Run-On. Is Natural Drainage Creating Run-On to the Site? (Must not be "Yes" if Structural Run-On above is "Yes")
<input type="checkbox"/> Yes <input type="checkbox"/> No
Natural Run-On Explanation

Current Operations Run-On. Are Current Operations Creating Run-On to the Site?
<input type="checkbox"/> Yes <input type="checkbox"/> No
Current Operations Run-On Explanation

**Assessment Finding**

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist?
<input type="checkbox"/> Yes <input type="checkbox"/> No

**Sign Off**

Site Not Found?	Revision of Earlier Assessment?
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Name of Assessment Author	Assessment Date (mm/dd/yyyy)
	/ /

**Surface Water Site Assessment Form**

**Additional Information**

**Trash and Debris Notes**

Is There Visible Trash and Debris on the Site? <input type="checkbox"/> Yes <input type="checkbox"/> No	Is There Visible Trash and Debris in a Watercourse? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trash and Debris Explanation (Required if either answer above = "Yes")	

**General Notes**

Assessment Comments (Opt)

**Best Management Practice Notes**

Are BMPs in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No	Are BMPs Being Properly Maintained? (Required if BMPs in place) <input type="checkbox"/> Yes <input type="checkbox"/> No
Description of Existing BMPs and Recommended Actions (Required if BMPs in place)	

**EXAMPLE**  
This form is available online via a link in Section 12.0.

## Attachment B: Instructions for Completing a Surface Water Site Assessment Form (Part B)

RRES-RS Regulatory Compliance personnel complete Part B, the Surface Water Site Assessment. Part B addresses erosion potential and is part of a systematic approach to quantify surface-water impacts at Laboratory sites. This procedure describes the process for determining whether a site has the potential to affect adversely surface-water quality by erosion from run-off.

Field teams from the RRES evaluate field conditions to determine the potential for erosion or sediment migration. Based on the results of field evaluation, surface-water corrective actions (BMPs) and/or NMED notifications may be required.

Photographs are taken to help document the field characteristics at some sites. A consideration of the visual site conditions is necessary to accurately provide a frame of reference for the site. Photographs visually enhance the field-site condition descriptions.

Use an indelible dark-ink pen on the assessment form. Make an entry in each blank. For entry blanks for which no data are obtained, enter "UNK" for unknown, "N/A" for not applicable, or "ND" for not done, as appropriate; do not leave blank spaces. To change an entry, draw a single line through it, add the correct information above it, and date and initial the change. For all forms, complete the following information:

### Site Information:

- 1a. SWMU/AOC Number — Use the SWMU/AOC identification assigned to the site by RRES-RS.
- 1b. Structure Number — Provide the nearest technical area/structure number.
- 1c. FMU Number — Provide the facility-management unit number.
2. Date— The date and time when the measurement was made, in the following formats: DD-MMM-YY (e.g., 01-JAN-91) .

### Site Setting:

3. Check the appropriate setting(s) that best describes the location, in order of increasing concern, for the listed site.
  - (a) Check "On mesa top" if site is situated on a defined mesa top (e.g., Three Mile Mesa).
  - (b) Check "Within a bench in a canyon" if site is located over the edge of a mesa top and is either on a defined slope or bench (the original source may be located on mesa top).
  - (c) Check "In the canyon floor, but not in an established channel" if site is located in the bottom of the canyon exclusive of a defined drainage or bench setting. ("Drainage" means having a bank and channel).
  - (d) Check "Within established channel in the canyon floor" if site is located in the defined drainage portion of the canyon channel. ("Drainage" means having a bank and channel).

In the explanation box describe particular circumstances/situations. Where more than one setting is checked, use the most conservative in scoring this criterion on the matrix. An example is where a septic tank was located on a mesa top (a), but the outfall from the

septic discharges over the mesa onto a defined slope or bench (b), the more conservative setting (b) is used.

4. Check the appropriate percentage of canopy and ground cover that best compares with the provided pictorial illustration for the site location.
  - Check from 0% to 25% if ground/canopy cover at site visually compares best with example (a).
  - Check 25% to 75% if ground/canopy cover at site visually compares best with example (b).
  - Check greater than 75% if ground/canopy cover at site visually compares best with example (c).

In the explanation box describe the type(s) of ground cover (e.g., pine needles, grass, asphalt, rock, etc.) and canopy cover (e.g., pine/juniper, deciduous/evergreen) observed at the site. Where more than one percentage is checked, use the most conservative in scoring this criterion on the matrix. An example is a septic tank was located in a densely vegetated area (c), but the outfall from the septic discharges over the mesa top into a less vegetated area (b), the most conservative coverage (b) is used

5. Check the appropriate slope(s) that best compares with the provided pictorial illustration for the site location.
  - Check less than 10% if slope at site visually compares to example (a).
  - Check 10% to 30% if slope at site visually compares to example (b).
  - Check greater than 30% if slope at site visually compares to example (c).

In the explanation box describe particular circumstances/situations. Where more than one slope steepness is checked, use the most conservative in scoring the criteria. An example is a septic tank located on a mesa top (a), but the outfall from the septic discharges over the mesa onto a very steep slope (c), use the most conservative slope (c).

#### Runoff Factors:

6. Is there visible evidence of water and/or sediment discharging from the SWMU/AOC? If "yes," complete parts a, b, and c. If "no," proceed to question number 7.
- 6a. Is runoff channelized? Check whether runoff discharges through man-made or natural drainage channels or from sheet flow. Describe the type of discharge in the explanation box.
- 6b. Where does evidence of runoff terminate? Check whether visual evidence of runoff terminates into a known canyon (e.g., Pajarito), into a known sub-drainage or wetland, or into other flat-lying areas (e.g., bench setting, meadows, detention ponds, etc.). Provide an adequate description of the location if runoff indicates an observable endpoint or drainage.
- 6c. Has runoff caused visible erosion at the SWMU/AOC? If "yes," check sheet, rill, or gully erosion. In the explanation box describe the visible signs of erosion and provide an indication of the potential for the movement of surface sediments from the site.

#### Run-on Factors:

7. Are structures (e.g., buildings, roof drains, parking lots, outfalls, culverts, fire hydrants, etc.) contributing run-on to this SWMU/AOC?

If structures, from existing or new construction for facilities, collect and/or divert storm water run-on onto the site being evaluated, check yes. In explanation box describe the potential for buildings, roof drains, and/or construction project sites larger than five acres, to increase the volume of run-on to the site.

8. Are current operations adversely affecting storm water run-on to the SWMU/AOC?

If current operations (e.g., NPDES outfalls, salvage material storage areas, septic discharges) could adversely affect run-on to the evaluated site, check "yes." Nonstormwater discharges such as fire-protection devices, potable-water-system tank overflow, and dust-suppression activities are of interest. In the explanation box describe which operations may affect run-on.

9. Are natural drainage patterns directing stormwater onto the SWMU/AOC?

If the site is located in an area in which natural drainage patterns focus stormwater run-on onto a site, check "yes." In the explanation box, describe the natural drainage that could potentially cause erosion.

Typically, either question 7 or 9 are selected independent of one another. If both selected, only one is rated in the matrix because the weighting is identical.

Assessment Finding:

10. Based on the above criteria and the assessment of the site, does soil-erosion potential exist?

This is a subjective decision made by the field technician based on the evidence found at the site. The "potential" for soil erosion may exist without observation of visible evidence of erosion on the day of the assessment.

Signature:

11. Provide signature of Name of Water Quality/Hydrology, RRES-WQH Representative and name of person who completed the surface-water site assessment for this site. After completion, provide a copy to the appropriate representatives for the site.

Notes and Recommendations:

- 12a. Is there visible trash/debris located on the site? If observe trash/debris at the site, check "yes" and provide comments in "Other Internal Notes."
- 12b. Is there visible trash/debris in a watercourse? If trash/debris is observed within a watercourse, as defined earlier in section 3.15, check "yes" and provide comments in "Other Internal Notes."
- 13a. Indicate if any BMPs are currently used at the site to provide stabilization. Provide a brief description of BMP type (e.g., wattles, rock check dams, etc.).
- 13b. Are BMPs properly maintained? Check either "yes" or "no" and provide a description of the effectiveness or ineffectiveness of BMPs in "Other Internal Notes," (e.g., "sediment is retained by BMP," or "there is visible evidence of sediment migration.")

## Attachment C: RRES-RS List of Potential Bioaccumulation Compounds

The priority list of compounds with a potential for bioaccumulation at LANL is provided with the stipulation that the list is still under development; check with Sheila Zang. Compounds are evaluated based on

- 1) toxicity;
- 2) frequency of occurrence at LANL, including the use of the co-occurrence of a bioaccumulator with another chemical as a marker for the bioaccumulator when supported by historical data or site sampling data;
- 3) potential for receptors, including sensitive species and habitat at the Laboratory; and
- 4) bioconcentration factor (BCF) adjusted for environmental factors at LANL or based on site-specific data.

Use the following list of compounds—currently in the category of “high priority” bioaccumulators—in assessing SOP-02.01 concerns at LANL:

- Cadmium
- Cesium-137
- Mercury
- Strontium-90
- All arochlors (PCBs)
- Perchlorates
- Other Isotopes, e.g., Americium

## Attachment D: List of Acronyms and Abbreviations

AHA	activity hazard analysis
AOC	area of concern
BCF	bioconcentration factor
BMP	best management practices
COPC	chemical of potential concern
DB	database
DOE	Department of Energy
DOE-OB	Department of Energy-Oversight Bureau
FMU	facility management unit
SS	security and safeguard division
FTL	field team leader
FWO	Facilities and Waste Operations Division
IWD	integrated work document
IWP	integrated work plan
LANL	Los Alamos National Laboratory
NFA	no further action
NMED-GWQB	New Mexico Environment Department—Ground Water Quality Bureau
NMED-SWQB	New Mexico Environment Department—Surface Water Quality Bureau
NMED-DOE/OB	New Mexico Environment Department—DOE Oversight Bureau
PL	project leader
PPE	personal protective equipment
PRS	potential release site
QP	quality procedure
QPPL	quality program project leader
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RPF	Records Processing Facility
RRES-RS	Risk Reduction And Environmental Stewardship—Remediation Services
RRES-WQH	Risk Reduction And Environmental Stewardship—Water Quality Hydrology
SOP	standard operating procedure
SSHASP	site-specific health and safety plan
SWAT	surface-water assessment team
SWMU	solid waste management unit
WQCC	Water Quality Control Commission