



ESHID-601070

# **STORM WATER POLLUTION PREVENTION PLAN**

## **SIMR-2 Well Pad and Construction Support Activities Los Alamos National Laboratory**

a requirement of the  
**NPDES GENERAL PERMIT**  
for Storm Water Discharges From Construction Activities

Prepared By:

Los Alamos National Laboratory  
Environmental Protection Division, Compliance Programs Group  
(ENV-CP)

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**STORM WATER POLLUTION PREVENTION PLAN  
SIMR-2 Well Pad and Construction Support Activities  
LOS ALAMOS NATIONAL LABORATORY**

**PREFACE**

The United States Environmental Protection Agency (EPA) has issued a final 2012 Construction General Permit (CGP) that covers discharges of stormwater from construction sites.

The 2012 National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activity (Appendix E) includes the following requirements:

- conduct a critical habitat and threatened/endangered species study;
- develop and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with good engineering practices;
- submit a Notice of Intent (NOI);
- install and maintain erosion and stormwater controls, Best Management Practices (BMPs);
- perform and document storm water inspections during construction and site stabilization;
- amend the SWPPP as necessary;
- submit a Notice of Termination (NOT) following project completion and final stabilization of disturbed areas.

Authorization to discharge storm water is required under this Permit for both large and small construction projects disturbing more than one (1) acre or part of a larger common plan of development that collectively disturbs more than one (1) acre.

All parties that meet the definition of Operator must be permitted. Each permittee is not required to develop and implement a separate SWPP Plan. It is required that there be at least one SWPP Plan for a site that incorporates the required elements for all Operators.

The 2012 CGP number for Indian country within the State of New Mexico (Region 6) is NMR120001. This Plan, which has been developed for Los Alamos National Security (LANS), describes the nature and sequencing of construction activities, potential sources of pollution, and identifies the Best Management Practices (BMPs) to minimize the potential for erosion and storm water pollution. The Plan was developed in accordance with the provisions of the Clean Water Act (33 U.S.C. § 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4), and the regulations established by the U.S. Environmental Protection Agency (EPA) for National Pollutant Discharge Elimination System (NPDES) General Permits for Storm Water Discharges From Construction Activities.

**SIMR-2 Well Pad and Construction Support Activities  
STORM WATER POLLUTION PREVENTION PLAN**

**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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."

Delegation of Authority Letter, NOI in Appendix E.

**Organization:** Los Alamos National Security, LLC (Los Alamos National Laboratory)  
**Contact:** Mike Alexander  
**Title:** Operations Manager

**Michael R Alexander**

Digitally signed by Michael R Alexander  
DN: c=US, o=U.S. Government, ou=Department of Energy, ou=Los Alamos National  
Laboratory, ou=People, serialNumber=102267, cn=Michael R Alexander  
Date: 2015.05.08 13:05:32 -06'00'

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(Signature)

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(Date)

## 1. PROJECT INFORMATION

This SWPPP covers the well pad construction and road improvement for a ground water monitoring well being constructed under a larger ongoing common plan of development for the Regional Wells (R-wells) Project. The R-Wells Project involves the drilling, construction, and stabilization of Regional, Deep, Intermediate, and alluvial wells located within Los Alamos National Laboratory (LANL) and adjacent areas.

Chromium contamination exists in the regional aquifer underlying Mortandad Canyon within Los Alamos National Laboratory (LANL). A new well pad will be constructed for the drilling of well SIMR-2 for modeling and ground water sampling. Earth disturbing work will be performed by Los Alamos National Security (LANS), while well drilling and well maintenance will be accomplished by a Subcontractor.

The proposed well pad area, approximately 150 feet by 150 feet, will be cleared of vegetation by mowing and will be compacted with base course. A temporary drill cuttings pit of 60 feet by 40 feet by 10-12 feet deep will be lined. A small storm water detention pond will be sized for the pad and installed in the northeast corner, the low point, of the pad. There is an existing road leading to the project site that will be improved with base course application. No grading of the existing road will be done, with the exception of an approximately 50 foot long section that will need to be cleared and grubbed so that heavy equipment can make a right hand toward the project site..

Once drilling is completed water will be removed from the cuttings pit and transported to the former drilling pits at R-42 for evaporation (or land applied if allowed). Once the cuttings pit is dry and the cuttings have been sampled, they will be containerized and removed from the site and the liner will be removed and the cuttings will be filled in place.

Water removed from the well during development will initially be placed in the cuttings pit while it is turbid. Once the water clears up, it will be placed in 20,000 gallon steel tanks set on the drilling pad. This water will be transported to the former drilling pad at R-42 for evaporation and the steel tanks removed from the pad as soon as practicable.

Following completion of drilling, well construction, development and aquifer testing activities, the drilling pad will be reduced to an approximately 60 foot by 60 foot gravel-covered turn around area (with down gradient base course berms for erosion control), only large enough for a future sampling truck and trailer to use during sampling. The remainder of the well pad, along with the portion of the access road that was constructed for a right hand turn, will be restored by removing base course to the extent practicable and seeding with native vegetation and hydromulching with Flexterra FGM hydromulch. The sediment pond may be removed but a depression should be left in its place for runoff velocity control.

Los Alamos National Security, LLC shall retain a single NPDES permit for all aspects of the Project.

### 1.1. Operators

The "operator" of a storm water discharge associated with construction activity is the individual or party responsible for applying to the EPA for NPDES Permit coverage. The EPA defines an "operator" to be anyone who meets either of the following two criteria:

- 1) Has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications, or
- 2) Has day-to-day operational control of project activities.

The permittee with day-to-day operational control over the construction plans and specifications including the ability to make modifications to those plans and specifications and with day-to-day operational control of project activities and implementation of this Plan is:

**Los Alamos National Security, LLC (LANS)**  
Los Alamos National Laboratory (LANL)  
Los Alamos, NM 87545  
Contact: Johnny Salazar

The Operator with day-to-day operational control of project activities must implement and maintain BMPs in the manner specified in the SWPPP. Operators shall ensure that project plans and specifications meet the minimum requirements of this SWPP Plan. Operators shall comply with the terms and conditions of the permit. Operators will implement the SWPPP until final stabilization is complete or the notice of termination (NOT) has been submitted along with another operator's NOI submission in accordance with Appendix I Section I.11.3 of the CGP addressing changes to authorization.

### 1.2. Stormwater Team

A Stormwater Team will be comprised of personnel who are responsible for overseeing the development of this SWPPP, any modifications to the SWPPP and for compliance with the requirements of the 2012 CGP. Each member of the stormwater team must have ready access to either an electronic or paper copy of applicable portions of the 2012 CGP and this SWPPP. SWPPP Preparer qualifications are included in Appendix J.

Operator	Name	Title	Contact	Responsible for:
LANL ENV-CP	See Inspector List App J	Inspector	667-0666	NOI/NOT, Inspections, SWPPP Modifications, identifying corrective actions
LANL	Mike Alexander	Operations Manager	665-4752	Certifying SWPPP, Implementing SWPPP and Corrective Actions, and Signing Inspections
LANL	Johnny Salazar	Shift Operations Manager	699-4058	Implementing SWPPP and Corrective Actions
LANL	Gary Garcia	Shift Operations Manager	606-1408	Implementing SWPPP and Corrective Actions
LANL	Steve Trujillo	MSS Superintendent	500-5398	Implementing SWPPP and Corrective Actions

#### SWPPP Preparer:

Name	Title	Company	Contact
Tim Zimmerly	CISEC, CPESC	LANS	664-0105
Jacob Knight	CISEC	COMPA, Inc.	665-5880

### 1.3. Site Description

The project area is located at the bottom of Mortandad Canyon on San Ildefonso Pueblo Property near the southeast border of LANL property. The area is gently sloping and grades and drainage patterns will not be affected.

The potential area of disturbance for this project is approximately one acre.

#### Staging Areas:

Staging of 1 Trackhoe, 1 Dozer, 1 blade, 1 loader, 1 skid steer, 2 dump trucks, 1 fork lift, 1 Drill Rig and construction materials will be within the project area and at an existing stabilized well pad approximately a 1/3 mile away, R-13, at the bottom of Mortandad Canyon.

**1.4. Buffers**

There are no surface waters located within 50 feet of the project area.

**1.5. Impaired Waters**

**Names of Receiving Waters**

Name(s) of the first surface water that receives stormwater directly from your site and/or from the MS4 (note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters)
1. <b>Tributary to Mortandad Canyon – Tier 2 Waters</b>

**Impaired Waters / TMDLs (Answer the following for each surface water listed in Table above)**

	Is this surface water listed as "impaired"?	If you answered yes, then answer the following:		
		What pollutant(s) are causing the impairment?	Tier 2 Waters?	Has a TMDL been completed?
1.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Aluminum, Gross Alpha, Copper	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

**1.6. Compliance with Other Federal Requirements**

This section contains summary information on documentation related to total maximum daily loads (TMDL) and documentation of permit eligibility related to threatened & endangered (T&E) species and critical habitat. Several tributaries to the Rio Grande are listed on the NM 303(d) list for assessed river/stream reaches requiring TMDLs; however TMDLs pertaining to sediment have yet to be established for these waters.

Appendix H includes a Historical Properties, Wetland, Threatened and Endangered (T&E) Species, and Critical Habitat Evaluation for Construction Projects with detailed information.

**404/401 permit requirements:**

Not applicable

## 2. CONSTRUCTION ACTIVITIES AND CONTROLS

This section includes a description of the Best Management Practices (BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. BMPs include structural controls, schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs are used to prevent the contamination of storm water runoff by retaining sediment on-site; minimizing contact with spoils, other disturbed soils, and equipment; and by diverting storm water from the locations in which erosion or sediment transport regularly take place. Details of controls are included in Appendix E and locations of controls will be shown on the site map included with this SWPP Plan.

BMPs that will be implemented at the construction site must be adequate and sufficient to meet water quality standards. Discharges that will cause or contribute to non-attainment of water quality standards, including failure to protect and maintain existing designated uses of receiving waters, are not allowed. Before soil-disturbing activities begin, the Operator with day-to-day control of Project activities will implement structural controls as needed to protect the disturbed areas and maintain them as required until final stabilization is achieved.

### 2.1. Sequence of Events/Soil Disturbing Activities

As major grading activities occur, as construction activities temporarily or permanently cease on a portion of the site and as stabilization measures are initiated, dates will be added to the Soil Disturbance Sequencing Table listed in Appendix A. The estimated sequence of soil disturbing activities is as follows:

- Mobilize
- Begin improving the existing road leading to well pad with base course
- Mow brush and vegetation at SIMR-2 well pad location
- Install down gradient temporary silt fencing for perimeter sediment control during well pad construction
- Begin construction of drilling cuttings pit.
- Apply and compact base course on the well pad
- Install detention pond per ENV-CP calculations
- Stabilization and restoration activities consisting of removing base course at the well pad area, with the exception of the small area to be left as base course for future sampling activities, and seeding/hydromulching.

### 2.2. Potential Pollutants

Potential pollutants that could have an effect on the quality of storm water discharges from this project may include but are not limited to:

- Construction and Well-Drilling Equipment (i.e. graders, drilling rigs, trucks, compressors, generators, etc.)
- Construction and well-drilling materials (i.e. drilling fluids, cuttings, development water, concrete, base course, and chemicals)
- Vehicle fluids such as hydraulic fluid, motor oil, gasoline, and diesel fuel
- Sediment from exposed areas and excavations
- Portable lavatories

All equipment and materials used during the project will be stored upslope of the site's structural controls. Additional appropriate controls including, but not limited to: secondary containment, drip pans, berming and covering; will be established based on site conditions and the type of equipment/materials used. If additional construction and waste materials are stored on site, these sections will be updated to reflect these materials, including a description of controls and storage practices, designed to minimize exposure of the materials to storm water, and spill prevention and response practices.

### 2.3. Design Requirements

See Appendix G for design details.

### 2.4. Control Measures

All erosion and sediment control measures, stabilization and structural controls, and other protective measures identified in this Plan will be maintained in effective operating condition by the Operator with day-to-day control. Installation, maintenance, and inspection criteria for the BMPs to be used on-site are described along with details and specifications in Appendix F. If inspections indicate that existing BMPs require modification, or additional BMPs are necessary, implementation shall be completed by no later than 7 calendar days after the time of discovery. If it is not feasible to complete the installation or repair within 7 days, it will be documented why it is infeasible within this timeframe and a schedule for installation or repair as soon as practicable after the 7-day timeframe will be identified. All reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events, will be taken immediately (on the same day or by no later than the following day).

General controls and management practices that will be implemented in association with activities at the Project site include:

#### Site Planning and Management Controls

- **Vegetation removal and soil disturbance will be minimized to the extent possible.** BMPs will be installed as needed to reduce flow velocities and control sediment. SWPPP will be modified to reflect any additional controls necessary during construction.
- Stabilization measures will be initiated immediately in portions of the site where construction activities have temporarily or permanently ceased. Within 7 days after the construction activity in that portion of the site has temporarily or permanently ceased stabilization measures will have to be completed (except as provided in 2.2.1.3 of the CGP).

#### Sediment and Erosion Controls

- Temporary silt fence will be installed at the north and east down gradient perimeter of soil disturbing activities during well pad construction.
- Compacted base course berms and swales for run-off/run-on diversion upon well pad construction completion.
- Waterbar/berm at the entrance to the well pad will be utilized to divert stormwater run-on for erosion control.
- Rock and/or gravel bag check dams will be installed as needed in drainage swales or channels for velocity dissipation.
- A sediment detention pond with a weir and armored spillway will be installed on the well pad and will incorporate a reinforced inlet and outlet with geotextile and riprap or TRM. Pond slopes and berms will be stabilized with riprap, seeding, and TRM or hydromulch. Sediment accumulation in the ponds will be removed once pond capacity has been decreased to 50% of original volume.
- Any soil stockpiles on site will be protected with perimeter sediment control BMPs such as gravel bags to minimize the potential for sediment transport.
- Where necessary, dust generation on-site shall be minimized with the application of water and/or an approved soil stabilizer. Water used to suppress dust generation will be applied at a rate to avoid discharge of water from the site.
- The temporary silt fence can be removed when the well pad construction is completed with functioning diversion berms and a sediment detention pond.

- Permanent controls after remediation should include a small depression at the site of the sediment pond for run off velocity control and compacted base course berms at the down gradient areas of the base course stabilized turn around area to prevent erosion on the hydromulched areas.

## 2.5. Stabilization

Dates for stabilization of areas will be added to the Sequence of Soil Disturbing Events Table (Appendix A). **Stabilization shall be initiated immediately and completed no more than 7 days after construction activities have permanently or temporarily ceased in an area** (except for exceptions provided in part 2.2.1.3 of the CGP). The Operator with day-to-day control of Project activities is responsible for implementation and maintenance of stabilization methods until final stabilization is achieved.

Stabilization of the well pad and associated access road soil disturbance will consist of the following:

- Improved access road will be stabilized with base course.
- Well pad will be stabilized with compacted base course.
- Site remediation will be accomplished via reseeding utilizing Flexterra FGM hydromulch in accordance with LANL Construction Specification 32 9219 – Seeding and manufacturer specifications. Approved Turf Reinforcement Matting may be used as necessary for any steep slopes or any areas of concentrated flow or as an alternative to hydromulching.

Final stabilization is defined as: all soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed. **Such determination will be made by ENV-CP personnel.**

### 3. POLLUTION PREVENTION

#### 3.1. Non-Storm Water Discharges and controls

Non-storm water discharges are defined as significant discharges of water not associated with the natural runoff from a storm event. Non-storm water discharge control is the responsibility of the Operator with day-to-day operational control of the project area. The Operator will not cause, contribute to, or have reasonable potential to cause or contribute to a violation of a water quality standard. If additional controls are required they will be implemented and added to the Plan. The following possible non-storm water discharges are included under this Permit and are listed below:

Type of Allowable Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Fire hydrant flushings	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Landscape irrigation	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Waters used to wash vehicles and equipment	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Water used to control dust	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Potable water including uncontaminated water line flushings	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Routine external building wash down	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Pavement wash waters	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Uncontaminated air conditioning or compressor condensate	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Uncontaminated, non-turbid discharges of ground water or spring water	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Foundation or footing drains	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Construction dewatering water	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

The Operator will ensure that any activities listed above will not result in runoff. If runoff from such an application does occur, appropriate controls such as rock check structures and gravel bags downstream of the discharge, will be established prior to the next anticipated discharge and the SWPP Plan will be amended to reflect such a change.

#### 3.2. Spill Prevention, Response & Reporting

Spill Prevention for this project includes inspecting equipment regularly for safety, cleanliness and leaks and implementation of appropriate controls at staging areas. Equipment found to be leaking will be removed from service and repaired. A spill kit will be staged on-site to respond to any spills or leaks.

The discharge of hazardous substances or oil resulting from an on-site spill is not authorized under this Permit coverage. Spills or releases shall be reported in accordance with LANL requirements. If fire or explosion is present, or if the potential for such exists, the situation will be reported by dialing 911.

Emergency Management & Response (EM&R) has been appointed by the Laboratory Director as the organization responsible for emergency management at the Laboratory. All uncontrollable spills or releases must be reported to the EM&R Office by calling 667-6211 or, after hours, at 667-7080. In the event of a spill, the EM&R Office will determine appropriate cleanup procedures and will notify the individuals or organization. If fire or explosion hazards are present, or if the potential for such exists, the situation must be reported by dialing 911 from a non-cellular phone or by activating a fire pull box. In accordance with LANL requirements, internal spill reporting will be completed in the event of any release. Spill reports will be completed by the LANL organization responsible for overseeing site operations, and copies of the reports will be maintained by both the responsible organization and ENV-CP. Federal and state reporting is the responsibility of ENV-CP, and the determination for such notification will be made by ENV-CP and the EM&R Office in accordance with Laboratory and DOE policies and federal and state regulatory reporting requirements.

In the event of a release equal to or in excess of a reportable quantity, the SWPP Plan will be amended. All spills over 1 quart will be documented in the Spill Tracking Table (Appendix D.) As per LANL Procedures and EPA Regulations, any facility with a total aboveground fuel and oil storage capacity greater than 1,320 gallons including a de minimis container size of 55 gallons must have a Spill Prevention Control and Countermeasures Plan (SPCC).

### 3.3. Construction and Waste Materials

#### Material and Waste Management

- Material and soil stockpiles will be protected from contact with stormwater (including run-on) using a temporary perimeter sediment barrier comprised of gravel bags. Cover or other appropriate temporary or permanent stabilization to avoid direct contact with precipitation or to prevent sediment discharge may also be employed.
- Topsoil preservation will be conducted to the extent practicable.
- Litter, material cuttings, tarps and plywood associated with the CMPs, and any other waste will be picked up or managed under good housekeeping practices at the end of each workday and prior to an anticipated precipitation event. Waste must be containerized to limit contact with storm water.
- Portable lavatories will be maintained and secured in accordance with manufacturer recommendations to prevent from tipping over in windy conditions or being knocked over; lavatory waste will be treated off-site. Lavatories will be placed on a level area at least 50' from a watercourse.
- Material shall be transported in appropriate containers or vehicles so that facility locations outside the project boundaries and public roadways will not be adversely impacted through sediment tracking or waste spillage.
- All vehicles and equipment will be observed for leaks and, if found, drip pans will be used until fixed. Leaks will be fixed as soon as practicable and leaking vehicles and equipment will be removed from service and repaired. Any leaks discovered shall be recorded in Appendix D. Spills of all products will be cleaned up and managed per applicable LANL procedures and state and federal regulations.
- Vehicle and equipment washing will not be performed.
- Fueling operations will be completed such that head space is provided within fuel tanks to allow for fuel expansion. Clearly flag off and designate areas to be used for fueling and maintenance activities and conduct such activities only in these areas. Secondary containment structures or other similarly effective means of preventing the discharge of spilled or leaked chemicals will be utilized.
- If sediment escapes the construction site, off-site accumulations of sediment will be removed by the end of the work day.
- Where necessary, dust generation on-site shall be minimized with the application of water and/or an approved soil stabilizer. Water used to suppress dust generation will be applied at a rate to avoid discharge of water from the site. No temporary soil stabilizers will be used.

## 4. PROCEDURES

### 4.1. Inspections

Disturbed areas, structural control measures, staging areas, and areas that have been stabilized shall be inspected at least once every **seven (7) calendar days**, and within 24 hours or the next working day of the end of a storm event equal to or greater than ¼ inch of precipitation. If the entire site has been temporarily stabilized, runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists), or during seasonal arid periods, inspections shall be conducted at least once every month.

Inspections to be performed by qualified personnel shall include the following:

- All areas that have been cleared, graded, or excavated where stabilization has not yet been implemented.
- All stormwater controls (including pollution prevention measures) installed at the site to comply with this permit.
- Material, waste, borrow, or equipment storage and maintenance areas that are covered by this permit.
- All areas where stormwater typically flows within the site, including drainageways designed to divert, convey, and/or treat stormwater.
- All points of discharge from the site.
- All locations where stabilization measures have been implemented.

Inspections shall be documented on the inspection form provided in Appendix J and will be retained in the SWPPP under Appendix K. Operators shall certify each inspection report in accordance with Appendix I, Part I.11 of the CGP. Inspections shall be continued by LANL (ENV-CP) until final stabilization of the site is achieved. Inspector qualifications are included in Appendix J.

Precipitation Event:

- The rain events in the high desert mountain environments such as northern New Mexico can vary from short intense storms to a longer duration and less intense storm. The CGP requires that permittees complete inspections within 24 hours of a ¼ inch or greater storm event. Inspections will only be conducted during the project's normal working hours as permitted by the CGP. Rain data will be taken from the LANL Met Tower TA-53. Rain gage TA-50-9001 will be used as a backup data source.

### 4.2. Maintenance

Erosion and sediment controls must remain in effective operation condition during permit coverage and must be protected from activities that would reduce their effectiveness. Erosion and sediment controls will be inspected as required and noted in section 4.1 of this SWPPP and deficiencies will be documented on inspection forms and corrective action forms as discovered. Repairs or modifications must be made according to the following schedule:

- Initiate work to fix the problem immediately after discovering the problem, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.
- When installation of a new erosion or sediment control or significant repair is needed, you must install the new or modified control and make it operational, or complete the repair, within 7 calendar days from the time of discovery where feasible. If it is infeasible, you must document the reason it is infeasible and document your schedule for installing the control measures or making it operational as soon as practicable after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in this SWPPP, the SWPPP will be modified accordingly within 7 calendar days of completing the work. '

#### **4.3. Corrective Actions and Reporting**

A corrective action report shall be completed for corrective actions taken in accordance with Part 5.4 of the CGP. A blank corrective action report will be kept in Appendix J. Completed corrective action reports will be kept in Appendix K behind each applicable inspection. Corrective actions will be identified when it is required of the project to maintain compliance with the CGP by conducting any of the following:

- Repair, modify, or replace any stormwater control used at the site;
- Install a new stormwater control based on site conditions or SWPPP requirements;
- Perform proper site housekeeping such as picking up trash;
- Clean up and properly dispose of spills, releases, or sediment deposits; and
- Correct any other permit violations.

Within 7 days of discovering any of the triggering conditions requiring a corrective action report, a follow up report must be attached to the corrective action report noting any immediate follow up actions taken and a summary of stormwater control modifications taken or to be taken, including schedules and dates.

Operators shall also certify each corrective action and follow up report in accordance with Appendix I, Part I.11 of the CGP and maintain such reports in Appendix K of this Plan.

#### **4.4. SWPPP Modifications**

This SWPP Plan, including site maps, will be modified within 7 calendar days under the following conditions:

- New operators become active in construction activities on the site or changes are made to the construction plans, stormwater control measures, pollution prevention measures, or other activities at the site that are no longer accurately reflected in the SWPPP. This includes changes made due to required corrective actions.
- Areas on the site map where operational control has been transferred (and the date of transfer) since permit coverage was initiated.
- Inspections or investigations by site staff, or by state or federal officials determine that SWPPP modifications are necessary for compliance with the CGP.
- EPA determines it is necessary to impose additional requirements on your discharge. The following must be included in the SWPPP:
  - A copy of any correspondence describing such requirements.
  - A description of the stormwater control measures that will be used to meet such requirements.
- To reflect any revisions to applicable federal or state requirements that affect the stormwater control measures implemented at the site.

A record of SWPPP modifications including a summary of the changes, authorization, dates and notifications to other operators will be maintained using the SWPPP Modification Tracking Log provided in Appendix B.

#### **4.5. Training**

Required project personnel must be trained to understand the following if related to the scope of their job duties:

- The location of all stormwater controls on the site required by this permit, and how they are to be maintained
- The proper procedures to follow with respect to the permit's pollution prevention requirements
- When and how to conduct inspections, record applicable findings and take corrective actions.

The following personnel at a minimum must receive training in order to understand the requirements of the CGP and their specific responsibilities with respect to the requirements:

- Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention measures)
- Personnel responsible for the application and storage of treatment chemicals (if applicable)
- Personnel who are responsible for conducting inspections as required in Part 4.1.1 of the CGP
- Personnel who are responsible for taking corrective actions as required in Part 5 of the CGP.

Records of training will be maintained in Appendix I.

#### **4.6. Site Maps**

Appendix C includes a project specific site map that provides boundaries of the project area and the locations where construction or potentially polluting activities will occur, including the following:

- Locations where earth-disturbing activities will occur
- Locations where sediment, soil or other construction materials will be stockpiled.
- Locations of all surface waters, including wetlands, that exist on or near your site. Indicate which waterbodies are listed as impaired, and which are identified as Tier 2, Tier 2.5, or Tier 3 waters.
- Locations of all potential pollutant-generating activities.
- Locations of all stormwater control measures

#### **4.7. Record Keeping**

A copy of the SWPP Plan will be maintained onsite for the use of all operators and those identified in the SWPP Plan as having on-site responsibilities, the EPA, ENV-CP representatives, and state and federal agencies until the project is closed under the conditions of the CGP. The Plan will contain required signatures, a copy of permit language, all reports required by permit coverage, a copy of the complete NOI (once posted on EPA's website), and any other applicable documentation. Items that will be maintained and attached to the SWPP include:

- Soil Disturbance Sequencing Event Table containing: dates when major soil disturbing activities occur, dates when construction activities temporarily or permanently cease on a portion of the site, and dates when stabilization measures are initiated (Appendix A)
- SWPPP Modification Records (Appendix B)
- Site Maps (Appendix C)
- Spill Tracking Form (Appendix D)
- SWPPP training (Appendix I)
- Inspection Reports and Corrective Action Reports (Appendix K)

Copies of SWPP Plans, inspection records, spill reports, all reports required by NPDES permit coverage, and data used to complete the NOI shall be retained by the permittees for a period of at least three (3) years from the date of final stabilization. LANL will also retain records in accordance with DOE policy.

**APPENDIX A:**

**Sequence of Events for Soil Disturbance  
Tracking Table**

## APPENDIX A: Sequence of Events for Soil Disturbance

Activity description	Actual dates of disturbance	Activity status
Move road and pad area - remove trees Mobilized equipment	6/1/15 6/1/15	Done Done
Installed trench in silt fence	6.2.15 - 6.3.15	Completed
Base course across road	6.6.15 - 6.5.15	Completed
Begin excavation for cutting pit	6.4.15 - Completed & lined 6.11.15	Ongoing
Base course Stabilization on pad & construction of berms around perimeter	Begin 6.11.15 Completed 6.16.15	Ongoing
Construct Small Sediment pad w/ Rip Rap armored outlet	Begin 6.11.15 Completed 6.15.15	







**APPENDIX C:**

**Site Maps**



**Legend**

- Roads, paved
- - - Roads, dirt
- ⋯ Trails
- Contours, 100 ft
- + Fences
- Drainage
- Structures
- Structures (LABELS)
- Other Developed Features
- Drainages
- Streams, Perennial

→ Direction of stormwater flow

- ⋯ Limits of disturbance for well pad construction. Perimeters will incorporate compacted base course berms for run-on and run-off control and to direct stormwater to a small detention pond
- ⋯ Temporary silt fence during clearing, grubbing and grading. Once berms on pad and sediment pond are constructed it may be removed

□ Small sediment detention pond with rip or TRM inlet and outlet with incorporated plywood weir outlet

Note: grades and drainage patterns will not change as a result of this project.

## **APPENDIX F:**

### **BMP Guidance, Details, and Specifications**

1. Berms
2. Fiber Rolls/Gravel bags
3. Check dams
4. Silt fence
5. Riprap
6. Turf Reinforcement Matting
7. Good Housekeeping
8. Revegetation
9. Seeding



## **BERMS AND CHANNELS**



### **Options and Alternatives**

- Swale/berm combination
- Rock berms
- Log berms
- Triangular Silt Dike®

### **BMP Objectives**

- Runoff Control
- Run-on Diversion

**Description**

Berms and channels are most often used to prevent run-on from eroding an exposed or disturbed area, and to divert sediment-laden runoff to a sediment trap, sediment basin or other suitable, stabilized discharge outlet. When used as a temporary control, berms are most often constructed from compacted soil or loose gravel, stone, or crushed rock. Berms may serve as a permanent structural control when constructed from asphalt, concrete, or other similar material. Channels can be incorporated into a berm design or function as a stand-alone BMP, and are typically constructed from compacted soil or lined with a suitable material.

**Applications**

Effective in diverting run-on away from unprotected areas and reducing flow velocities; effective to retain small amounts of runoff and sediment onsite.

**Limitations**

- A berm with a height of over 2 feet or located in an area where failure of the berm would result in damage to facilities, the environment or other safety issues requires an engineered design.
- Increased potential for failure if the upslope gradient is too great, resulting in high velocity flows.
- Earth berms may require vegetative stabilization to prevent erosion of the berm itself.
- Excessive sediment accumulation on upslope side of berm needs frequent clean-out.
- Channels may require engineering calculations to ensure the channel material is adequate to withstand flow velocity and shear stress.

**Performance and Longevity**

Performance		Poor or N/A	Good	Excellent
Erosion Prevention			x	
Sediment Control			x	
Runoff Control				x
Good Housekeeping		x		
Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Earth and base course	x	x		
Asphalt and concrete			x	
Prefabricated channels and culverts	x	x	x	x
Prefabricated barriers	x			x

**Design and Construction Guidance**

- Berms should be constructed during initial land-disturbing activities and must be operational prior to upslope land disturbance.
- A shallow trench or swale to contain the diverted run-on/runoff can be incorporated into the berm design.
- Where applicable, on-site material should be used for berm construction.
- Berm material needs to meet requirements for gravelly clay or sandy clay. Do not use gravelly sand or gravelly loam to construct berms.
- When used as a perimeter or down slope control, berms should divert runoff to a sediment trapping control such as a sediment trap or basin.

- Berms should be located so as to minimize damage by construction operations and traffic.
- Triangular Silt Dike® berms can be used in locations subject to minor traffic flow.
- Earth berms must be adequately compacted to prevent failure.
- Logs must be delimbed, trenched in and backfilled. If necessary, secure with wooden stakes on either side of the log.
- Rock berms must be constructed of large angular rock. Height and depth of the berm is dependent on the expected storm water flow. Ends of berm should be brought forward to help contain the flow.
- Channel material must be adequate to withstand flow velocity and shear stress.
- Ensure channels are designed and constructed with a defined flow line adequate to convey flows.
- Spillways on berms should be at least 6 inches in depth and should be protected against scour. Use rock or TRM for stabilization of the spillway.

### Inspection and Maintenance

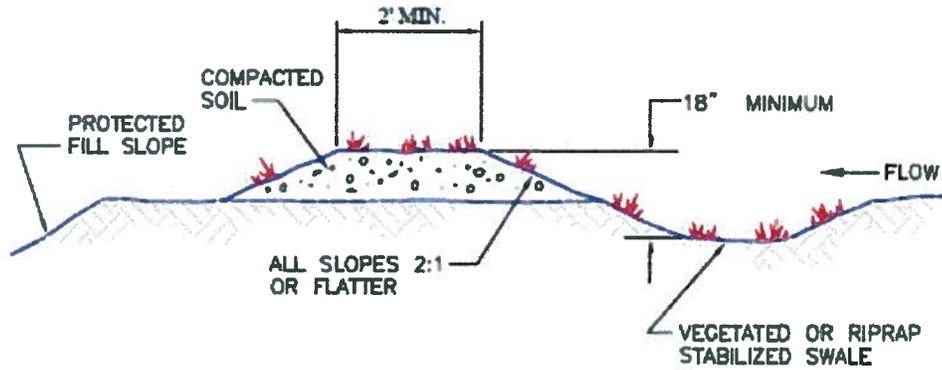
- Seeded areas which fail to establish a vegetative cover shall be reseeded as necessary.
- Damage from vehicle or construction traffic shall be repaired prior to the end of each working day or prior to the next storm event, whichever is sooner.
- Conduct required repairs immediately.
- Temporary berms may be removed when the site has been finally stabilized or when drainage patterns changed so that the berms are no longer functional.
- Berms that are designed to trap sediment should be cleaned out as necessary or after each storm event.
- Inspect for erosion or other damage, and repair.

### What not to do...

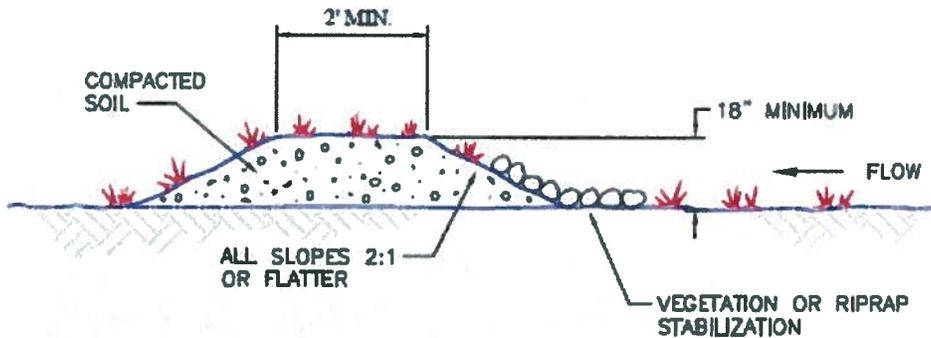


Berm was not well stabilized and could not stand up to run-on flows. Berms and swales should be designed and constructed to handle site specific run-on or run-off flows.

## EARTH BERM



## TYPICAL FILL DIVERSION

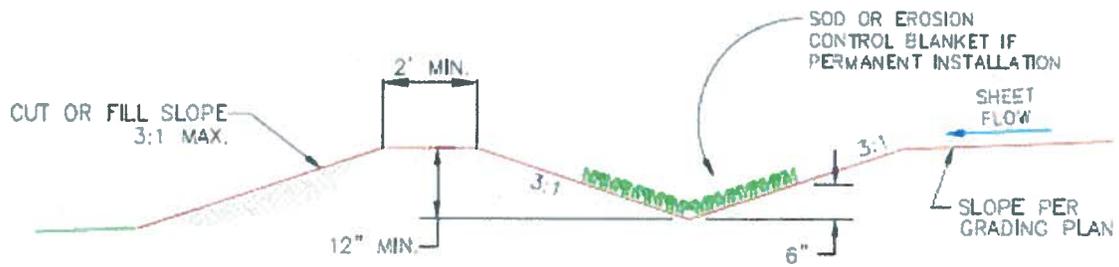


## TYPICAL TEMPORARY DIVERSION DIKE

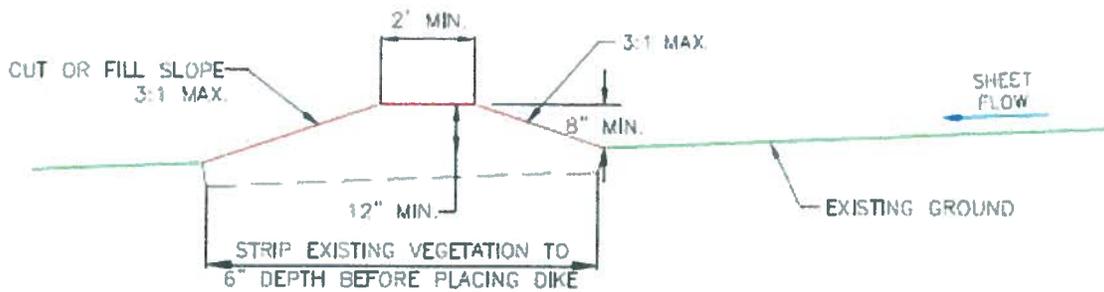
### NOTES:

1. THE CHANNEL BEHIND THE BERM SHALL HAVE A POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE BERM SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT SEEDING, MATTING, OR OTHER APPLICABLE MEASURES.
4. THE TOP OF THE BERM SHALL HAVE A MINIMUM WIDTH OF 2 FEET AND ALL SIDE SLOPES SHALL BE 2:1 OR FLATTER.

# EARTH BERMS & SWALES



SWALE

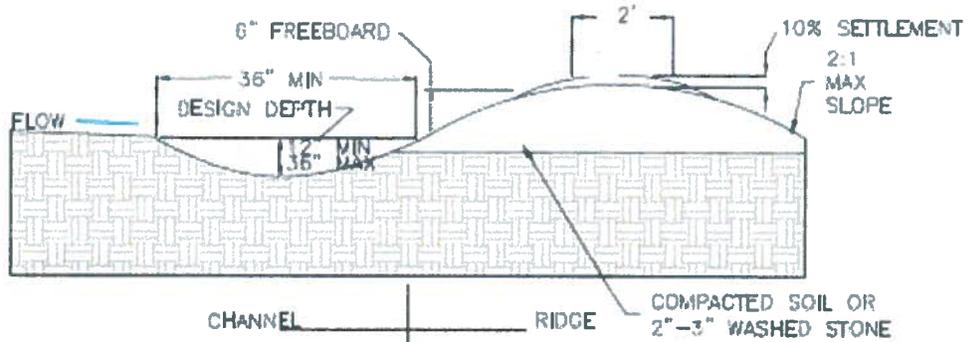


DIKE

## NOTES:

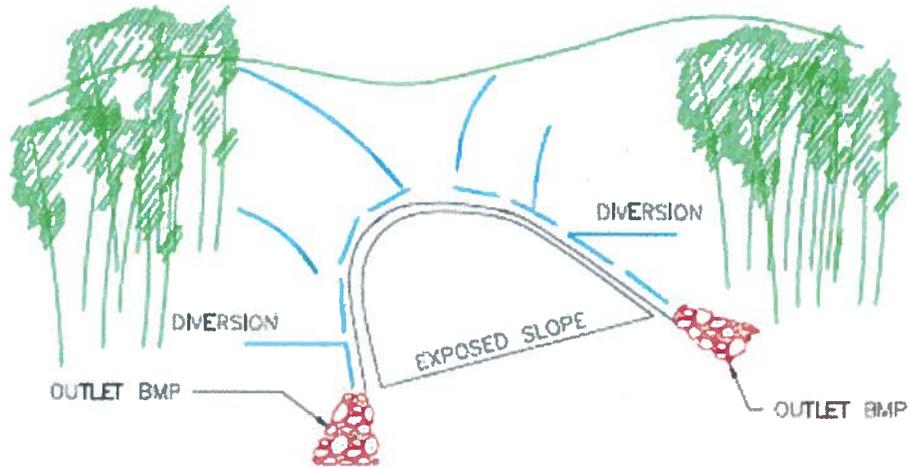
1. DIKE SHALL BE COMPACTED TO DENSITY EQUAL TO THAT SPECIFIED FOR ADJOINING AREA (90% STANDARD PROCTOR DENSITY, MINIMUM).
2. MINIMUM 1% GRADE MUST BE PROVIDED FOR SWALE OR ALONG UPSLOPE SIDE OF DIKE FOR PROPER DRAINAGE.

## EARTH BERMS & SWALES

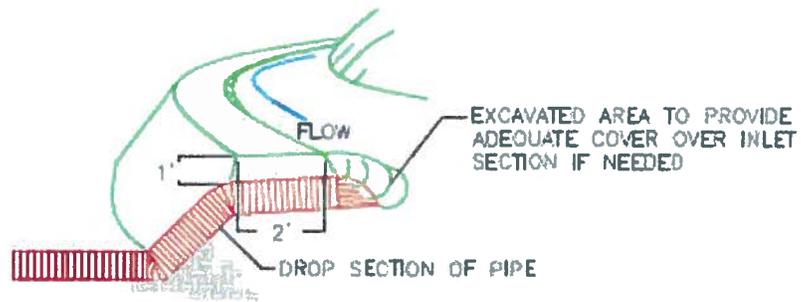


### CROSS SECTION

ALL SURFACE STABILIZED WITH MULCH, SEED OR GRAVEL



### TYPICAL PERIMETER PROTECTION



### TYPICAL TOP OF SLOPE INSTALLATION

## Fiber Rolls/Gravel Bags



### **BMP Objectives**

- Sediment Control
- Reduce Runoff Velocity
- Inlet Protection

### **Options**

- Fiber Rolls,
- Straw Fiber rolls™,
- Terra-Tubes®
- Coir Logs,
- Compost Socks,
- Gravel Bags

### **Alternatives**

- Silt fence
- TSD

### **Description**

Fiber rolls are tube-shaped erosion-control devices filled with straw, flax, rice, coconut fiber material, fabrics, or composted material. Common types of this BMP include: straw fiber rolls, coir logs, compost socks, gravel bags, and Terra-Tubes®. Straw fiber rolls are wrapped with UV-degradable polypropylene netting for longevity or with 100% biodegradable materials like burlap, jute, or coir. Coir logs are very similar to straw fiber rolls but are comprised of long lasting coconut fiber. They are also resistant to being consumed by wildlife. Compost socks and gravel bags are three dimensional tubular devices comprised of woven mesh fabric or other similar material and filled with gravel, rock or compost material. Terra-Tubes® are similar to fiber rolls except they are treated with special polymers that react (floculate) with suspended soil particles, increasing their ability to settle.

These devices can be used to break up a slope length, reducing the effects of runoff on long or steep slopes. They also help reduce sediment loads to receiving waters by filtering runoff or capturing sediments. Fiber roll BMPs can be used as check structures to reduce runoff velocity and can be placed around storm drain inlets for velocity and sediment control.

**Applications**

- Along the toe, top, face, and at-grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- Along the perimeter of exposed soil areas
- As check dams in unlined ditches
- Around temporary stockpiles (on dirt)
- Around storm drain inlets (see Section 2.6)

**Limitations**

- They have a limited sediment capture zone
- Some may have problems with ice buildup
- Must be trenched in to function properly

**Performance and Longevity**

Performance	Poor or N/A	Good	Excellent
Erosion Prevention	x		
Sediment Control			x
Runoff Control		x	
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Straw, Coir logs	x	x		
compost socks	x			x
gravel bags/snakes	x			x

**Design Criteria and Construction Specifications**

**Materials**

- Most will come prefabricated. Some may require filling onsite, such as gravel bags and compost socks.
- Straw fiber rolls must be at least 8" diameter. To be effective, fiber rolls at the toe of slopes must be at least 20 inches in diameter. An equivalent installation, such as stacked smaller-diameter fiber rolls, can be used to achieve a similar level of protection.
- Compost socks: the compost shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Filter socks used for erosion control are usually 12 inches in diameter.
- Gravel bags: filled with clean 3/4" crushed or 1/4" pea gravel. If subject to impact from equipment or vehicles, fill bags only 1/2 to 3/4 full with non-angular rock.
- Terra-Tubes® can be used where additional reductions in turbidity are required
- Stakes installed per manufacture recommendations.

**Installation.**

- On projects with slopes, install fiber rolls along the contour with a slight downward angle at the end of each row to prevent ponding at the midsection. Turn the ends of each fiber roll upslope to prevent runoff from flowing around the

roll.

- Install fiber rolls in shallow trenches dug 3 to 5 inches deep for soft, loamy soils and 2 to 3 inches deep for hard, rocky soils.
- Determine the vertical spacing for slope installations on the basis of the slope gradient and soil type. A good rule of thumb is:
  - 1:1 slopes = 10 feet apart
  - 2:1 slopes = 20 feet apart
  - 3:1 slopes = 30 feet apart
  - 4:1 slopes = 40 feet apart
- Fiber rolls can be anchored in the following ways:
  1. Drive the stakes through the middle of the fiber roll and deep enough into the ground to anchor the roll in place. About 3 inches of the stake should stick out above the roll, and the stakes should be spaced 3 to 4 feet apart.
  2. Stakes may be placed on each side of the roll tying across with a natural fiber twine or staking in a crossing manner ensuring direct soil contact at all times.
- Gravel bags do not require staking
- Terminal ends of fiber rolls may be dog legged up slope to ensure containment and prevent channeling of sedimentation.
- Backfill the length of the fiber roll with the excavated soil and compact

## **Inspection and Maintenance**

- Ensure that the rolls remain firmly anchored in place and are not crushed or damaged by equipment traffic.
- Check that fiber rolls are trenched in and no gaps exist under the rolls.
- Check that fiber rolls are adequately aligned with the next roll. Either overlapped uphill of the next or doglegged.
- Check that fiber rolls are securely anchored.
- Repair or replace split, torn, unraveled, or slumping fiber rolls.
- Rills or gullies upslope of the rolls and any undercutting is to be repaired.
- Sediment deposits shall be removed when the sediment reaches one-third of the fiber rolls functional freeboard height. Removed sediment shall be deposit within the project in such a way that the sediment is not subject to erosion by wind or water.
- Do not disturb or remove sediment from BMPs in PRS/SWMU areas
- Additional fiber rolls can be placed on top of existing ones to increase sediment capacity.

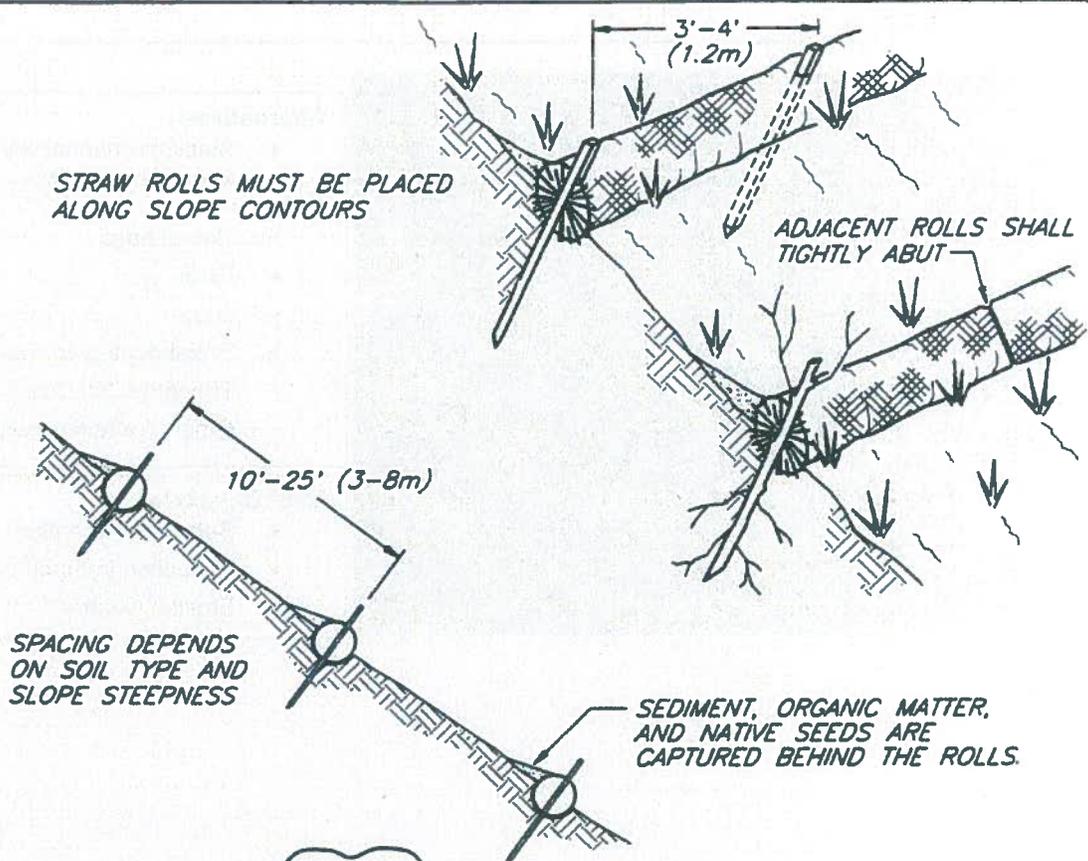
**What not to do...**



Notice that erosion is occurring under the fiber roll where a rill is forming. The fiber roll should be properly entrenched into the soil so that water velocity is decreased and water is forced to pool behind to promote sedimentation and flow over the fiber roll.

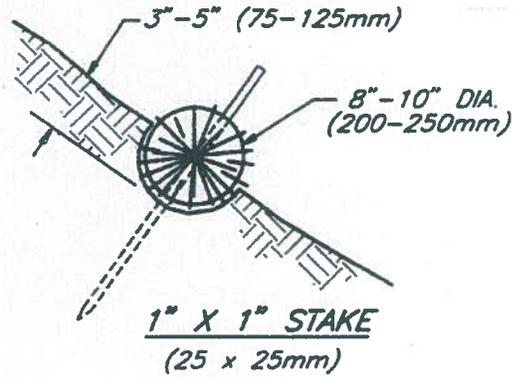
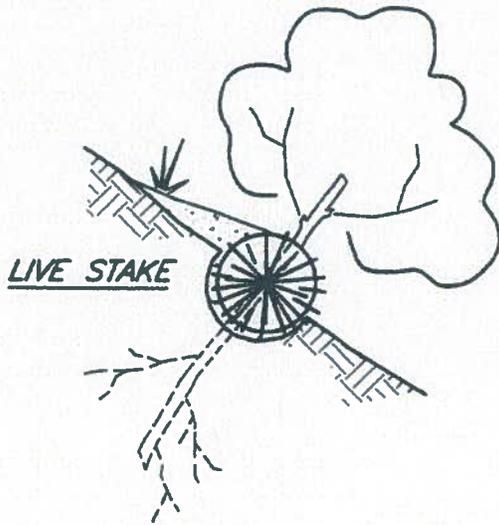
STRAW ROLLS MUST BE PLACED ALONG SLOPE CONTOURS

ADJACENT ROLLS SHALL TIGHTLY ABUT



SPACING DEPENDS ON SOIL TYPE AND SLOPE STEEPNESS

SEDIMENT, ORGANIC MATTER, AND NATIVE SEEDS ARE CAPTURED BEHIND THE ROLLS.



NOT TO SCALE

NOTE:

1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" (75-125mm) DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

**STRAW ROLLS**

## **CHECK DAMS**

---



### **Alternatives**

- Stabilize channel with TRM, asphalt or concrete.

### **Options**

- Gravel bags
- Rock
- Logs
- Prefabricated Juniper Bales
- Triangular Silt Dike®
- Other prefabricated products

### **BMP Objectives**

- Sediment Retention
- Reduction in runoff velocity
- Erosion Control

**Description**

A check dam is a small dam constructed across a channel, drainage ditch or other area of concentrated flow. Check dams reduce erosion and promote sedimentation by reducing runoff flow velocity and encouraging sediment to settle out. Check dams are usually constructed of rock, gravel bags, sandbags or other proprietary products and may either be a temporary or permanent structural control.

**Applications**

- Use to minimize down cutting in channels, retain sediment, and reduce velocity.
- Useful in temporary ditches that will be removed after construction.

**Limitations**

- A check dam with a height of over 2 feet or located in an area where failure of the check dam would result in damage to facilities, the environment or other safety issues requires an engineered design.
- Significant sediment accumulations behind the check structure may destroy vegetation lining the channel.
- Requires regular maintenance and sediment removal.
- May not be used in a drainage that is a perennial stream.
- May cause increased erosion if not installed correctly.

**Performance and Longevity**

Performance	Poor or N/A	Good	Excellent
Erosion Prevention		x	
Sediment Control			x
Runoff Control			x
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Rock, logs, juniper bales		x	x	
Gravel bags, Triangular Silt Dike	x			x

**Design and Construction Guidance**

- Check dam must be located in a defined channel to reduce runoff velocity or retain sediment.
- If high flows are expected, ensure scour protection has been installed on the downstream of the check dam.
- Check dams should be spaced at a distance to allow the elevation of the ponded water from the downstream check dam to match the elevation of the toe of the upstream dam.
- Flows must be directed over the check dam.
- When using rock, ensure the material diameter is appropriate to create ponding.
- Straw bales and wattles should not be used as check dams.
- The center of a check dam must always be lower than its outside edges and the channel bank height to allow proper flow over the check structure.

**Installation:**

- Should be installed as soon as possible while construction activities are occurring.
- The center of the dam should be at least six-inches lower than its edges.
- Check dam material should be entrenched into the sides and bottom of the channel to ensure flow does not go around or under the check dam.
- Rock should be placed individually by hand or by mechanical methods (no dumping of rock).

### **Inspection and Maintenance**

- Check for damage and erosion caused by flows around or under the dam structure. Repair erosion around a check dam and lower the center if required.
- Remove any debris that would impede flow over the check dam.
- When the sediment has reached a height of approximately one-half the original height of the dam (measured at the center), remove accumulated sediment from the upstream side of the dam.
- Remove check dams made from temporary materials when the adjacent site is stabilized.
- Before removing a check dam, remove all accumulated sediment from the channel. If sediment is placed on adjacent slopes, stabilize it with native vegetation.

**What not to do...**

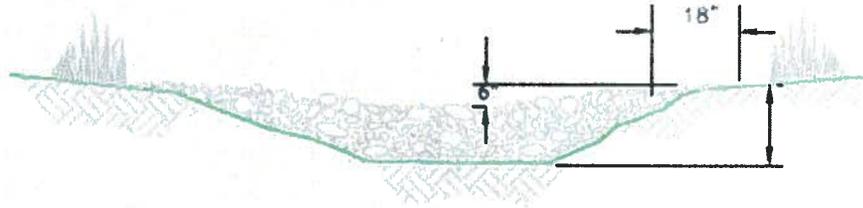


Silt fence cannot be used as a check structure and is not designed for concentrated flow.

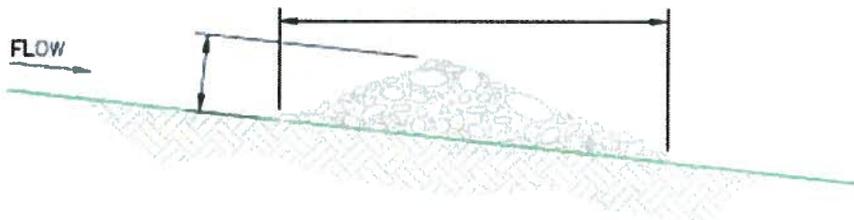


Notice how runoff bypassed the check structures. Channel banks must be sufficient to withstand flows and the dam center must be lower to allow flow over the check dam.

## ROCK CHECK DAM

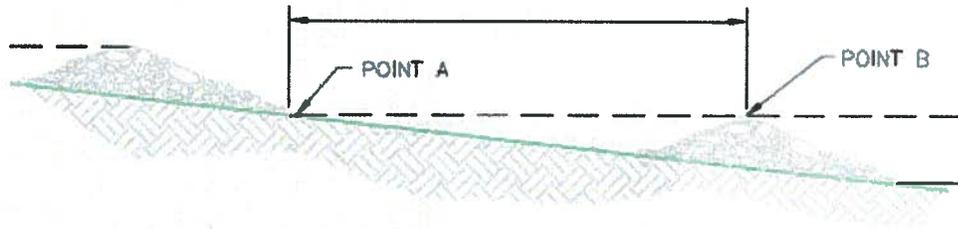


VIEW LOOKING UPSTREAM



SECTION A

X = THE DISTANCE SUCH THAT POINT A AND B ARE OF EQUAL ELEVATION.

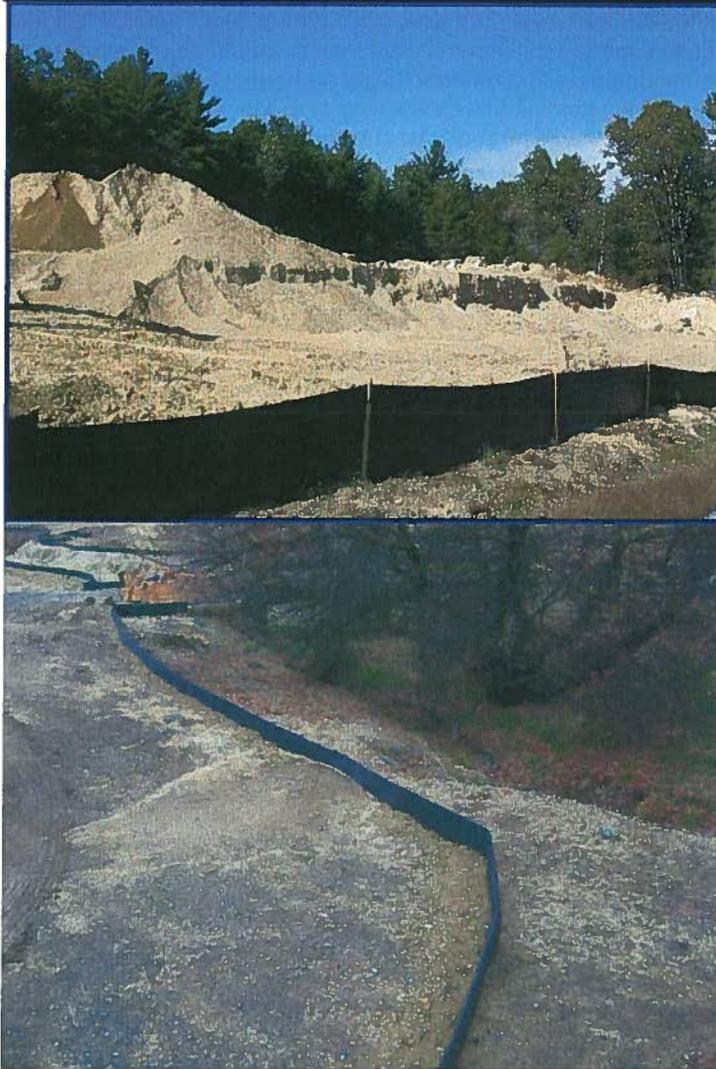


SPACING BETWEEN CHECK DAMS

### NOTES:

1. ROCK CHECK DAMS SHALL BE CONSTRUCTED WITH 2-15 INCH MAXIMUM SIZE AGGREGATE ROCK.
2. WHERE APPLICABLE, KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18° TO PREVENT FLOW AROUND DAM.
3. PROVIDE AN ENERGY DISSIPATOR ON THE DOWNSTREAM SIDE OF THE DAM TO REDUCE DOWNSTREAM EROSION.

## SILT FENCE AND S-FENCE™



### Product Types

- Silt fence
- S-Fence™

### Alternatives

- Depending on surface and site conditions; gravel bags, wattles, or Triangular Silt Dike may be used.

### BMP Objectives

- Sediment Control
- Sheet Flow Runoff Control
- Wind Erosion Control

### Description

Silt fences are typically used as temporary perimeter controls around sites where construction activities will disturb the soil. They can also be used within the interior of a site. A silt fence consists of a length of woven, permeable geotextile, stretched between anchoring posts spaced at regular intervals along the site at low/downslope areas. The filter fabric should be entrenched in the ground between the support posts. When installed correctly, silt fences create ponding of runoff from the site, allowing transported sediment to settle out. Silt fences can be an effective barrier to sediment leaving the site.

The S-Fence is made from HDPE material and is much stiffer than the silt fence material. It is buried 3 inches in the ground and can be secured to an existing chain link fence or can be installed by itself and fastened to wood stakes. Each section is 7 feet long and comes in two heights: 10 inch and 14 inch. S-Fence is designed to allow water to flow through it and significantly reduces erosive energy and provides particle

filtering.

**Applications**

Silt fences apply to construction sites with relatively small drainage areas. They are appropriate in areas where runoff will occur as sheet flow. The drainage area for silt fences should not exceed 0.25 acre per 100-foot fence length. Silt fence should not be used for runoff velocity control or placed in areas of concentrated runoff such as drainage channels and storm drain inlets and outlets. Silt fence should be installed along the contour to minimize channeling of runoff. They may also be placed perpendicular to prevailing winds at staggered intervals to address wind erosion. The same applications apply to S-Fence.

**Limitations**

- Do not install silt fences along areas where rocks or other hard surfaces will prevent uniformly anchoring the fence posts and entrenching the filter fabric. Improper installation prevents proper function.
- Silt fences are not suitable for areas where large amounts of concentrated runoff are likely. Do not install silt fences across streams, ditches, or waterways.
- High winds can make the filter fabric deteriorate faster, so installing fences in open, windy areas should be avoided.
- When the pores of the fence fabric become clogged with sediment, pools of water are likely to form on the uphill side of the fence. Siting and design of the silt fence should account for this. Take care to avoid unnecessarily diverting storm water from these pools, causing further erosion damage.
- UV exposure degrades silt fence filter fabric, causing separation of the fabric strands which leads to greater potential for holes and wind damage.

**Performance and Longevity**

Studies have approximated the following effectiveness ranges for silt fences constructed of filter fabric that are properly installed and well maintained:

- Average total suspended solids removal of 70 percent
- Sand removal of 80 to 90 percent
- Silt-loam removal of 50 to 80 percent
- Silt-clay-loam removal of 0 to 20 percent.

Removal rates are highly dependent on local conditions and installation.

Silt fence in the LANL area will typically experience the onset of degradation due to UV exposure over a period of 6 to 12 months and will need to be maintained or repaired due to damage from wind and runoff.

S-Fence can also be used as a perimeter control but is made from an HDPE material and has a functional life greater than 4 years. It can also be reused. The product will stand up to winds and UV exposure and can be recycled at the end of its life.

Performance	Poor or N/A	Good	Excellent
Erosion Prevention	x		
Sediment Control			x
Runoff Control		x	
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Silt Fence	x			
S-fence	x			x

**Design and  
Construction  
Guidance**

**Materials**

**Silt Fence**

- The material for silt fences should be a pervious sheet of synthetic fabric such as polypropylene, nylon, polyester, or polyethylene yarn.
- Choose the material based on the minimum synthetic fabric requirements shown in Table 1.

*Table 1. Minimum requirements for silt fence fabric*

<b>Physical property</b>	<b>Requirements</b>
Filtering efficiency	75%-85% (minimum): highly dependent on local conditions
Tensile strength at 20% (maximum) Elongation	Standard strength: 30 lb/linear inch (minimum) Extra strength: 50 lb/linear inch (minimum)
Ultraviolet radiation	90% (minimum)
Slurry flow rate	0.3 gal/ft <sup>2</sup> /min (minimum)

**S- Fence Product Characteristics**

- Unit weight, 10" / 14" (Lbs/ft) (max) 0.35 / 0.48
- Reusable YES
- Functional life (minimum)(years) 4+
- Filter capability – AOS (ASTM D4751) (microns) 250
- Dimension – length per module (ft) 7
- Percentage Open Area (COE 22125-86) (min %) 20%
- Dimension (freeboard height in inches) 10.0 / 14.0
- Tensile Yield ASTM D-638 (lb/in<sup>2</sup>) 1800 - 2800
- Installed freeboard height (inches) 7.0 / 11.0
- Ultimate Tensile Strength: ASTM D-638 (lb/in<sup>2</sup>) 2000 - 2800
- Recyclable Post consumer #2 YES
- Service temperature (deg F) -30 to 160

**Installation**

- Standard-strength fabric can be reinforced with wire mesh behind the filter fabric to increase the effective life of the fence.
- Attach the filter fabric to wood or metal stakes at least 4 feet long. Stakes should have a minimum diameter of 2 inches if a hardwood like oak is used or at least 4 inches in diameter if soft woods such as pine are used. When using metal posts in place of wooden stakes, they should weigh at least 1.00 to 1.33 lb/linear foot. If metal posts are used, attachment points are needed for fastening the filter fabric with wire ties.
- Erect silt fence in a continuous fashion from a single roll of fabric to eliminate gaps in the fence. If a continuous roll of fabric is not available, overlap the fabric from both directions only at stakes or posts. Overlap at least 6 inches in a shingle pattern in the direction of runoff flow.
- Excavate a trench to anchor the bottom of the fabric fence at least 6 inches

below the ground surface. The trench should be backfilled and the soil compacted over the toe of the filter fabric. Alternatively use a slicing machine to install the filter fabric.

- Install posts along the length of the fence at a height of 18 to 36 inches above the original ground surface. Posts should be driven into the ground a minimum of 12 inches. If standard-strength fabric is used with wire mesh, space the posts no more than 10 feet apart. If extra-strength fabric is used without wire mesh reinforcement, space the posts no more than 6 feet apart. Attach the filter fabric to the posts.
- The ends of the silt fence should be turned uphill to prevent flow from running around the ends of the fence.
- Install silt fence at least 6 feet from the toe of a slope.
- Once installed, silt fence should remain in place until all areas upslope have been permanently stabilized by vegetation or other means.

### **Inspection and Maintenance**

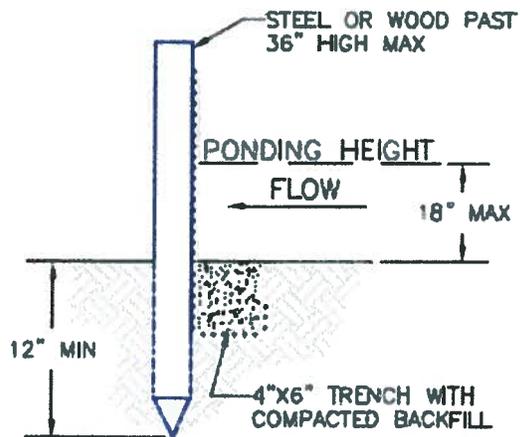
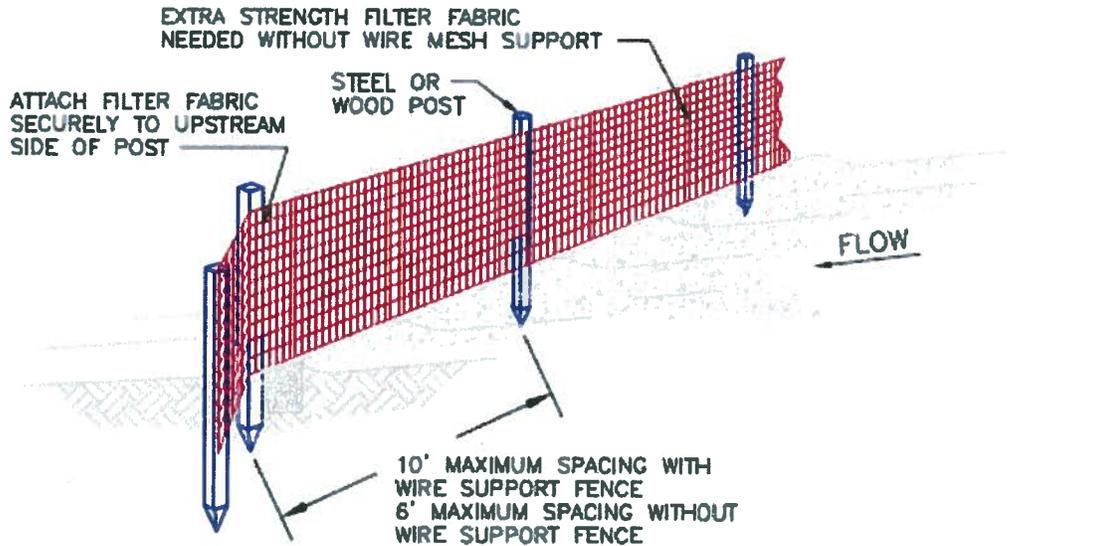
- Inspect fences to make sure that they are intact and that there are no gaps where the fence meets the ground or tears along the length of the fence.
- If gaps or tears are found, repair or replace the fabric immediately.
- Remove accumulated sediments from the fence base when the sediment reaches one-third to one-half the fence height.
- Remove sediment more frequently if accumulated sediment is creating noticeable strain on the fabric and the fence might fail from a sudden storm event.
- When removing the fence, remove the accumulated sediment as well.

### **What not to do...**



Silt fence should be properly entrenched for proper operation.

## SILT FENCE

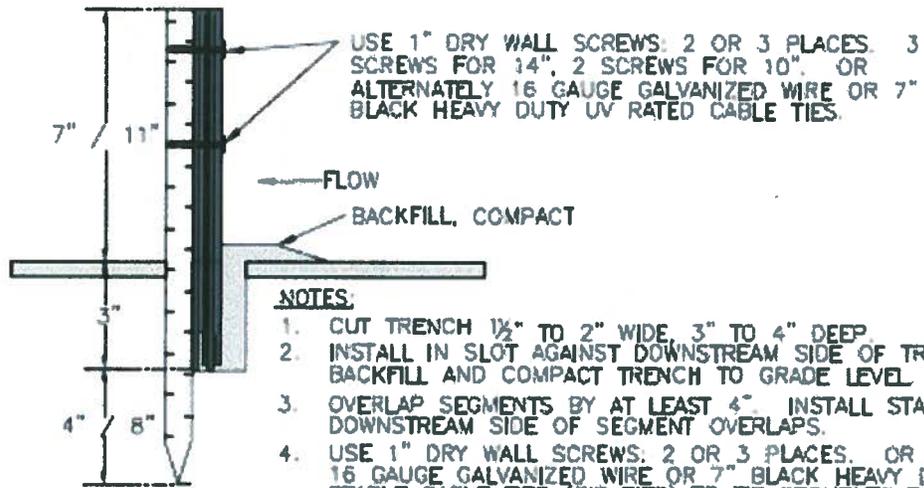


### TRENCH DETAIL

#### NOTES:

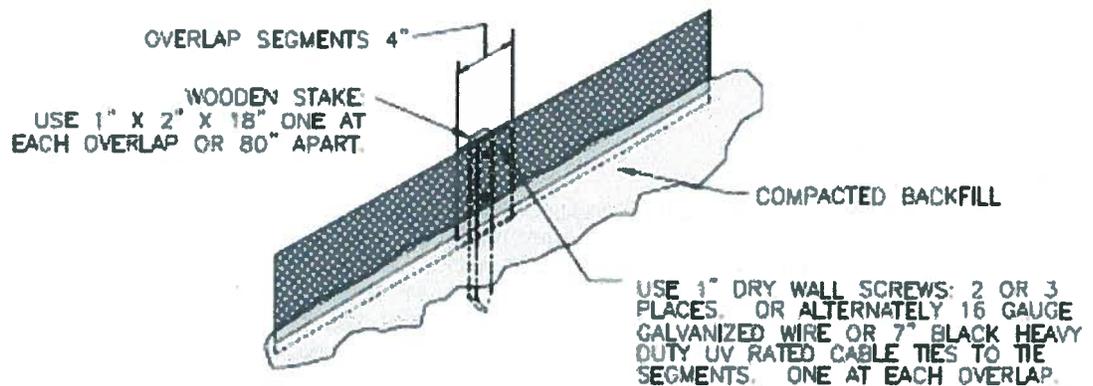
1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. WHEN USING WIRE MESH SUPPORT, EXTEND WIRE INTO TRENCH A MINIMUM OF 2 INCHES AND NO MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
3. THE ENDS OF THE SILT FENCE SHALL BE TURNED UPHILL.
4. PLACE SILT FENCE AT LEAST 6 FEET FROM THE TOE OF A SLOPE.
5. PONDING HEIGHT SHALL BE A MAXIMUM OF 18 INCHES WITH TRENCH INSTALLATION AND 9" WITHOUT TRENCHING.

# ERTEC™ S-FENCE™



**NOTES:**

1. DOG-LEG AT END-OF-RUNS TO CONTAIN SEDIMENT.
2. INSTALL ON SAME CONTOUR TO LIMIT SCOUR AND FLOW CONCENTRATION. DOG-LEG PERIODICALLY IF ON DOWN-HILL RUN TO MINIMIZE VELOCITY SCOUR.



# RIPRAP



## **BMP Objectives**

- Erosion Control

## **Options**

- Can be wire enclosed or loose

## **Alternatives**

- Use TRM for channel install (see Section 4.3)
- Vegetation and terracing on slopes

**Description**

Riprap is a permanent, erosion-resistant layer made of stones. It is intended to protect soil from erosion in areas of concentrated runoff. Riprap generally consists of crushed rock and for added effectiveness may be placed on filter fabric on a prepared surface. The individual stones are typically angular in shape and well graded to promote interlocking.

**Applications**

- Riprap is effective in protecting culvert inlets and outlets and preventing scouring and undercutting.
- Useful in the stabilization of stream or channel banks and drainage channels.
- Can be used to stabilize cut and fill slopes, storm drains and slope drains.
- Should be considered where perennial flows or frequent ponding would drown a vegetated lining.

**Limitations**

- Should not be placed on slopes greater than 2:1.
- Cost may be a prohibitive factor in large scale applications.
- Proper design and stone selection for expected flow velocity is essential.
- Difficult to remove sediment accumulations.

**Performance and Longevity**

Performance	Poor or N/A	Good	Excellent
Erosion Prevention			x
Sediment Control			x
Runoff Control	x		
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Riprap	x			

**Design Criteria and Construction Specifications**

- Riprap installations should be designed and specified by an engineer.
- Use stones angular in shape and well graded to promote interlocking.
- Filter fabric must be used underneath.
- Brush, trees, stumps, and other objects that would interfere with riprap placement should be removed.
- Use filter fabric and connect joints with a minimum overlap of 1 foot and space anchor pins approximately every 3 feet along the overlap. The ends of the fabric shall be buried to a minimum depth of 12 inches.
- Place riprap stones forming a continuous blanket to minimum thickness of 12 inches.
- Place the riprap in a trench excavated to 24 inches below the toe of the slope of the embankment or side of channel.

**Inspection and Maintenance**

- Check that filter fabric was used under the riprap.
- Check that riprap installed in a channel has a low point in the center to prevent flows from going around the rock.
- For riprap aprons, inspect for erosion around the riprap and dislodgment of stones.
- Check for slumping on hillsides.
- Check for scour or undermining – replace or reposition riprap as necessary.

**What not to do...**



**Properly installed riprap at culvert outlet will control erosion.**

## TURF REINFORCEMENT MATS



### **BMP Objectives**

- Erosion Control

### **Options and Alternatives**

- Riprap or Gabions
- Engineered Stabilization

**Combinations and Alternatives**

Turf reinforcement mats (TRMs) may be used in conjunction with temporary or permanent sediment and erosion control BMPs to promote vegetation growth. Areas where TRMs are applied should be seeded prior to installation.

**Description**

Turf reinforcement mats are a long term non-degradable rolled erosion control product (RECP) comprised of UV stabilized, non-degradable, synthetic fibers or nettings. TRMs are especially useful in areas such as channels that receive higher velocity flows and on slopes requiring immediate permanent soft stabilization. TRMs can enhance the natural ability of vegetation to protect soil from erosion.

**Applications**

- TRMs may be used in areas where hard armoring or impervious lining would be required.
- Excellent for stabilizing soil in high shear stress/velocity channels or any area exposed to high volume or high velocity storm water runoff such as drainage ditches and runoff conveyance systems. TRMs may be used in channels where shears are up to 11 lbs/ft<sup>2</sup> and velocities range up to 20 ft/sec.
- May be used on slopes requiring immediate permanent soft stabilization.
- Remain in place as permanent stabilization.
- Helps establish and maintain vegetative cover.

**Limitations**

Should not be used when anticipated hydraulic conditions are beyond the limits of TRMs.

**Performance and Longevity**

Performance	Poor or N/A	Good	Excellent
Erosion Prevention			x
Sediment Control	x		
Runoff Control	x		
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
TRM			x	

**Design Criteria and Construction Specifications**

Site preparation is essential to ensure that TRMs perform as intended and remain in close contact with the soil. Ensure soil amendments are applied as necessary and seed according to LANL Master Specifications Section 32 9219 Seeding. Choose the appropriate turf reinforcement mat for a channel based on the calculated shear stress and water velocities

**Anchoring:**

- U-shaped wire staples, metal geotextile stake pins, or triangular wooden stakes can be used to anchor mats to the ground surface. Wire staples should be a minimum of 11 gauge. Metal stake pins should be 3/16 inch diameter steel with a 1 1/2 inch steel washer at the head of the pin. Wire staples and metal stakes should be driven flush to the soil surface. All anchors should be 6-8 inches long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.

**Installation on Slopes:**

- Begin at the top of the slope and anchor its mat in a 6 inch deep x 6 inch wide

- trench. Backfill trench and tamp earth firmly.
- Unroll mat downslope in the direction of the water flow.
  - The edges of adjacent parallel rolls should be overlapped 2-3 inches and be stapled every 3 feet.
  - When mats must be spliced, place mats end over end (shingle style) with 6 inch overlap. Staple through overlapped area, approximately 12 inches apart.
  - Lay mats loosely and maintain direct contact with the soil - do not stretch or allow "tenting" of the material.
  - Mats should be stapled sufficiently to anchor mat and maintain contact with the soil.
  - Staples should be placed down the center and staggered with the staples placed along the edges.

**Installation in channels:**

- Dig initial anchor trench 12 inches deep and 6 inches wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 6 inches deep and 6 inches wide across the channel at 25-30 foot intervals along the channel.
- Cut longitudinal channel anchor slots 4 inches deep and 4 inches wide along each side of the installation to bury edges of matting. Whenever possible extend matting 2-3 inches above the crest of channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 1 foot intervals.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 inches
- Secure these initial ends of mats with anchors at 1 foot intervals, backfill and compact soil.
- Unroll center strip of matting upstream.
- Unroll adjacent mats upstream in similar fashion, maintaining a 3 inch overlap.
- Shingle-lap spliced ends by a minimum of 1 foot with upstream mat on top to prevent uplifting by water
- Anchor overlapped area by placing two rows of anchors, 1 foot apart on 1 foot intervals.
- Place edges of outside mats in previously excavated longitudinal slots, anchor and backfill and compact soil.
- Anchor, fill and compact upstream end of mat in a 12 inch x 6 inch terminal trench.
- Secure mat to ground surface using U-shaped wire staples geotextile pins or wooden stakes.

**Inspection and Maintenance**

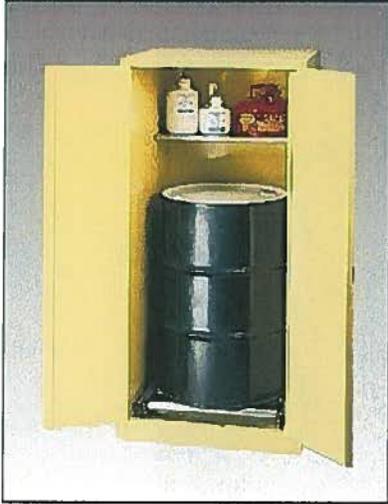
- All mats should be inspected periodically following installation.
- Inspect mats after significant rain events to check for erosion and undermining. Any failure should be repaired immediately.
- If washout or breakage occurs, re-install the material after repairing the soil damage

**What not to do...**



**TRM installation was not continued along swale where water flow is concentrated, causing erosion.**

## GOOD HOUSEKEEPING



### Options and Alternatives

- WASTE AND MATERIAL STORAGE AND TRANSPORTATION
- VEHICLE AND EQUIPMENT BOMBS
- STREET SWEEPING
- WASHOUT AREAS

### Objectives

- REDUCE OR ELIMINATE RUNOFF POLLUTANTS

**Description**

Good housekeeping includes controls that are practices (as opposed to structural controls) that are used to reduce or prevent pollutants.

**Applications**

Low cost alternative to structural BMPs.

**Limitations**

Only prevents the initial migration of pollutants from the source.

**Performance and Longevity**

In general, use of practices to prevent pollutants from contact with storm water is extremely effective.

Good housekeeping practices are implemented before project activities begin and throughout project activities. These practices are temporary in nature and are only meant to last through the construction activity process.

Performance	Poor or N/A	Good	Excellent
Erosion Prevention	x		
Sediment Control	x		
Runoff Control	x		
Good Housekeeping			x

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Good housekeeping	x			

**Design and Construction Guidance**

**Material storage**

- Designate material storage areas away from the nearest watercourse and in locations that do not receive a substantial amount of upslope run-on.
- Store soils uphill of BMPs or the excavation.
- Hazardous materials, fluids, and chemicals should be placed within covered storage, or a lined berm or other appropriate secondary containment.
- Drums containing liquids or hazardous materials should be stored on secondary containment pallets that minimize storm water accumulation.

**Wastes**

- Designate a waste collection site that does not drain to a watercourse and that does not receive a substantial amount of upslope run-on.
- Refuse containers should have lids that will remain closed to prevent rain exposure. Bins should be leak proof.
- Waste collection should be scheduled to prevent overflow of refuse.
- Trash, material cuttings, and any other waste should be managed or disposed of at the end of each workday and prior to an anticipated storm event.
- Portable lavatories should be used and maintained in accordance with manufacturer's recommendations; staked to the ground to prevent being knocked over by wind; and lavatory waste must be treated off-site.

### **Material Transport or Movement**

- Material should be transported in appropriate containers or vehicles so that facility locations outside the project boundaries and public roadways will not be adversely impacted through sediment tracking or waste spillage.
- Spill control equipment should be present during any transfer operations.
- Movement of liquid filled containers or transfers of oil or chemicals will not occur during precipitation events
- Containers must be upright and secured to the vehicle/hand truck it is being transported on
- Drums are not to be rolled or tipped, even while empty, to prevent damage to containers
- Containers will be inspected before and after they are transported for leaks or damage.
- Storm drain covers will be used at adjacent storm drains if necessary to prevent a potential spill from entering the storm drain before it would be controlled.
- Transfers from portable containers to equipment occur away from storm drains. Spigots or pumps should be used, do not pour directly from drums. Consider placing absorbent mats before a transfer occurs.

### **Vehicle and Equipment Refueling & Maintenance**

Vehicle and equipment control techniques include:

- Properly covering and providing secondary containment for fuel drums and other similar materials.
- Refueling of equipment shall be conducted at least 100 feet from any storm drain, drainage, or wetland, including dry arroyos. This project has a special exception, as noted in Section 3.3 of this SWPPP, for the generator that will be powering the pump to reroute water around the project area.
- Refueling operations will be completed such that head space is provided within fuel tanks to allow for fuel expansion.
- Develop and implement spill prevention and cleanup plan.
- Maintain a spill kit on site.
- Use a covered, paved area dedicated to vehicle maintenance.
- Wash vehicles and equipment only at facilities approved for washing activity.
- All vehicles and equipment will be observed for leaks and if found drip pans will be used until fixed.
- Leaks will be fixed as soon as practicable and leaking vehicles and equipment will be removed from service and repaired.
- Spills of all products will be cleaned up and managed per applicable state and federal regulations.

### **Potholing**

- Spoils must be properly disposed of.
- Discharge spoils only in approved designated areas.
- Do not discharge to the environment any glycol treated water.

### **Concrete Washouts**

Concrete washouts should be used to contain concrete and liquids when rinsing equipment used for mixing or delivering concrete, or for excess concrete. They consolidate solids for easier disposal and prevent contaminated water from mixing with runoff.

- Washouts should be located a minimum of 100' from a watercourse or storm drain and in a location that allows convenient access for concrete trucks and equipment.
- Containment areas will not be constructed in areas designated as Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), or Treatment Storage and Disposal Facilities (TSDFs).
- Washouts are typically built below grade to prevent breaches and reduce runoff.
- Washouts should be sized to manage both concrete washout and storm water accumulation from precipitation events.
- Use appropriate control measures that act as a continuous line barrier to prevent the runoff of discharges and the co-mingling of discharges with storm water.
- Prefabricated washout containers must protect against spills and leaks, be watertight, and should be used in accordance with manufacturer specifications.
- Inspect washout area for damage and repair as necessary to ensure structure integrity.
- Once a washout facility has reached 75% capacity the materials should be removed and properly disposed of.

### **Street Sweeping**

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways.

- Vacuuming is essential because sweeping alone may cause dust pollution and off-site sediment transport.
- Points of site egress are especially vulnerable to off-site sediment tracking.
- A proper construction entrance/exit may be needed if street sweeping efforts are not sufficient to prevent sediment from leaving the site.
- Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).
- Sweeping should be performed at a frequency necessary to minimize visible sediment tracking from the site.

### **Inspection and Maintenance**

- Check that materials are properly stored.
- Check that washout areas are being used.
- Check for vehicle leaks and proper maintenance.
- Check for tracking of sediment from site.

**What not to do...**

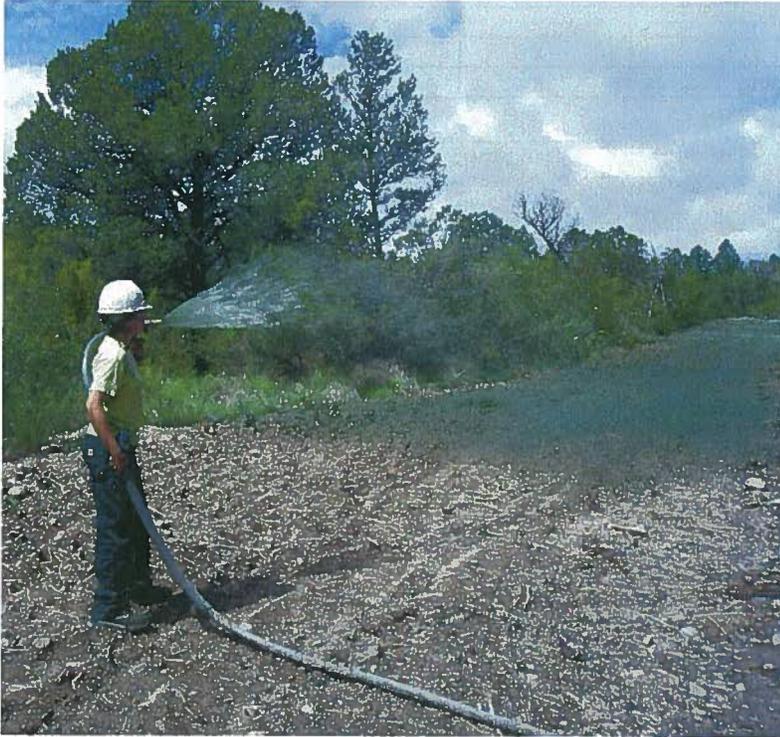


**Sweeping without vacuuming causes severe dust migration leading to sediment transport offsite.**



**Improper waste disposal and storage of waste products. Containerize and separate waste items for proper disposal.**

# Revegetation



## Options

- Seed in conjunction with hydromulch
- Seed in conjunction with erosion control blanket installation
- Seed in conjunction with other types of mulch products

## Alternatives

- Use Turf Reinforcement Mat
- Preservation of existing vegetation

## BMP Objectives

- Temporary or permanent soil stabilization
- Increase infiltration and reduce erosion and sediment transport

## Description

Revegetation is the establishment of short-term or long-term vegetative cover, through seeding, on disturbed surfaces or other areas that pose a high risk of erosion. Seeding can provide temporary or permanent stabilization with reduced erosion, runoff, and sediment transport. Temporary seeding can be used on any temporary earthen structure, construction sites, topsoil stockpiles, etc. Typical areas appropriate for permanent seeding include denuded areas where long-term vegetative cover is desired, buffer areas, steep slopes, stream banks, and areas where soils are unstable.

## Applications

- Temporary or permanent stabilization at construction sites, topsoil stockpiles, etc.
- Denuded areas where long-term vegetative cover is desired, buffer areas, steep slopes, stream banks, and areas where soils are unstable.

## Limitations

- Establishment of vegetation can take one or more growing seasons and is dependent upon growing conditions (temperature, rainfall, soils, etc.).
- May require ongoing irrigation and maintenance to establish vegetation.
- Incorrect revegetation methods may inhibit growth and may not be fully evident until after the growing season.
- Effectiveness can be greatly reduced if rills or gullies are allowed to form underneath blankets, or if hydromulch is subject to concentrated flows.
- Soil may require agronomic evaluation and/or amendment before revegetation can be successfully implemented or established.

**Performance and Longevity**

Performance	Poor	Good	Excellent
Erosion Prevention			x
Sediment Control		x	
Runoff Control	x		
Good Housekeeping	x		

Longevity	Temporary (must be removed)	Long term (may need maintenance)	Permanent	Re-useable
Revegetation		x		

**Design Criteria and Construction Specifications**

Design Criteria: Use LANL Master Specification 32 9219 for detailed guidance on seedbed preparation, applicable seed mixes, seeding operations, application rates, and mulch cover products. ([http://engstandards.lanl.gov/specs/32\\_9219R3.doc](http://engstandards.lanl.gov/specs/32_9219R3.doc))

- Seeding should be initiated as soon as practicable following completion of soil disturbing activities.
- Permanent seeding should be applied prior to seasonal rains or freezing weather.
- If soil is compacted, loosen soil with disking, raking or harrowing. Remove large clods and stones, or other foreign material that would interfere with seeding equipment and installation of erosion control blankets (ECB).
- If seeding requires harrowing, tracking, or furrowing, these activities shall be conducted horizontally across the face of the slope.
- Native species appropriate to site conditions should be used wherever possible.
- Seed shall be applied uniformly using calibrated broadcast spreaders, mechanical drills, or hydroseeders.
- Do not seed during windy weather, or when topsoil is dry, saturated or frozen.
- Apply slow-release organic fertilizers in accordance with manufacturer recommended rates.
- The application of mulch shall immediately follow seeding.
- Apply hydromulch and soil amendments in accordance with manufacturer's specifications.
- Select appropriate mulch material or erosion control blanket based on slope, required longevity, irrigation or non-irrigation, and site and soil conditions.
- If hydraulically applying mulch as part of the broadcast seeding process, use a 2-step process. Apply seed with a tracer. Once seed is applied, apply full complement of mulch. This will allow seed to be in good contact with soil surface and not suspended in the mulch matrix.
- Mix hydromulch slurry in a tank with an agitation system and spray, under pressure, uniformly over soil surface.
- Lay ECBs loosely and maintain direct contact with the soil. Do not place over protruding objects; rocks, bushes, etc.
- Install storm water diversion and conveyance controls as needed to divert concentrated flows away from seeded areas.

**Inspection  
and  
Maintenance**

**ECB and Hydromulch Usage Table**

	slopes steeper than 1:1	slopes flatter than 1:1	slopes flatter than 2:1	slopes flatter than 3:1	channels
Permanent blankets (TRM)	x	x	x	x	x
BFM, FGM hydromulch	x	x	x	x	
Wood fiber hydromulch, compost mulch			x	x	
Straw/coir ECBs			X	x	
Coir ECBs		x	X	X	

- Ensure seed and mulch is applied at the specified rate.
- Inspect seeded area for uniform application of seed and mulch.
- For hydromulch applications on slopes, inspect the mulch application from multiple directions (i.e., looking both up and down the slope) to ensure uniform application and no "shadowing" (absence of mulch on the back side of a furrow caused by spraying hydromulch from only one direction).
- Ensure ECBs are properly trenched, overlapped, and anchored. Check that rocks, sticks, or vegetation are not interfering with the blanket's contact with the ground.
- Ensure that ECBs have been placed such that they maintain contact with the ground surface.
- Inspect seeded area for evidence of erosion (rills, gullies).
- Check for erosion and undermining. Backfill and compact any rills. Install storm water diversion and conveyance controls as needed to divert concentrated flows away from seeded areas.
- Repair torn or windblown blankets.
- Inspect reseeded areas for uniform growth of vegetation. Check for areas for damage by vehicles or other equipment.
- Install storm water diversion and conveyance controls as needed to divert concentrated flows away from seeded areas.

**Visual Key for Proper Application (Flexterra-FGM shown)**



Proper Application: 3,000 lb/acre - 4.1 mm thick



Improper Application (thin)

**What not to do...**



Properly prepare seed bed and ensure mulch or blanketing is installed correctly in order to promote vegetation growth and control erosion.

## SEEDING

\*\*\*\*\*

### LANL MASTER SPECIFICATION

Word file at <http://engstandards.lanl.gov>

**This template must be edited for each project. In doing so, specifier must add job-specific requirements. Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer. Once the choice is made or text supplied, remove the brackets. The specifications must also be edited to delete specification requirements for processes, items, or designs that are not included in the project -- and specifier's notes such as these. To seek a variance from requirements in the specifications that are applicable, contact the Engineering Standards Manual Civil POC. Please contact POC with suggestions for improvement as well.**

**When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General requirements.**

**Specification developed for ML-4 projects. For ML-1, 2, and 3 applications, additional requirements and independent reviews should be added if increased confidence in procurement or execution is desired; see ESM Chapter 1 Section Z10 Specifications and Quality sections.**

**This specification is to be used for the establishment or reestablishment of vegetation. See ESM Civil Chapter 3, Section G2050, Landscaping and ESM Architectural Chapter 4, Section B-C\_GEN, G2050 for additional guidance.**

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Preparation of seedbed.
- B. Seeding.
- C. Mulching and erosion control blankets.
- D. Watering and maintenance.

##### 1.2 RELATED SECTIONS

- A. Section 01 5705, Temporary Controls and Compliance Requirements
- B. Section 31 2000, Earth Moving

##### 1.3 SUBMITTALS

- A. Submit the following in accordance with project submittal procedures:
  - 1. Catalog data, including sources of supply for amendments, mulch, tackifier, fertilizer and erosion control blankets.
  - 2. Certification substantiating that material complies with specified requirements. Submit certified seed bag tags and copies of seed invoices identified by project name.

3. Installation instructions, including proposed seeding schedule. Coordinate with specified maintenance periods to provide maintenance from date of final acceptance. Once schedule is accepted, revise dates only with LANL approval after documentation of delays.

#### 1.4 QUALITY ASSURANCE

##### A. Subcontractor Qualifications:

1. Perform work by a single firm experienced with the type and scale of work required and having equipment and personnel adequate to perform the work satisfactorily.

##### B. Material Quality Control:

1. Provide seed mixture in containers sealed and labeled by seed dealer. Container label shall show origin of seed and pure live seed (PLS) content, species and percentages in seed mix; lot number; test information including, purity, germination, percentage seed crop, percentage inert, percentage noxious/restricted weeds; net weight; test date; date of packaging; and location of packaging. The seed dealer may premix the seed, documentation shall be provided the same as if the seeds were sold or bagged separately. Seed analysis shall be no older than five months for seed shipped interstate, and no older than nine months for seed shipped intrastate.
2. Furnish seed labeled in accordance with the requirements of federal seed laws and New Mexico Department of Agriculture seed labeling laws. Such resulting requirements include but are not necessarily limited to: Federal Seed Act and Amendments, rules and regulations established by the United States Department of Agriculture; the New Mexico Seed Law; and all resulting regulations or restrictions established by New Mexico State University or other authorized entity.
3. In addition, ensure seed mix and its application comply with the requirements of all other federal and New Mexico statutes and regulations governing seeds, plants, and weeds. These requirements include but are not necessarily limited to: the Noxious Weed Control Act and all rules, regulations, or control measures by a noxious weed control district embracing Los Alamos County, New Mexico; and the Harmful Plant Act.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged materials in original sealed and labeled containers from seed dealer. Protect materials from deterioration during delivery and while stored at site. Opened or wet seed shall be rejected and returned to the responsible party.
- B. Temperature of the seed in storage shall not exceed the supplier's recommended maximum temperature.

### PART 2 PRODUCTS

#### 2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Comply with Section 01 2500, Substitution Procedures.

#### 2.2 SEED

- A. Obtain native grass seed from sources whose origin would ensure site adaptability at LANL. Plant sources from New Mexico or surrounding states are preferred.
- B. Obtain shrub and wildflower seed from sources whose origin would ensure site adaptability at LANL. Plant sources from New Mexico or surrounding states are preferred.

- C. Cover crops (e.g., annual barley, oats, winter rye, etc.) may be used only as a temporary stabilization measure and shall not be used in conjunction with a perennial seed mix or for final stabilization.
- D. Only sterile, non-invasive annual species such as Quickguard sterile triticale hybrid or Regreen shall be used with a perennial seed mix. A minimum 7 lbs per acre to a maximum 10 lbs per acre shall be applied with the perennial mix. This shall be done when a quick growth establishment is necessary.
- E. Develop seed mixture from the following guidelines. Choose a minimum of 5 grass species from the list. Should wildflowers be included in the mix, use a ratio of 80 – 90 percent grasses and 10- 20 percent wildflowers. Choose 3 –5 species from the forb and wildflowers list. These species are applicable for both undeveloped and urban-interface areas. All seeding operations must include fertilizer. The seed dealer may premix the seed.
1. Pre-mixed Sources:
    - a. Plants of the Southwest, "Dryland Blend"
    - b. Granite Seed, "CGRP Mix"
    - c. Curtis & Curtis Inc, "Homesteaders Choice Mix" or "Santa Fe Trail Mix"

#### NATIVE PERENNIAL MIX

Common Name	Scientific Name	% of Mix
<b>Grasses</b>		
Blue grama*	<i>Bouteloua gracilis</i>	5 – 10%
Galleta grass*	<i>Hilaria jamesii</i>	5- 10%
Mutton grass	<i>Poa fendleriana</i>	10-15%
Sideoats grama*	<i>Bouteloua curtipendula</i>	10-15%
Arizona fescue†	<i>Festuca arizonica</i>	10 – 15%
Prairie junegrass†	<i>Koeleria macrantha</i>	5 – 10%
Bottlebrush squirreltail*	<i>Elymus elymoides</i>	15 – 20%
Little bluestem†	<i>Schizachyrium scoparium</i>	10 – 15%
Indian ricegrass*	<i>Oryzopsis hymenoides</i>	10 – 15%
Mountain brome†	<i>Bromus marginatus</i>	10 – 15%
Sand dropseed*	<i>Sporobolus cryptandrus</i>	1 - 8%
Thickspike wheatgrass	<i>Agropyron dasystachyum</i>	20 – 25%
Needle and Thread grass*	<i>Stipa comata</i>	5 – 10%
New Mexico needlegrass*	<i>Stipa neomexicana</i>	10 - 15%
Sheep fescue	<i>Festuca ovina</i>	10 – 15%
Smooth Brome	<i>Bromus inermis</i>	15 – 20%
Stream Bank Wheatgrass	<i>Elymus lanceolatus ssp. psammophilus</i>	20 – 25%
<b>Forbs/ Wildflowers</b>		
Firewheel	<i>Gaillardia pulchella</i>	2%
Evening primrose	<i>Oenothera caespitosa</i>	1%
Gooseberry leaf globemallow	<i>Sphaeralcea grossulariaefolia</i>	1.5%

<i>Common Name</i>	<i>Scientific Name</i>	<i>% of Mix</i>
Scarlet gilia	<i>Ipomopsis aggregata</i>	1%
Plains aster	<i>Aster biglovii</i>	1%
Western yarrow	<i>Achillea millifolium</i>	½%
Fringed sage	<i>Artemisia frigida</i>	1%
Blue flax	<i>Linum perenne lewisii</i>	4%
Scarlet bulgler	<i>Penstemon barbatus</i>	2%
Palmer penstemon	<i>Penstemon palmerii</i>	2%
Prairie coneflower	<i>Ratibida columnifera</i>	1%
Showy golden-eye	<i>Heliomerus multiflora</i>	1%
Purple geranium	<i>Geranium caespitosum</i>	5%

\*Species particularly suited for especially dry sites

†Species particularly suited for higher elevations (above 7000 ft.)

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Choose one or more appropriate mulching methods to use in conjunction with seeding. Indicate where each stabilization method is to be used on the construction drawings. Delete methods not used from Specifications.

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### 2.3 STRAW MULCH

- A. Straw shall be stalks from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material. At least 65 percent of the herbage by weight of each bale of straw shall be 10 inches in length or longer. Rotted, brittle or molded straw is not acceptable. Straw from introduced grasses is acceptable if cut prior to seed formation.

### 2.4 HYDRAULIC MULCH/TACKIFIER

- A. Provide mulch material consisting of 100 percent virgin wood fibers manufactured expressly from whole wood chips, such as Eco-Fibre, Conwed, etc. Process chips in such a manner as to contain no growth or germination inhibiting factors. Do not produce fiber from recycled material such as sawdust, paper, cardboard, or residue from pulp and paper plants. Provide materials free from contaminants such as lead paint, varnish or other metal contaminants. Hydraulic mulch shall contain non-toxic dye to assist in visually determining even distribution. Mulch material shall meet the following specifications:

<b>5. <u>PARAMETER</u></b>	<b><u>VALUE</u></b>
pH at 3% consistency	4.5 +/- 0.5
Ash content	0.8% +/- 0.2%
Moisture holding capacity	1250 (grams water/100 grams oven dry fiber)
Moisture content	12% +/- 3% (Wet weight basis)

- B. Combine mulch with an organic plantago based tackifier, such as M-binder, etc., that has no growth or germination inhibiting factors and is nontoxic. Apply the uniform mixture to the seeded area.

- C. Bagged mulch/tackifier mix that is homogenous within the unit package may also be used. Tackifier shall adhere to the fibers during manufacturing to prevent separation during shipment and to avoid chemical agglomeration during mixing in the hydraulic mulching equipment.

2.5 BONDED FIBER MATRIX

- A. Provide Bonded Fiber Matrix (BFM) composed of natural color, long strand wood fiber, produced by therm-mechanical defibration of wood chips and joined together by a high strength non-toxic adhesive, such as Eco-Ageis, etc. The product shall be composed of 90 percent wood fiber, 9 percent blended hydrocolloid-based binder, and 1 percent mineral activators, all by total weight. The BFM shall be 100 percent biodegradable and non-toxic to fish and wildlife, and it shall not contain any synthetic fibers.

2.6 FLEXIBLE GROWTH AND FLEXIBLE CONTROL MEDIUMS

- A. Provide Flexible Growth Medium (FGM) such as Flexterra™/CocoFlex ET™ or a Flexible Control Medium (FCM) such as EcoFlex™ composed of longstrand, thermally processed wood fibers, crimped, interlocking fibers and performance enhancing additives. The FGM or FCM requires no curing period and upon application forms an intimate bond with the soil surface to create a continuous, porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth.
- B. The FGM or FCM™ shall be hydraulically applied to the soil as a viscous mixture, creating a continuous three-dimensional blanket that adheres to the soil surface. Upon drying, the matrix shall form a high-strength, porous and erosion-resistant mat that shall not inhibit the germination and growth of plants in and beneath the layer. The matrix shall retain its form despite re-wetting. The FCM™ shall be 100% biodegradable over time, non-toxic to fish and wildlife, and it shall not contain any non-photo-degradable synthetic fibers.

2.7 ROLLED EROSION CONTROL PRODUCTS

- A. For all non-channel applications provide the following:

- 1. Slopes less than 2:1:

Straw/ coir blend blankets	A machine produced straw /coir fiber erosion control blanket using 70 percent straw /30 percent coir fibers sewn into a heavy weight photo degradable top net and a medium weight photo degradable bottom net. Minimum weight of blanket 0.7 lbs/square yard, such as Greenfix America CFS072R, etc.
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- 2. Slopes 2:1 and greater:

Permanent turf reinforcement mat	A machine-produced mat of 100% UV stable polypropylene fiber. The matting shall be of consistent thickness with synthetic fibers evenly distributed over the entire area of the mat. The matting shall be covered on the top with black heavyweight UV stabilized polypropylene netting having ultraviolet additives to prevent breakdown and an approximate 0.50 x 0.50 inch (1.27 x 1.27 cm) mesh size. The bottom net shall also be UV stabilized polypropylene, with a 0.625 x 0.625 inch (1.57 x 1.57 cm) mesh size. The matting shall be sewn together on 1.50 inch (3.81 cm) centers with UV stabilized polypropylene thread, such as North American Green P300 or Greenfix America CFG 2000
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B. For all channel applications provide the following:

1. For channels subject to flow producing an unvegetated shear stress of 3 lbs/ft<sup>2</sup> or less and a vegetated shear stress of 8 lbs/ft<sup>2</sup> or less:

Permanent composite turf reinforcement mat (C-TRM)	A machine-produced composite turf reinforcement mat comprised of a 100% UV stabilized polypropylene fiber matrix incorporated into a permanent three-dimensional turf reinforcement matting. The matting shall be of consistent thickness with synthetic fibers evenly distributed over the entire area of the mat. The matting shall be covered on the top with black heavyweight UV stabilized polypropylene netting having ultraviolet additives to prevent breakdown and an approximate 0.50 x 0.50 inch (1.27 x 1.27 cm) mesh size. The bottom net shall also be UV stabilized polypropylene, with a 0.625 x 0.625 inch (1.57 x 1.57 cm) mesh size. The matting shall be sewn together on 1.50 inch (3.81 cm) centers with UV stabilized polypropylene thread. to form a permanent three-dimensional turf reinforcement matting, such as North American Green P300.
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2. For channels subject to flow producing an unvegetated shear stress of 4 lbs/ft<sup>2</sup> or greater and a vegetated shear stress of 12 lbs/ft<sup>2</sup> or less:

<p>Permanent composite turf reinforcement mat (C-TRM)</p>	<p>A machine-produced composite turf reinforcement mat comprised of a 100% coconut fiber matrix or a 100% polypropylene fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded between a super heavy duty UV stabilized bottom net with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, an ultra-heavy duty UV stabilized, dramatically corrugated (crimped) intermediate netting with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, and covered by a super heavy duty UV stabilized top net with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings. The corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 inch (3.81 cm) centers with UV stabilized polypropylene thread to form a permanent three dimensional turf reinforcement matting, such as North American Green C350 or P550.</p>
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- C. Staples: U-shaped, 11 gauge or heavier steel wire, minimum leg length of 6 inches after bending, with a throat approximately 2 inches wide.

2.8 AMENDMENTS / SOIL ADDITIONS

- A. Fertilizer: Apply slow-release organic fertilizers such as Biosol Mix, Biosol, Gro-Power, Osmocote, or approved equal to minimize deficiencies of the topsoil. Micronizing fertilizer is acceptable for use in the spring and summer months. All seeding operations must include fertilizer.
- B. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth.
- C. Sand: Clean, washed, and free of toxic materials.

PART 3 EXECUTION

3.1 PREPARATION

- A. Preparation of the Seedbed:
  1. Prepare seedbed to a maximum depth of 4 inches by tilling with a disc, harrow or chiseling tool. Uproot all competitive vegetation during seedbed preparation and work soil uniformly, leaving surface rough to reduce surface erosion and to retain water runoff. Remove large clods and stones, or other foreign material that would interfere with seeding equipment and erosion control blankets.
  2. Perform tillage across slope and along the contour adequately break up soil. Do not till up and down slopes, as this will create excessive surface erosion problems.
  3. Do not do work when moisture content of soil is unfavorable or ground is otherwise in a non-tillable condition.
  4. To minimize dust problems for adjoining areas, when wind speeds are over 10 mph, dust control measures shall be implemented.
  5. The extent of seedbed preparation shall not exceed the area on which the entire seeding operation can be accomplished within a one week period.
- B. Soil Amendments/Additions: Uniformly apply slow release organic fertilizer to prepared seedbed in accordance with manufacturer recommended rates.

- C. Prepare seedbed again if prior to seeding rain or some other factor has affected the prepared surfaces and will prevent seeding to the proper depth.
- D. If cover crop has been established in area to be seeded, mow cover crop early in growing season before cover crop is ready to drop seeds.

### 3.2 APPLICATION OF SEED

#### A. General:

1. Avoid seeding between October 1 and April 15. Provide for temporary soil stabilization measures between these dates. Do not seed during windy weather, or when topsoil is dry, saturated or frozen.
2. Equip seed boxes used for drill and broadcast seeding with an agitator.
3. To prevent stratification of seed mix, do not run seed box agitators while seeding is not being performed.
4. If seed mix is transported to site in a seed box or other equipment that subjects mix to shaking or similar movement that has the potential to cause stratification, remix seed prior to application.
5. Seeding equipment shall be calibrated as appropriate to distribute seed at the specified rates.
6. Unless otherwise shown on Drawings, seed areas disturbed by or denuded by construction operations or erosion.
7. Use markers to ensure that no gaps will exist between passes of seeding equipment.
8. If cover crop has been established, mow the crop and drill seed perennial seed mix into the crop stubble.

#### B. Drill Seeding:

When drill seeding, plant seed mix at a rate of 30 - 35 PLS lbs/acre. Uniformly apply prescribed mix over area to be seeded as follows:

1. Accomplish seeding operations, where practical, by drilling in a direction across slope and along the contour.
2. Plant seeds approximately 1/4 inch deep.
3. Do not exceed 4 inches distance between drilled furrows. If furrow openers on drill exceed 4 inches, drill area twice to obtain a 4-inch distance between furrows.
4. Seed with grass wheels, rate control attachments, seed boxes with agitators, and separate boxes for small seed.
5. Once seed is applied, apply full complement of mulch. This shall allow seed to be in good contact with soil surface and not suspended in mulch matrix.
6. Prohibit vehicles from traveling over the seeded areas.

#### C. Broadcast Seeding:

When broadcast seeding, plant seed mix at a rate of 32 - 37 PLS lbs/acre.

1. Where it is not practical to accomplish seeding by drilling, mechanically broadcast seed by use of a hydraulic mulch slurry blower, rotary spreader, or a seeder box with a gear feed mechanism. If seeding is done with a slurry blower, use highest pressure and smallest nozzle opening that will accommodate the seed.

2. Immediately following seeding operation, thoroughly rake seedbed to provide approximately 1/4 inch of soil cover over of the seed.
3. If hydraulically applying mulch as part of the broadcast seeding process, use a 2-step process. Apply seed with a tracer. Once seed is applied, apply full complement of mulch. This shall allow seed to be in good contact with soil surface and not suspended in mulch matrix.
4. Prohibit vehicles from traveling over the seeded areas.

**3.3 STRAW MULCH: Slopes Flatter than 3:1, Non-Irrigated Projects**

- A. Apply straw mulch at a minimum rate of 1.5 tons per acre of air-dry material. Spread straw mulch uniformly over area either by hand or with a mechanical mulch spreader to achieve 80 percent ground cover. When spread by hand, tear bales of straw apart and fluff before spreading. Depth of applied straw mulch shall not exceed 3 inches. Do not mulch when wind velocity exceeds 10 mph.
- B. Straw mulch shall only be used where use of crimping equipment is practical. Place mulch in manner noted above and anchor the straw into the soil to a minimum depth of 2 inches and not to exceed 3 inches. Use a crimper or heavy disc such as a mulch tiller, with flat serrated discs at least 1/4 inch in thickness, having dull edges, and spaced no more than 9 inches apart. Provide discs of sufficient diameter to prevent frame of equipment from dragging the mulch. Where practical, perform crimping in 2 (opposite) directions. Do not use Sheep's Foot Rollers, heavy equipment tracks, and standard disc cultivators for crimping.
- C. If straw mulched areas cannot be anchored by crimping, use hydraulic mulch wood fibers with tackifier. Mix slurry in a tank with an agitation system and spray under pressure uniformly over the soil surface. Keep all materials in uniform suspension throughout the mixing and suspension cycle when using hydraulic mulching equipment. Mix 100 lb. of wood fiber with a minimum 150 lbs. to 200 lbs of tackifier to anchor straw mulch. Apply mixture at a rate of 250 - 300 lbs/acre.
- D. Use both horizontal and vertical movements in the applicator to achieve an even application of the slurry material.

**3.4 HYDRAULIC MULCHING/TACKIFIER: Slopes Flatter than 2:1, Irrigated Projects**

- A. Mix slurry in a tank with an agitation system and spray, under pressure, uniformly over soil surface. Apply mulch evenly across landscape at a rate of 2000 lbs/ acre.
- B. Use both horizontal and vertical movements in applicator to achieve an even application of slurry material. Keep all materials in uniform suspension throughout mixing and suspension cycle when using hydraulic mulching equipment.
- C. When using plantago based tackifier as mulch, apply tackifier at a rate of 150 lbs/acre.
- D. Prohibit foot/vehicle traffic from hydraulically mulched areas.

**3.5 BONDED FIBER MATRIX (BFM): Slopes 2:1 and Steeper, Irrigated and Non-Irrigated Projects**

- A. Hydraulically apply BFM over seeded area (or apply seed with a tracer amount, 200-300 lbs/ acre) in accordance with manufacturer's specified procedures. Hydraulically apply BFM as a viscous mixture to form a continuous, porous and erosion resistant mat. Upon drying, matrix shall not inhibit germination and growth of plants in and beneath the layer. Matrix shall retain its form despite re-wetting.
- B. Apply matrix uniformly across area and apply in multiple directions to ensure a 100 percent soil surface coverage.

- C. Apply at a rate of approximately 3,500-lbs/ acre in a manner that achieves uniform coverage of all exposed soils.
- D. Prohibit vehicle traffic on hydraulic BFM applications.

3.6 FLEXIBLE GROWTH MEDIUM (FGM) AND FLEXIBLE CONTROL MEDIUM (FCM): SLOPES 3:1 AND STEEPER, IRRIGATED AND NON-IRRIGATED PROJECTS

- A. For maximum performance, apply FGM or FCM in a two-step process:
  1. Step One: Mix and apply seed and soil amendments with small amount of FGM for visual metering.
  2. Step Two: Mix and apply FGM at a rate of 50 lb per 125 gallons (23 kg/475 liters) of water over freshly seeded surfaces. Confirm loading rates with equipment manufacturer. Do not leave seeded surfaces unprotected, especially if precipitation is imminent.

B. Mixing:

A mechanically agitated hydraulic-application machine is recommended:

1. Fill tank to middle of agitator shaft or tank about 1/3 full of water. Turn on pump to wet or purge lines. Begin agitating. Keep adding water slowly while adding the FGM at a steady rate.
2. Consult application and loading charts to determine number of bags to be added. Mix at a rate of 50 lbs of FGM per 125 gallons (23kg/475 liters). Contact equipment manufacturer to confirm optimum FGM mixing rates.
3. All FGM should be loaded when the tank is approximately 3/4 full.
4. Fertilizer should be added once the tank is nearly full.
5. Before applying, mix the slurry for at least 10 minutes after adding the last amount of FGM. This is very important to fully activate the bonding additives and to attain proper viscosity.
6. Turn off re-circulation valve to minimize potential for air entrainment within the slurry.

C. Application:

Use a fan-type nozzle (50-degree tip) whenever possible for best soil surface coverage. Apply FGM from opposing directions to soil surface, reducing the "shadow effect" and assuring a minimum of 95% of soil surface coverage. Slope interruption devices or water diversion techniques are recommended when slope lengths exceed 100 feet (30 m). Install materials at the following minimum application rates:

CONDITION ENGLISH SI

≤ 3H to 1V .....	3000 lb/ac.....	3400 kg/ha
>3H to 1V and ≤ 2H to 1V .....	3500 lb/ac .....	3900 kg/ha
>2H to 1V and ≤ 1H to 1V .....	4000 lb/ac .....	4500 kg/ha
>1H to 1V .....	4500 lb/ac .....	5100 kg/ha
Below ECB or TRM .....	1500 lb/ac .....	1700 kg/ha
As infill for TRM .....	3500 lb/ac .....	3900 kg/ha

**Material should not be applied in channels, swales or other areas where concentrated flows are anticipated, unless installed in conjunction with a temporary erosion control blanket or non-degradable turf reinforcement mat. After application, thoroughly flush the tank, pumps and hoses to**

**remove all FGM material. Wash all material from the exterior of the machine and remove any slurry spills. FGM will be more difficult to remove once it dries.**

3.7 EROSION CONTROL BLANKET: SLOPES 2:1 AND FLATTER, IRRIGATED AND NON-IRRIGATED PROJECTS

- A. Place blankets over native grass seeding immediately following the raking/chaining operation.
- B. When using single netted products for 3:1 or flatter slopes, place blanket with netting on top and the wood/ straw fibers in contact with soil over entire seeded area.
- C. For slope installations, the following guidelines shall be used:

Upslope Anchor – utilize one of the methods detailed below for initial anchoring of Rolled Erosion Control Products (RECP):

- 1. Staples: Install the RECP 3 ft. (900 mm) beyond the shoulder of the slope onto flat final grade. Secure roll end with a single row of stakes/staples on 1 ft. (300-mm) centers.
- 2. Anchor trench: Excavate a 6 in. by 6 in. (150 mm by 150 mm) anchor trench. Extend the upslope terminal end of the RECP 3 ft. (900 mm) past the anchor trench. Use stakes or staples to fasten the product into the bottom of the anchor trench on 1 ft. (300 mm) centers. Backfill the trench and compact the soil into the anchor trench.
- 3. Unroll blanket downslope in direction of water flow.
- 4. Overlap edges of adjacent parallel rolls 2 to 4 inches and staple every 3 feet.
- 5. When blankets are spliced, place blankets end over end (shingle style) with 6-inch overlap. Staple through overlapped area, approximately 12 inches apart.
- 6. Lay blankets loosely and maintain direct contact with soil. Do not place over protruding objects; rocks, grass, etc.
- 7. Wire staple blankets sufficiently to anchor blanket and maintain blanket contact with soil per manufacturer's instructions.

**Seams** – utilize one of the methods detailed below for seaming of RECP:

- 1. Adjacent seams: Overlap edges of adjacent RECP by 2 to 4 in. (50 to 100 mm) or by abutting products as defined by manufacturer. Use a sufficient number of stakes or staples to prevent seam or abutted rolls from separating.
- 2. Consecutive rolls: Shingle and overlap consecutive rolls 2 to 6 in. (50 to 150 mm) in the direction of flow. Secure staples through seam at 1 ft. (300 mm) intervals.
- 3. Check seam. Construct a stake/staple check seam along the top edge of RECP for slope application and at specified intervals in a channel by installing two staggered rows of stakes/staples 4 in. (100 mm) apart on 4 in. (100 mm) centers.
- 4. Slope interruption check slot: Excavate a trench measuring 6 in. wide by 6 in. deep (150 x 150 mm). Secure product to the bottom of the trench. Fold product over upslope material and fill and compact the trench on the downslope side of check slot and seed fill. Continue rolling material downslope over trench.

**Terminal Ends** – utilize one of the methods detailed below for all terminal ends of RECPs:

1. Staples: Install the RECP 3 ft. (900 mm) beyond the end of the channel and secure end with a single row of stakes/staples on 1 ft. (300-mm) centers. Stakes/staples for securing RECP to the soil is typically 6 in. (150 mm) long.
  2. Anchor trench: Excavate a 6 in. by 6 in. (150 mm by 150 mm) anchor trench. Extend the terminal end of the RECP 3 ft. (900 mm) past the anchor trench. Use stakes or staples to fasten the product into the bottom of the anchor trench on 1 ft. (300 mm) centers. Backfill the trench and compact the soil into the anchor trench. Apply seed and any necessary soil amendments to the compacted soil and cover with remaining 1 ft. (300 mm) terminal end of the RECP. Secure terminal end of RECP with a single row of stakes or staples on 1 ft. (300 mm) centers.
- D. Check slot: Construct a stake/staple check slot along the terminal end of the RECP by installing two rows of staggered stakes/staples 4 in. (100 mm) apart on 4 in. (100 mm) centers.
- E. Do not use blankets on undisturbed, natural tuff slopes. Use hydraulic mulching on tuff slopes.

### 3.8 WATERING

- A. Where temporary watering is required for seeded areas, provide temporary water system which may be a sprinkler system, or a water truck with a spray boom or any other method satisfactory to distribute a uniform coverage of clean water (free of oil, acid, salt or other substances harmful to plants) to previously seeded and mulched areas.
- B. If a temporary sprinkler system is used, keep all pipe connections tight to avoid leakage and loss of water, and to prevent washing or erosion of growing areas. Maintain sprinklers in proper working order during watering.
- C. Do not drive trucks with spray systems on seeded areas and ensure water force does not cause movement of mulch or seed on the ground.

### 3.9 MAINTENANCE

- A. Begin maintenance immediately after planting. Keep re-vegetated areas free of noxious weeds.
- B. Maintain seeded areas for not less than 60 days after final acceptance of work and longer as required to achieve final stabilization as described in Section 3.11 ACCEPTANCE.
- C. Reseed void areas greater than 6 square feet or repetitive voids greater than 2 square feet amounting to more than 10 percent of any area that appears the growing season following installation.

### 3.10 CLEANUP AND PROTECTION

- A. After completion of work, clear site of excess soil, waste material, debris and objects that may hinder maintenance and detract from neat appearance of site.
- B. Protect seeded areas, work and materials from damage due to vehicles, pedestrians, and operations by other subcontractors. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged work as directed.
- C. Upon completion of all seeding operations, clean the portion of the project site used for storing materials and equipment of all debris. Remove all superfluous materials and equipment from the project site. Sweep walks and pavement clean upon completion of work in this section.

3.11 ACCEPTANCE

- A. Seeded areas will be reviewed for acceptance by LANL when final stabilization has been achieved. Final stabilization is defined as "All soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed." Stabilization shall be in conformance with the Storm Water Pollution Prevention Plan (SWPPP), as applicable.
- B. In the event that all other work required by the Subcontract is completed before final stabilization is achieved or because seasonal limitations prevent seeding, partial acceptance of the work shall be made with final acceptance delayed until satisfactory vegetative growth has been established.

END OF SECTION

\*\*\*\*\*

**Do not delete the following reference information:**

\*\*\*\*\*

FOR LANL USE ONLY

**This project specification is based on LANL Master Specification 32 9219 Rev. 3, dated December 23, 2009.**





[http://www.epa.gov/npdes/pubs/cgp2012\\_finalpermit.pdf](http://www.epa.gov/npdes/pubs/cgp2012_finalpermit.pdf)

**APPENDIX E:**  
**Permit Regulations, NOI, Delegation of Authority Letter,**  
**EPA Acknowledgement**



Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section II of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section I of this form. Submission of this NOI also constitutes notice that the operator identified in Section II of this form meets the eligibility requirements of Parts 1.1 and 1.2 of the CGP for the project identified in Section III of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in Part 8 of the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form.

**I. Approval to Use Paper NOI Form**Have you been given approval from the Regional Office to use this paper NOI form\*?  Yes  NO

If yes, provide the reason you need to use this paper form, the name of the EPA Regional Office staff person who approved your use of this form, and the date of approval:

Reason for using paper form:

Name of EPA staff person:

Date approval obtained:

**\* Note: You are required to obtain approval from the applicable Regional Office prior to using this paper NOI form.****II. Permit Information:****Tracking Number (EPA Use Only) NMR12B657**Permit Number: NMR120000

(see Appendix B of the CGP for the list of eligible permit numbers)

**III. Operator Information**Name: LOS ALAMOS NATIONAL SECURITYPhone: (505) 667-2397

Fax (Optional):

E-mail: tleemke@lanl.govIRS Employer Identification Number (EIN): 20-3104541Point of Contact (First Name, Middle Initial, Last Name): TERRILL LEMKE

Mailing Address:

Street: PO BOX 1663 MS K490City: LOS ALAMOSState: NMZip: 87545**NOI Preparer (Complete if NOI was prepared by someone other than the certifier):**Prepared by (First Name, Middle Initial, Last Name): Tim ZimmerlyOrganization: LOS ALAMOS NATIONAL LABORATORYPhone: (505) 664-0105

Fax (Optional):

E-mail: tzimmer@lanl.gov

**IV. Project/Site Information**

Project/Site Name: SIMR 2 Well Pad Construction

Project/Site Address:

Street/Location:

City: LOS ALAMOS

State: NM

Zip: 87545

County or similar government subdivision: Los Alamos

**For the project/site for which you are seeking permit coverage, provide the following information:**

Latitude/Longitude (Use one of three possible formats, and specify method)

Latitude 1. 35.51.13 N(degrees, minutes, seconds) Longitude 1. 106.15.07 W(degrees, minutes, seconds)  
 2. \_\_\_\_\_ N(degrees, minutes, decimal) 2. \_\_\_\_\_ W(degrees, minutes, decimal)  
 3. \_\_\_\_\_ N(degrees, decimals) 3. \_\_\_\_\_ W(degrees, decimals)

Latitude/Longitude Data Source:  U.S.G.S topographical map  EPA Web Site  GPS  Other: GOOGLE EARTH

If you used a U.S.G.S. topographic map, what was the scale?

Horizontal Reference Datum:  NAD 27  NAD 83 or WGS 84  Unknown

Is your project located in Indian Country lands?  Yes  No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: Pueblo de San Ildefonso Lands

Are you requesting coverage under this NOI as a "federal operator" as defined in Appendix A?  Yes  No

Estimated Project Start Date: 05/26/2015 Estimated Project Completion Date: 09/20/2016

Estimated Area to be Disturbed (to the nearest quarter acre): 1.0

Have earth-disturbing activities commenced on your project/site?  Yes  No

If yes, is your project an emergency-related project?  Yes  No

Have stormwater discharges from your project/site been covered previously under an NPDES permit?  Yes  No

If yes, provide the Tracking Number if you had coverage under EPA's CGP or the NPDES permit number if you had coverage under an EPA individual permit:

**V. Discharge Information**

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?  Yes  No

Are there any surface waters within 50 feet of your project's earth disturbances?  Yes  No

**Receiving Waters and Wetlands Information: (Attach a separate list if necessary)**

Surface water(s) to which discharge	Impaired Water	Listed Water Pollutant(s)	Tier 2, 2.5 or 3	Source	TMDL Name and Pollutant
TRIBUTARY to MORTANDAD CANYON	Yes	METALS (OTHER THAN MERCURY) RADIATION	Yes	STATE OF NEW MEXICO CLEAN WATER ACT 303(d)/305(b) INTEGRATED REPORT 11/18/2014	

Describe the methods you used to complete the above table: Please refer to the Source(s) in the above table.

**VI. Chemical Treatment Information**

Will you use polymers, flocculants, or other treatment chemicals at your construction site?  Yes  No

If yes, will you use cationic treatment chemicals\* at your construction site?  Yes  No

If yes, have you been authorized to use cationic treatment chemicals by your applicable EPA Regional Office in advance of filing your NOI\*?  Yes  No

If you have been authorized to use cationic treatment chemicals by your applicable EPA Regional Office, attach a copy of your authorization letter and include documentation of the appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

Please indicate the treatment chemicals that you will use:

\* Note: You are ineligible for coverage under this permit unless you notify your applicable EPA Regional Office in advance and the EPA office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

### VII. Stormwater Pollution Prevention Plan (SWPPP) Information

Has the SWPPP been prepared in advance of filing this NOI?  Yes  No

#### SWPPP Contact Information:

First Name, Middle Initial, Last Name: TERRILL LEMKE

Organization: LOS ALAMOS NATIONAL SECURITY

Phone: (505) 665-2397

Fax (Optional):

E-mail: tlemke@lanl.gov

### VIII. Endangered Species Protection

Using the instructions in Appendix D of the CGP, under which criterion listed in Appendix D are you eligible for coverage under this permit (only check 1 box)?

A  B  C  D  E  F

Provide a brief summary of the basis for criterion selection listed in Appendix D (e.g., communication with U.S. Fish and Wildlife Service or National Marine Fisheries Service, specific study): Communication with U.S. Fish and Wildlife Service

If you select criterion B, provide the Tracking Number from the other operator's notification of authorization under this permit:

If you select criterion C, you must attach a copy of your site map (see Part 7.2.6 of the permit), and you must answer the following questions:

What federally-listed species or federally-designated critical habitat are located in your "action area":

What is the distance between your site and the listed species or critical habitat (miles):

If you select criterion D, E, or F, attach copies of any letters or other communications between you and the U.S. Fish and Wildlife Service or National Marine Fisheries Service.

### IX. Historic Preservation

Is your project/site located on a property of religious or cultural significance to an Indian tribe?  Yes  No

If yes, provide the name of the Indian tribe associated with the property: , Pueblo de San Ildefonso Lands

Are you installing any stormwater controls as described in Appendix E that require subsurface earth disturbance? (Appendix E, Step 1)  Yes  No

If yes, have prior surveys or evaluations conducted on the site have already determined historic properties do not exist, or that prior disturbances have precluded the existence of historic properties? (Appendix E, Step 2)  Yes  No

If no, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? (Appendix E, Step 3)  Yes  No

If no, did the SHPO, THPO, or other tribal representative (whichever applies) respond to you within the 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? (Appendix E, Step 4)  Yes  No

If yes, describe the nature of their response:

<input type="checkbox"/>	Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
<input type="checkbox"/>	No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.
<input type="checkbox"/>	Other: _____

**X. Certification Information**

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.

First Name, Middle Initial, Last Name: ALISON M DORRIES

Title: DIVISION LEADER

Signature:

Date: Monday, May 11, 2015

E-mail: adorries@lanl.gov

Company: LOS ALAMOS NATIONAL SECURITY  
ATTN: TERRILL LEMKE  
PO BOX 1663 MS K490  
LOS ALAMOS NM 87545

Project/Site: SIMR 2 Well Pad Construction  
MORTANDAD CANYON  
LOS ALAMOS NM 87545

Permit Tracking Number: NMR12B657

This email acknowledges that a complete Notice of Intent (NOI) form seeking coverage under EPA's Construction General Permit (CGP) is now active. Your NOI was completed and submitted on Monday, May 11, 2015. Coverage under this permit began at the conclusion of your 14 day waiting period on Monday, May 25, 2015, unless otherwise notified by EPA.

For tracking purposes, the following number has been assigned to your NOI form: NMR12B657. Attached to this email, you will find an electronic copy of your completed NOI which should be posted at your site.

As stated above, this email acknowledges receipt of a complete NOI. However, it is not an EPA determination of the validity of the information you provided. Your eligibility for coverage under this permit is based on the validity of the certification you provided. Your electronic signature on this form certifies that you have read, understood, and are implementing all of the applicable requirements. An important aspect of this certification requires that you have correctly determined whether you are eligible for coverage under this permit.

As you know, the CGP requires you to have developed a Stormwater Pollution Prevention Plan (SWPPP) prior to submitting your NOI. The CGP also includes specific requirements for erosion and sediment control, stabilization, pollution prevention, inspections, corrective actions, and staff training. You must also comply with any additional location-specific requirements applicable to your state or tribal area as described in the CGP. Note that a copy of the CGP must be kept with your SWPPP. An electronic copy of the CGP and additional guidance materials can be viewed and downloaded at: <http://www.epa.gov/npdes/stormwater>

You have indicated in your NOI that you discharge to at least one surface water that is listed as impaired by the state or tribe in which your project is located. If your site discharges to one or more surface waters that are impaired for sediment or a sediment-related parameter (e.g., total suspended solids or turbidity) or nutrients (e.g., nitrogen or phosphorus), you are required to comply with additional stormwater control requirements pertaining to site inspections in Part 4.1.3 and the deadline to complete site stabilization in Part 2.2.1.3.c. If your site discharges to surface waters that are impaired for pollutants other than a sediment or nutrients, or related pollutants, you are only subject to additional requirements if EPA informs you separately of such requirements.

If you have general questions regarding the stormwater program or your responsibilities under the CGP, please call your region contact. Regional contact email and phone number can be found at: <http://cfpub.epa.gov/npdes/contacts.cfm>

If you have questions about your NOI form, please call the EPA NOI Processing Center at 1-866-352-7755 (toll free) or send an inquiry via the online form at:  
<http://cfpub.epa.gov/npdes/noicontact.cfm>

If you have difficulty accessing CDX, please contact the CDX Help Desk at: (888) 890-1995.

You can return to the eNOI system using the following link at any time  
<https://cdx.epa.gov/SSL/cdx/login.asp>.

EPA NOI Processing Center  
Operated by Avanti Corporation  
1200 Pennsylvania Ave., NW  
Mail Code: 4203M  
Washington, DC 20460  
1-866-352-7755



***Associate Director for ESH***

ADESH

P. O. Box 1663, MS K491

Los Alamos, New Mexico 87545

505-667-4218/Fax 505-665-3811

*Date:* **AUG 14 2013**

*Symbol:* ADESH-13-041

LAUR: 13-25954

Mr. Ron Curry, Regional Administrator  
U.S. Environmental Protection Agency, Region 6  
1445 Ross Avenue, Suite 1200  
Mail Code: 6RA  
Dallas, TX 75202-2733

Dear Mr. Curry:

**SUBJECT: NOTIFICATION OF LOS ALAMOS NATIONAL SECURITY, LLC SIGNATORY OFFICIAL AND AUTHORIZED REPRESENTATIVES FOR NPDES STORMWATER GENERAL PERMITS AND LANL INDUSTRIAL POINT SOURCE OUTFALL PERMIT (NPDES PERMIT NO. NM0028355)**

The purpose of this letter is to provide an update to the Environmental Protection Agency (EPA) Region 6 on the signatory authority for the operator of Los Alamos National Laboratory (LANL) NPDES permits. Los Alamos National Security, LLC (LANS) has been the Laboratory's management and operation contractor since June 1, 2006 and is also a co-permittee with the Department of Energy under the LANL Industrial Point Source Outfall Permit (NPDES Permit No. NM0028355).

The positions of Associate Director of Environmental, Safety, and Health (ADESH), Deputy Associate Director, and Division Leader of the Environmental Protection Division (ENV-DO) are hereby identified as LANS's primary signatory officials under 40 CFR 122.22(a) for certifying and signing permit applications and reports required under the LANL Industrial Point Source Outfall Permit (NPDES Permit No. NM0028355) and the NPDES Stormwater Construction and Multi-Sector General Permits.

The following positions are hereby designated as authorized representatives under 40 CFR 122.22(b) to sign reports, Storm Water Pollution Prevention Plans, and any other compliance documentation required by the permits:

**Construction General Permit:**

- Group Leader of the Laboratory's Environmental Compliance Programs Group.
- Cognizant Project Manager, Project or Field Engineer, or Subcontractor Technical Representative for the regulated construction activity.

- Responsible Facility Operations Director (FOD), Deputy FOD, or Operations Manager responsible for the overall operation of the regulated facility or construction activity.

**Multi-Sector General Permit (No. NMR05GB21) & Industrial Point Source Outfall Permit (No. NM0028355):**

- Group Leader of the Laboratory's Environmental Compliance Programs Group.
- Division Leader, Deputy Division Leader, or Group Leader of the LANL division responsible for the overall operation of the regulated facility or activity.
- Responsible FOD, Deputy FOD or Operations Manager responsible for the overall operation of the regulated facility or activity.
- Group Leader in the ESH Deployed Services Division assigned to the regulated facility.

This letter supersedes and replaces the signatory authority letter dated March 2, 2009 (See Enclosure 1) with respect to the LANL Industrial Point Source Outfall Permit, the Construction General Permit, and the Multi-Sector General Permit, and is submitted to notify the EPA of the current authorized representatives pursuant to 40 CFR 122.22(c).

Please contact Alison M. Dorries, Division Leader for the Environmental Protection Division, at (505) 665-6592, if you have questions.

Sincerely,



Michael T. Brandt, DrPH, CIH  
Associate Director  
Environment, Safety & Health

MTB:AMD:MTS/lm

Enclosure:

1. Delegation of "Authorized Representative" for the Clean Water Act (CWA) and NPDES Storm Water Permits and Industrial Outfall Permit by Los Alamos National Security, LLC (LANS) Memo

CY: Diana McDonald, USEPA, Region 6, Dallas, TX  
Isaac Chen, USEPA, Region 6, Dallas, TX  
Jan Walker, USEPA, Region 6, Dallas, TX  
Brent E. Larsen, USEPA, Region 6, Dallas, TX  
Bruce Yurdin, NMED/SWQB, Santa Fe, NM  
Gene Tuner, NA-OO-LA, (E-File)  
David Sosinski, LC-DO, (E-File)  
Carl A. Beard, PADOPS, A102  
Alison M. Dorries, ENV-DO, (E-File)

Cy (continued):

Anthony R. Grieggs, ENV-CP, (E-File)  
Michael T. Saladen, ENV-CP, (E-File)  
Terrill W. Lemke, ENV-CP, (E-File)  
Deborah K. Woitte, LC-LESH, (E-File)  
Brett S. Henrikson, LC-LESH, (E-File)  
Alexander W. Purdue, LC-BL, (E-File)  
[LASOmailbox@mnsa.doe.gov](mailto:LASOmailbox@mnsa.doe.gov), (E-File)  
[locatesteam@lanl.gov](mailto:locatesteam@lanl.gov), (E-File)  
ADESH Correspondence File, (E-File)  
ENV-CP Correspondence, File, K490

# **ENCLOSURE 1**

**Delegation of “Authorized Representative” for the Clean  
Water Act (CWA) and NPDES Storm Water Permits and  
Industrial Outfall Permit by Los Alamos National Security,  
LLC (LANS) Memo**

**ADESH-13-041**

**LAUR-13-25954**

**Date:**           **AUG 14 2013**



Associate Directorate for ESH&Q  
P.O. Box 1663, Mail Stop K491  
Los Alamos, New Mexico 87545  
(505) 667-4218/Fax: (505) 665-3811

Date: March 2, 2009  
Refer To: ESH&Q-09-009

Mr. Lawrence E. Starfield, Regional Administrator  
U.S. Environmental Protection Agency, Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, TX 75202-2733

Dear Mr. Starfield:

**SUBJECT: DELEGATION OF "AUTHORIZED REPRESENTATIVE" FOR THE CLEAN WATER ACT (CWA) AND NPDES STORM WATER PERMITS AND INDUSTRIAL OUTFALL PERMIT BY LOS ALAMOS NATIONAL SECURITY, LLC (LANS)**

The purpose of this letter is to inform the Environmental Protection Agency (EPA) Region 6 of a change in signatory authority for operator of Los Alamos National Laboratory (LANL). Los Alamos National Security, LLC (LANS) has been the Laboratory's management and operation contractor since June 1, 2006. This letter delegates authority as the LANS "authorized representative" for certifying and signing permits and documents required under the Clean Water Act and associated National Pollutant Discharge Elimination System (NPDES) storm water permits (Construction General Permit, Multi-Sector General Permit, LANL Individual Permit), and the NPDES Industrial Outfall Permit. This letter replaces the two LANS' delegation of "authorized representative" letters dated June 1, 2006 (ESH&Q: 06-001) and June 19, 2006 (ESH&Q: 06-002).

As the designated LANS signatory official for Clean Water Act and associated NPDES Permit Programs (please see Enclosure 1), I wish to further identify the position of Division Leader of the Laboratory's Environmental Protection Division (ENV-DO) as certifying official for NPDES standard permit requirements with the authority to certify, review, approve and/or sign as certifying official of all permit applications (e.g. Notice of Intent (NOIs) and Notice of Termination (NOTs)), permit modifications, registrations, certifications, reports and other information as required by EPA. The following is a detailed breakdown of this delegation of signatory authorities.

The following positions are hereby designated as authorized representatives to sign reports, plans, certifications, notices of changed conditions, discharge monitoring reports, and other information as required by the EPA:

NPDES Storm Water Construction General Permit

- Group Leader or Deputy Group Leader of the Laboratory's Water Quality & RCRA Group.
- Cognizant Project Manager, Project Leader, or Subcontractor Technical Representative for the regulated construction activity.
- Responsible Facility Operations Director (FOD), Deputy FOD, or Operations Manager responsible for the overall operation of the regulated facility or activity.

Multi-Sector General Permit & LANL Individual Permit

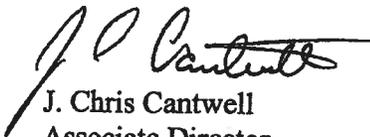
- Group Leader or Deputy Group Leader of the Laboratory's Water Quality & RCRA Group.
- Director, Deputy Director, or Group Leader of the Laboratory Division responsible for the overall operation of the regulated facility or activity.
- Responsible FOD, Deputy FOD or Operations Manager responsible for the overall operation of the regulated facility or activity.
- Program Director, Program Manager or Project Leader responsible for the overall operation of the regulated facility or activity.

NPDES Outfall Permit No. NM0028355

- Group Leader or Deputy Group Leader of the Laboratory's Water Quality & RCRA Group.
- Director or Deputy Director of the Laboratory Division responsible for the overall operation of the regulated facility or activity.

Please contact Tori George, Division Leader for Environmental Protection, at (505) 667-2211, if you have questions.

Sincerely,

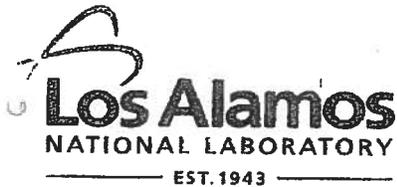


J. Chris Cantwell  
Associate Director  
Environment, Safety, Health and Quality

Enclosures: a/s

Cy: M. Flores, U.S. EPA, Region 6, Dallas, TX, w/enc.  
C. Hosch, U.S. EPA, Region 6, Dallas, TX, w/enc.  
W. Lane, U.S. EPA, Region 6, Dallas, TX, w/enc.  
I. Chen, U.S. EPA, Region 6, Dallas, TX, w/enc.  
B. Larsen, U.S. EPA, Region 6, Dallas, TX, w/enc.  
G. Saums, NMED/SWQB, Santa Fe, NM, w/enc.  
R. Powell, NMED/SWQB, Santa Fe, NM, w/enc.  
D. Winchell, NNSA-LASO, w/enc., MS A316  
G. Rael, NNSA-LASO, w/enc., MS A906  
G. Turner, NNSA-LASO, w/enc., MS A316  
D. Sosinski, LC-DO, MS A183  
D. Woitte, LC-LESH, MS A187  
P. Wardwell, LC-LESH, w/enc., MS A187  
T. George, ENV-DO, w/enc., MS J978  
T. Grieggs, ENV-RCRA, w/enc., MS K490  
M. Saladen, ENV-RCRA, w/enc., MS K490  
T. Lemke, ENV-RCRA, w/enc., MS K490  
ESH&Q File, w/enc., MS K491  
ENV-DO, File, w/enc., MS J978  
ENV-RCRA, File, (09-024), w/enc., MS K490  
IRM-RMMSO, w/enc., MS A150

( ENCLOSURE 1 )



*Office of the Director*

March 4, 2009

J. Chris Cantwell  
Associate Director  
Environment, Safety, Health and Quality  
Los Alamos National Security

Dear Mr. Cantwell: *Chris*

**SUBJECT: CONTRACT NUMBER: DE-AC52-06NA25396, DELEGATION OF AUTHORITY FOR PERMITS, AUTHORIZATIONS AND OTHER DOCUMENTS AS AN OPERATOR OR CO-OPERATOR UNDER ENVIRONMENTAL PERMITS FOR THE LOS ALAMOS NATIONAL LABORATORY**

I, Michael R. Anastasio, Director of Los Alamos National Laboratory and President of Los Alamos National Security, LLC (LANS), the "Company," hereby delegate authority to you, J. Chris Cantwell, Associate Director, Environmental, Safety and Health and Quality (ADESH&Q), to execute on behalf of the Company permits, authorizations, or other documents necessary for the Company to become an operator or co-operator under the environmental permits for the Los Alamos National Laboratory, which permits are currently in the name of the Los Alamos National Security.

This delegation shall remain in effect while you are in the position of Associate Director, ADESH&Q or until revoked by me.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Mike'.

Michael R. Anastasio  
Director

Cy: I. E. Richardson III, DIR, A100  
M. Mallory, PADOPS, A102  
M. Graham, ADEP, M991  
T. George, ENV-DO, J978  
D. Sosinski, LC-DO, A183

D. Woitte, LC-LESH, A187  
R. Madison, LANS, T009  
M. Rafferty, PCM-DO, M722  
IRM-RMMSO, A150  
DIR-09-085

PO Box 1663, MS A100, Los Alamos, NM 87545  
505-667-5101 / FAX 505-665-2679

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National Nuclear Security Administration of the U.S. Department of Energy

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**APPENDIX G:**

**BMP Design Requirements**

## **Knight, Jacob L**

---

**From:** Zimmerly, Timothy  
**Sent:** Friday, June 05, 2015 1:35 PM  
**To:** Salazar, Johnny Abe  
**Cc:** Maze, Steve; Knight, Jacob L  
**Subject:** Detention pond sketches for SIMR-2 Well Pad  
**Attachments:** Detention pond sketches for SIMR-2 well pad.pdf

Johnny,

Attached are the pond sketches for the SIMR-2 well pad as we discussed yesterday. The pond was sized to provide storage for the 2 Yr-24 Hr storm as required in the CGP. This volume is approx.. 350 cubic feet. This design was not the most favorable, but given the conditions it was the best possible solution. It was different from other designs since we are under a NOI for Pueblo lands and the predevelopment discharge requirement does not apply, however the outlet must be design/built so that erosion does not occur when the pond discharges. This was also a little different from past design since there is not any elevation to provide drainage from the pond since the pad was not balanced with cut and fill. The pond is triangular shaped to minimize the space taken on the pad. Each side is 25 feet long and the pond is 1 foot deep along the inlet side and slopes 2% to the out to an approximate depth of 1.35 feet deep at the outlet. The outlet is 3 feet wide at the base and is level with the ground at the NE corner. This is the only way this pond can drain provided the site conditions and restrictions required by the Pueblo. The berms adjacent to the outlet are approximately 18 inches high and will taper back to meet the 1 foot high berm around the pad. The outlet will need to be hardened with riprap to prevent erosion when the pond discharges. The inlet will also need to be hardened to prevent head cutting into the base course pad. TRM or riprap will also need to be installed just downstream of the outlet up to the native vegetation.

Let me know if you have any questions.

Thanks

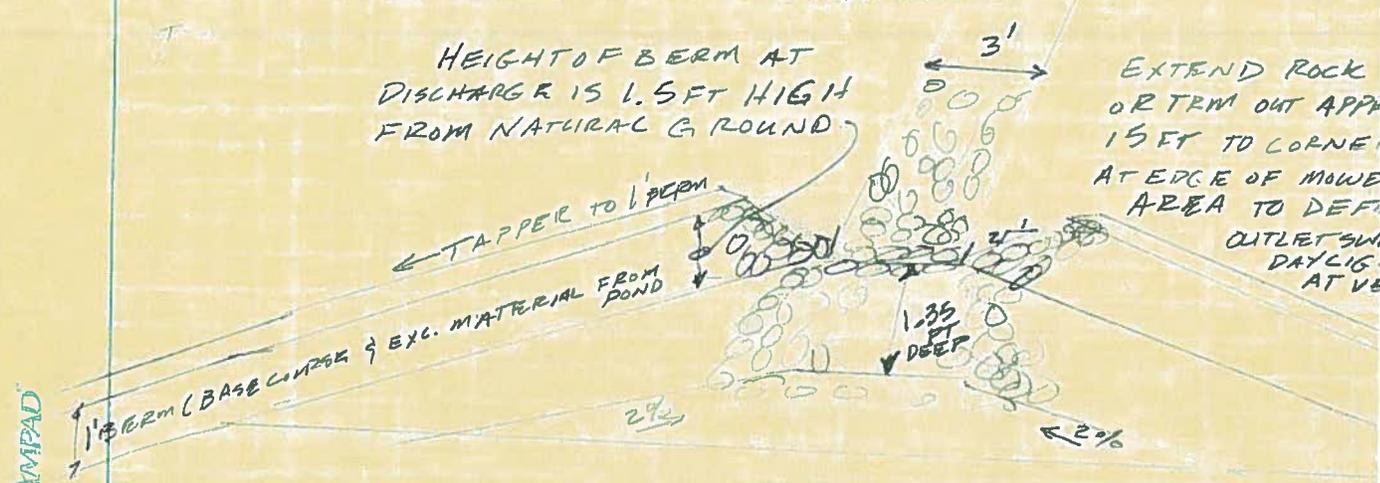
Tim

***Tim Zimmerly, CPESC, CISEC  
Environmental Compliance Programs  
Los Alamos National Laboratory  
MS K490  
Los Alamos, NM 87545  
email: [tzimmer@lanl.gov](mailto:tzimmer@lanl.gov)  
office: 505-664-0105  
cell: 699-7621***

# SIMR-2 WELL PAD DETENTION POND

HEIGHT OF BERM AT DISCHARGE IS 1.5 FT HIGH FROM NATURAL GROUND

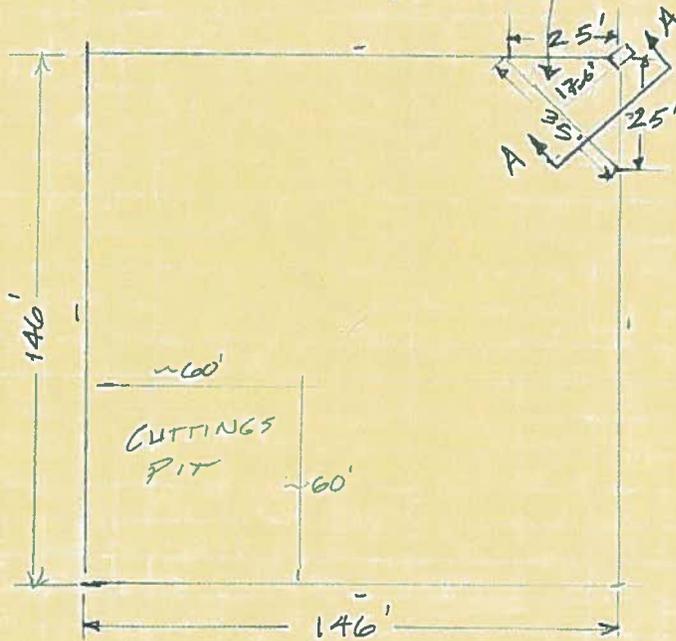
EXTEND ROCK OR TRM OUT APPROX 15 FT TO CORNER AT EDGE OF MOWER AREA TO DEF. OUTLET SW. DAY LIG. AT VE



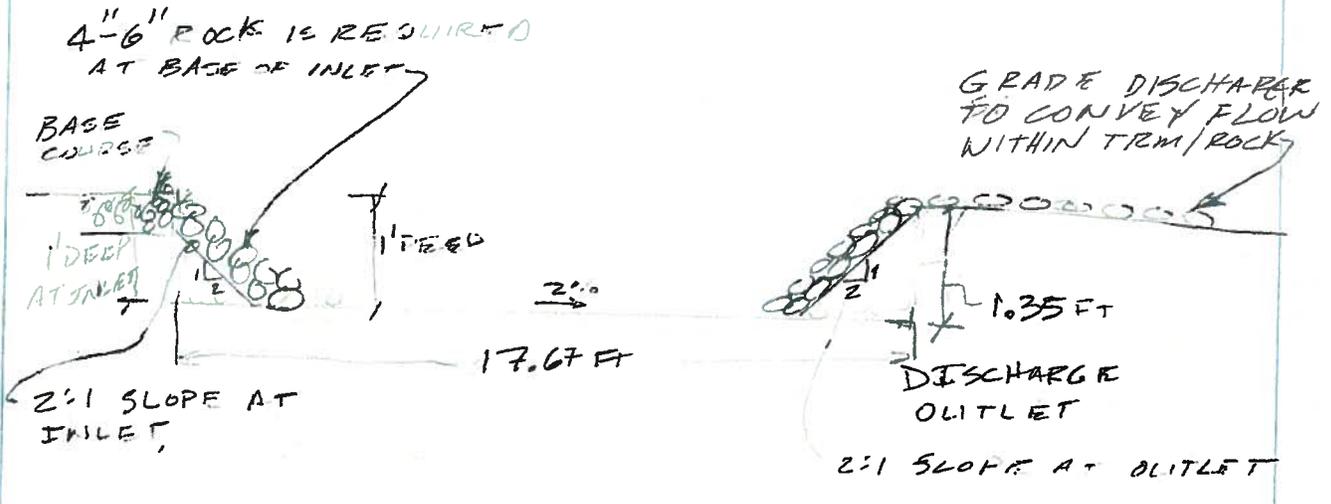
DET POND VOLUME  $\approx 350 \text{ FT}^3$

## DETENTION POND

1" = 50'



AMFAD



DET. POND SECTION A-A

**APPENDIX H:**

**Endangered Species Act and Historical Property Documentation**

**APPENDIX I:**  
**SWPPP Training Records**



## ENV-CP

**Meeting Topic: LANS SWPPP BMP Staff Training for SIMR-2 Well Pad Construction Activities Project**

**Meeting Date: 5/27/2015**

**Place: TA-60-250 R&G Conference/Break Room**

**Meeting Called By: Tim Zimmerly <sup>TS 51</sup> ENV-CP and Steve Maze**

Name	Z#	Org					
<i>Concepcion Montoya</i>	<i>296326</i>	<i>LOG</i>					
<i>John Montoya</i>	<i>098663</i>	<i>LOG-HERG</i>					
<i>Eppie Gallegos</i>	<i>244304</i>	<i>Log-Herg</i>					
<i>Jaramillo Felix</i>	<i>119835</i>	<i>Log-Herg</i>					
<i>Felix Wakefield</i>	<i>190100</i>	<i>Logs "</i>					
<i>MANUEL G ORTIZ</i>	<i>248187</i>	<i>Logs</i>					
<i>Andrew L Ortiz</i>	<i>224634</i>	<i>Log-HERG</i>					
<i>Francisco Lopez</i>	<i>267098</i>	<i>Log-herg</i>					
<i>Jeffrey Martinez</i>	<i>302582</i>	<i>log-herg</i>					
<i>Rafael Andresquez</i>	<i>219923</i>	<i>LOG-HERG</i>					
<i>Mark A. Lopez</i>	<i>173018</i>	<i>Log Herg</i>					
<i>Robert Cujati</i>	<i>241628</i>	<i>LOG-HERG</i>					
<i>Stephen Diaz</i>							

<u>Name</u>	<u>Z#</u>	<u>Organization</u>		<u>PETE Bushmer</u>	<u>92792</u>	<u>Log Herg</u>
ALVIN B. Sanchez	087220	LOG HERG		Marcus A podera	294984	Log Herg
Jose Medina	154217	LOG HERB		Alfred	298839	Log Herg
Benjé Martinez	169687	LOG Herg				
Roy A. Hurtado	185209	LOG HERG				
Angelo J. Bacon	291789	LOG HERG				
TIMOTHY SMITH	201384	LOG HERG				
Pedro J. Madrid	191518	LOG Herg				
Ryan Wilks	187001	ER-FS				
Victor Gardo	118012	ER-FS				
Sam Rogers	200966	ADEP-EK				
DAVE DIXSON	117232	ADESH.				
Rick Parker	183574	ER-FS				
DAVE ANDERSON	096490	ADEP-ER-FS				
Jose Gonzalez	267605	LOG-HERG				
Lorenzo F. Ramirez	276701	LOG-HERG				
Donaldo Ardueto	193349	Log. Herg				
Daniel Carballo	293053	LOG HERG				
GARY M Medina	1297029	LOG Herg				
Charitie J Coan	1293744	Log Herg				
Fermin Mues	293996	LOG Herg				

---

## NPDES Construction General Permit

### SWPPP Training for SIMR-2 Well Pad and Construction Support Activities (LANS)



Operated by Los Alamos National Security, LLC for NNSA

UNCLASSIFIED



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## Background

- **What is a SWPPP?**

***Storm Water Pollution Prevention Plan***

- **Why do we need one, what is its purpose?**

***Requirement of an EPA permit***

***Required by law***

***Environmental protection***



Operated by Los Alamos National Security, LLC for NNSA

UNCLASSIFIED



## What is NPDES CGP?

- **National Pollutant Discharge Elimination System (NPDES)**
  - Part of Federal Clean Water Act
  - Under jurisdiction of EPA
  - Established to minimize discharge of pollutants to surface waters
  - Nationwide requirements
- **NPDES Construction General Permit (CGP)**
  - Projects 1 acre or more of disturbance
  - Regulates and authorizes storm water discharges from construction activity
    - *Clearing, grading, excavation, soil stockpiling*

## CGP at LANL

- **LANS identified as having day-to-day control of the site – “Operator”**
  - Required to implement SWPPP & other CGP requirements
- **LANS identified as an “operator” with control over the plans and specifications**
  - Required to make modifications to the plans and specifications to maintain compliance
- **ENV-CP has oversight for CGP compliance at LANL**

## SWPPP Staff Training Requirements

---

- **Training of staff required prior to starting work and with addition of new personnel**
- **Need to understand:**
  - Permit requirements
  - Location of storm water controls on site
  - How to maintain controls and take corrective actions
  - Proper procedures for pollution prevention
  - How to record findings and corrective actions

## Why Does This All Matter?

---

- **What is the most common pollutant on a construction site?**

**Answer: Sediment**

- Oils, fuels and chemicals
- Trash

## Common Problems on Construction Sites



## Project SWPPP

**SWPPP identifies how we will comply with the CGP for this project**

- **Describes nature of construction activities and all of the potential pollutant-generating activities for the project**
- **Contains a description of all the specific sediment and erosion control measures and stabilization practices at the project**
- **Must be available on-site to all Operators, Inspectors and Regulators**

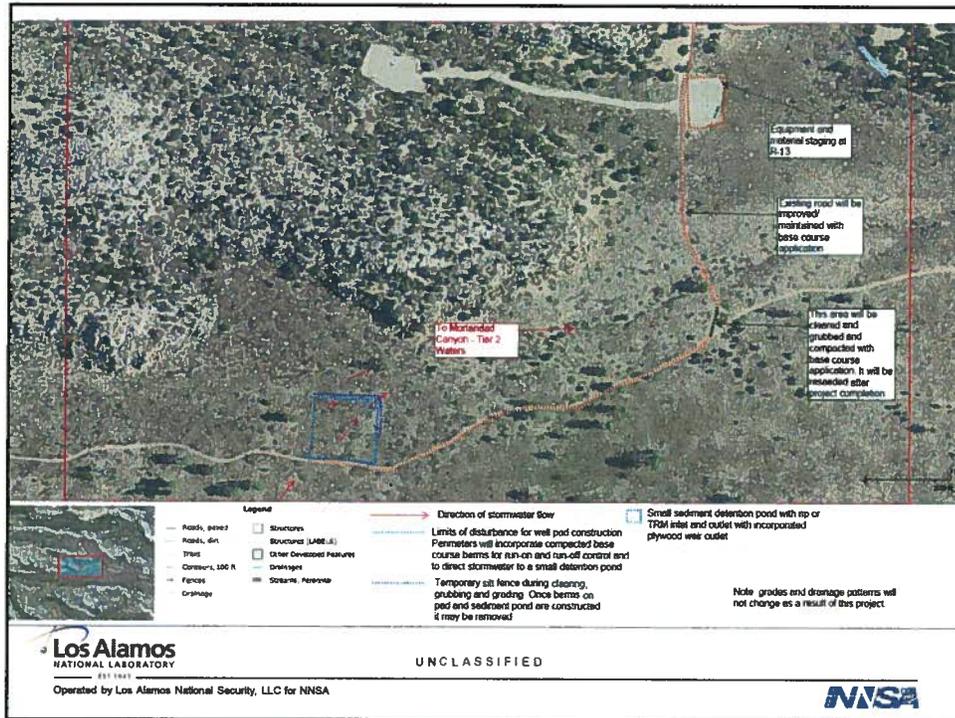
## SWPPP Content

### Major Elements:

- Project description
- Site description
- Identification of potential pollutants
- List of Best Management Practices (BMPs) to be used
- Supporting documents
  - Site map, inspection reports, BMP detail sheets, corrective action documentation

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<b>4. PROCEDURES</b>	.....	<b>4-1</b>
4.1 INSPECTIONS	.....	4-1
4.2 MAINTENANCE	.....	4-1
4.3 CORRECTIVE ACTIONS	.....	4-2
4.4 SWPPP MODIFICATIONS	.....	4-2
4.5 TRAINING	.....	4-3
4.6 SITE MAPS	.....	4-3
4.7 RECORD KEEPING	.....	4-4
4.8 POSTING REQUIREMENTS	.....	4-4
APPENDIX A	Sequence of Events	
APPENDIX B	SWPPP Modification Records	
APPENDIX C	Site Maps	
APPENDIX D	Spill Tracking Form	
APPENDIX E	Federal Regulations, NOI, Delegation of Authority letter, EPA acknowledgement	
APPENDIX F	BMP Guidance, Details, and Specifications	
APPENDIX G	BMP Design Requirements	
APPENDIX H	Endangered Species Act and Historical Property Documentation	
APPENDIX I	SWPPP Training Records	
APPENDIX J	Inspector/SWPPP Preparer Qualifications and Inspection Report Templates	
APPENDIX K	Inspection and Corrective Action Reports	



## BMPs for SIMR-2 Well Pad Construction Activities

### ■ Temporary Controls

- Silt fence, gravel bags, rock check dams, earth berms, wattles as deemed necessary

## BMPs for SIMR-2 Well Pad Construction Activities

---

- **Permanent Controls**
  - **Base course(rolled)**
  - **Swales, culverts**
  - **Seed and Flexterra**

## Other BMPs to Plan for SIMR-2 Well Pad Construction Activities

---

- **Soil stockpile controls**
- **Preserve topsoil**
- **Concrete washout in lined, leak-proof pits/containers**
- **Material storage/handling to minimize exposure to storm water**
- **Covered containers for waste**
- **Spills/leaks – repair leaking equipment, clean-up/disposal, on-site spill kits**
- **Minimizing dust**
- **Porta potty must be anchored**

## Other BMPs to Plan for SIMR-2 Well Pad Construction Activities

---

- **Dewatering requirements**
  - For ground water and accumulated stormwater in excavations, trenches, foundations etc.
  - Can not discharge liquid from dewatering activities without some form of treatment
  - Treatment includes sediment basins, traps, sediment socks, dewatering tanks, boxes and other filtration devices

## Maintenance of BMPs

---

- If sediment is tracked off your site onto pavement, how soon do you have to sweep?

*By the end of the same workday (sediment tracking)*

- If the wind tears the fabric of a silt fence away from the post, how soon does it have to be fixed?

*By the end of the next workday (routine maintenance)*

- If a new row of gravel bags or a new earth berm needs to be installed at a location on site, how soon must it be installed?

*As soon as practicable but no later than 7 days (new BMPs or a significant repair)*

## Maintenance of BMPs



## Maintenance of BMPs



## Maintenance of BMPs

---

- **Maintain all BMPs in working order**
- **House keeping and spill prevention are BMPs**
- **Fix identified issues**
- **Complete documentation**

***This is as important as any other part of your project!***

## Inspections

---

- **Weekly**
- **After 0.25 inches of precipitation**
- **Monthly (after stabilization has been initiated)**
- **On-site personnel needs to identify and document BMP repairs and maintenance for site in the SWPPP**

# CA Report

## NPDES Construction General Permit Stormwater Site Corrective Action Report

Project Name:	Date:	Time:	
CA #	Condition Identified	Nature of condition requiring action	Due Date
1	<input type="checkbox"/> No permit action <input type="checkbox"/> Erosion Control <input type="checkbox"/> Sedimentation <input type="checkbox"/> Stormwater Management <input type="checkbox"/> Best-Practices <input type="checkbox"/> Stabilization <input type="checkbox"/> Erosion <input type="checkbox"/> Silt <input type="checkbox"/> Stormwater Storage		
2	<input type="checkbox"/> Erosion Control <input type="checkbox"/> Sedimentation <input type="checkbox"/> Stormwater Management <input type="checkbox"/> Best-Practices <input type="checkbox"/> Stabilization <input type="checkbox"/> Erosion <input type="checkbox"/> Silt <input type="checkbox"/> Stormwater Storage		
3	<input type="checkbox"/> No permit action <input type="checkbox"/> Erosion Control <input type="checkbox"/> Sedimentation <input type="checkbox"/> Stormwater Management <input type="checkbox"/> Best-Practices <input type="checkbox"/> Stabilization <input type="checkbox"/> Erosion <input type="checkbox"/> Silt <input type="checkbox"/> Stormwater Storage		
4	<input type="checkbox"/> Erosion Control <input type="checkbox"/> Sedimentation <input type="checkbox"/> Stormwater Management <input type="checkbox"/> Best-Practices <input type="checkbox"/> Stabilization <input type="checkbox"/> Erosion <input type="checkbox"/> Silt <input type="checkbox"/> Stormwater Storage		
5	<input type="checkbox"/> No permit action <input type="checkbox"/> Erosion Control <input type="checkbox"/> Sedimentation <input type="checkbox"/> Stormwater Management <input type="checkbox"/> Best-Practices <input type="checkbox"/> Stabilization <input type="checkbox"/> Erosion <input type="checkbox"/> Silt <input type="checkbox"/> Stormwater Storage		

## NPDES Construction General Permit Corrective Action Report Cont.

Notes/Observations:

CA# Identified by:  SWPPP Inspector  Site representative  Other

Print name and title of Modifier of corrective actions: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

\*Verify under penalty of law that this document and all attachments were prepared under the direction and supervision of a person duly licensed as a professional engineer, geologist, or other person directly responsible for gathering the information, the information contained in, in the field of architecture and civil, mechanical, and electrical, or any other profession for which the information is being submitted, including the possibility of fire and environmental for building activities.

LANL  
Print name and title: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Subcontractor  
Print name and title: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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# CA Report

## NPDES Construction General Permit 7 Day Corrective Action Follow-Up

Project Name:	Date:		
CA #	Follow-up actions or modifications taken or to be taken necessary to address Corrective Action	Due Date	Date Completed
1			
2			
3			
4			
5			

\*Verify under penalty of law that this document and all attachments were prepared under the direction and supervision of a person duly licensed as a professional engineer, geologist, or other person directly responsible for gathering the information, the information contained in, in the field of architecture and civil, mechanical, and electrical, or any other profession for which the information is being submitted, including the possibility of fire and environmental for building activities.

Report completed by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Subcontractor: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

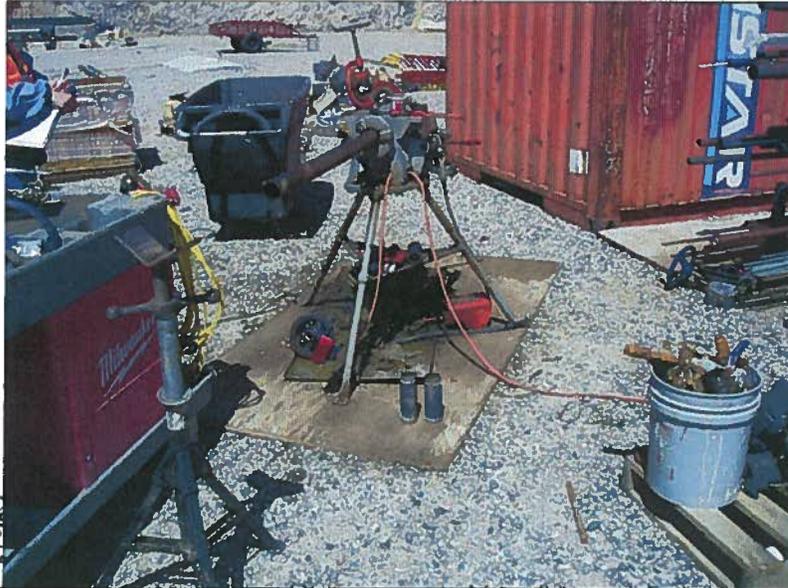
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## What's Wrong Here?



## Stabilization

- **Initiate stabilization immediately when disturbance has ceased for 7 days.**
- **Complete stabilization within 7 days.**

**APPENDIX J:**

**Inspector/SWPPP Preparer Qualifications and Inspection Templates**

# **Inspector/SWPPP Preparer Qualifications**

## **NPDES General Permit for Storm Water Discharges from Construction Activities**

**Terrill Lemke, P.E., CPESC, CISEC, ENV Division**

**Qualifications:** LANL program lead responsible for institutional storm water permitting and compliance. Involved in the development, implementation, and regulatory review of construction SWPP Plans. Assisted in the development of LANL guidance documents for storm water BMPs. Attended and instructed courses in NPDES storm water permit compliance and sediment and erosion control. Civil engineer with previous experience in construction. Professional Engineer (PE), Certified Professional in Erosion and Sediment Control (CPESC) and Certified Inspector of Sediment and Erosion Control (CISEC).

**Tim Zimmerly CPESC, CISEC, ENV Division**

**Qualifications:** Bachelor of Science in Civil Engineering with over 20 years experience in design engineering/construction/project management/remediation and emergency and spill response. Assisted in the development of LANL guidance documents for storm water BMPs and the development of construction SWPP Plans. SME in field inspections, implementation of BMPs and other controls. Certified Professional in Erosion and Sediment Control (CPESC) and Certified Inspector of Sediment and Erosion Control (CISEC), and familiar with erosion control and storm water requirements for this project.

**Jacob Knight, CISEC, ENV Division**

**Qualifications:** Bachelor of Science degree in Biology. Involved in the development and revision of SWPP Plans and site maps. Has demonstrated ability in performing and documenting storm water inspections and is familiar with placement, and maintenance of BMPs. Certified Inspector of Sediment and Erosion Control (CISEC).

**Samuel R. Loftin, BS, MS, PhD, CISEC, ENV Division**

**Qualifications:** I received my BS degree in Biology from Western Oregon State University in 1983, my MS in Botany from Arizona State University in 1987 and my Ph.D. in Biology from the University of New Mexico in 1994. I worked on a postdoc research appointment with the USFS Rocky Mountain Research Station in Albuquerque for five years and then started at LANL in 1998. I have over 20 years of professional experience in terrestrial plant ecology, restoration ecology, and vegetation management. I have been working on NPDES permit management at LANL since 2006. I received CISEC certification in June 2010.

**Marwin Shendo, CISEC, ENV Division**

**Qualifications:** Received my Bachelor of Science degree in Wildlife Science in 2004 and my Master of Water Resources degree in 2011. I have a year and half experience in performing inspections of NPDES CGP, MSGP, and IP regulated sites; is knowledgeable about implementation and maintenance of BMPs. Certified Inspector of Sediment and Erosion Control (CISEC).

# NPDES Construction General Permit Stormwater Site Inspection Report

<b>Project Name</b>				<b>Inspection Date</b>	
<b>Inspector(s) Name and Title</b>				<b>Time of Inspection</b>	
<b>Others Present</b>				<b>Present Phase of Construction</b>	<input type="checkbox"/> Active <input type="checkbox"/> Stabilization
<b>Type of inspection</b>	<input type="checkbox"/> 7-Day <input type="checkbox"/> Monthly	<input type="checkbox"/> 14-Day <input type="checkbox"/> Precipitation Event <small>*See attached precipitation data</small>	<b>Are there any discharges occurring?</b>	<input type="checkbox"/> Yes <small>*See attached visual assessment</small> <input type="checkbox"/> No	
<b>Stabilization</b> Has area disturbance ceased for a period of 14 or more days? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A  Initiated: <input type="checkbox"/> Yes <input type="checkbox"/> No Functioning: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Equipment/Material Storage Area:</b>  Present: <input type="checkbox"/> Yes <input type="checkbox"/> No Proper Housekeeping: <input type="checkbox"/> Yes <input type="checkbox"/> No Proper controls installed to prevent discharge: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Waste Management</b> Proper Concrete Washout: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Adequate Containment: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Good Housekeeping: <input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Perimeter Controls:</b> Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Functional: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<b>Porta-Potty</b> <input type="checkbox"/> Anchored <input type="checkbox"/> Unanchored <input type="checkbox"/> N/A		<b>Spills</b> <input type="checkbox"/> Present <input type="checkbox"/> None Spill Kit On Site: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Sediment Track Out</b> Stabilized Entrance: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Track out observed: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Discharge points:</b> Visible erosion or sedimentation? <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Stockpiles</b> <input type="checkbox"/> Present Are proper BMPs in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>50 Foot Buffer</b>  Required: <input type="checkbox"/> Yes <input type="checkbox"/> No  Additional Controls Needed: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Erosion, Pollution, Sediment Controls:</b> <input type="checkbox"/> All Operational <input type="checkbox"/> Required Controls Installed <input type="checkbox"/> Significant Repair/Replacement <input type="checkbox"/> Routine Maintenance required <input type="checkbox"/> Additional control required		<b>SWPPP No</b> <input type="checkbox"/> updates required Map <input type="checkbox"/> updates required <input type="checkbox"/> Land disturbance log update required <input type="checkbox"/> BMP Log update required Corrective Action Documentation Updated: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other: _____	

# NPDES Construction General Permit Stormwater Site Inspection Report Cont.

Project Name		Date	
Corrective Action Report Required: <input type="checkbox"/> Yes <input type="checkbox"/> No This site has been found to be: <input type="checkbox"/> In Compliance <input type="checkbox"/> Non-Compliant Reason for non-compliance:			
Inspector Signature: _____ Date: ____/____/____			
Comments:			
<p style="font-size: small;">"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."</p> LANL Print name and title: _____ Signature: _____ Date: _____  Subcontractor Print name and title: _____ Signature: _____ Date: _____			

# NPDES Construction General Permit Stormwater Site Corrective Action Report

Project Name:		Date		Time		
CA #	Condition Identified	Nature of condition requiring action				Due Date
1	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping					
2	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping					
3	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping					
4	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping					
5	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping					

# NPDES Construction General Permit Stormwater Site Corrective Action Report

CA #	Condition Identified	Nature of condition requiring action	Date	Time	Due Date
Project Name:					
6	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping				
7	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping				
8	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping				
9	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping				
10	<input type="checkbox"/> All required Controls <input type="checkbox"/> Additional Controls <input type="checkbox"/> Control Maintenance <input type="checkbox"/> Replace/Repair Control <input type="checkbox"/> Track-Out <input type="checkbox"/> Stabilization <input type="checkbox"/> Housekeeping <input type="checkbox"/> Spill <input type="checkbox"/> Material/Waste Storage <input type="checkbox"/> Record Keeping				

# NPDES Construction General Permit Stormwater Site Corrective Action Report

Notes/Observations:

CAs identified by:  SWPPP Inspector  Site representative  Other:

Print name and title of identifier of corrective actions: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."

LANL

Print name and title: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Subcontractor

Print name and title: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

# NPDES Construction General Permit 7 Day Corrective Action Follow-Up

Project Name		Date	
CA #	Follow-up actions or modifications taken or to be taken necessary to address Corrective Actions	Due Date	Date Completed
1			
2			
3			
4			
5			

"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."

Report completed by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

LANL

Print Name \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Subcontractor

Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# NPDES Construction General Permit 7 Day Corrective Action Follow-Up Cont.

Project Name		Date	
CA #	Follow-up actions or modifications taken or to be taken necessary to address Corrective Actions	Due Date	Date Completed
6			
7			
8			
9			
10			

**APPENDIX K:**  
**Inspection and Corrective Actions Reports**

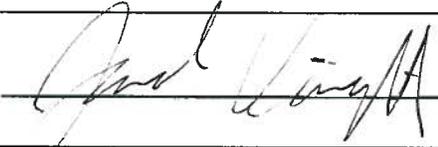
# NPDES Construction General Permit Stormwater Site Inspection Report

<b>Project Name</b>	<b>SIMR-2 Well Pad Construction</b>		<b>Inspection Date</b>	<b>6-8-15</b>
<b>Inspector(s) Name and Title</b>	Jacob Knight - CISEC		<b>Time of Inspection</b>	1:30
<b>Others Present</b>	Johnny Salazar, Ray Hurtado, Steve Trujillo		<b>Present Phase of Construction</b>	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Stabilization
<b>Type of inspection</b>	<input type="checkbox"/> 7-Day <input type="checkbox"/> 14-Day <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Precipitation Event <small>*See attached precipitation data</small>		<b>Are there any discharges occurring?</b>	<input type="checkbox"/> Yes <small>*See attached visual assessment</small> <input checked="" type="checkbox"/> No
<b>Stabilization</b> Has area disturbance ceased for a period of 14 or more days? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A  Initiated: <input type="checkbox"/> Yes <input type="checkbox"/> No Functioning: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Equipment/Material Storage Area:</b> Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper Housekeeping: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper controls installed to prevent discharge: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Waste Management</b> Proper Concrete Washout: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Adequate Containment: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Good Housekeeping: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Perimeter Controls:</b> Installed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Functional: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Porta-Potty</b> <input type="checkbox"/> Anchored <input type="checkbox"/> Unanchored <input checked="" type="checkbox"/> N/A	<b>Spills</b> <input type="checkbox"/> Present <input checked="" type="checkbox"/> None Spill Kit On Site: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Sediment Track Out</b> Stabilized Entrance: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Track out observed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Discharge points:</b> Visible erosion or sedimentation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Stockpiles</b> <input type="checkbox"/> Present Are proper BMPs in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<b>50 Foot Buffer</b> Required: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Additional Controls Needed: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Erosion, Pollution, Sediment Controls:</b> <input checked="" type="checkbox"/> All Operational <input type="checkbox"/> Required Controls Installed <input type="checkbox"/> Significant Repair/Replacement <input type="checkbox"/> Routine Maintenance required <input type="checkbox"/> Additional control required		<b>SWPPP</b> <input checked="" type="checkbox"/> No updates required <input type="checkbox"/> Map updates required <input type="checkbox"/> Land disturbance log update required <input type="checkbox"/> BMP Log update required Corrective Action Documentation Updated: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other: _____

# NPDES Construction General Permit Stormwater Site Inspection Report Cont.

Project Name	<b>SIMR-2 Well Pad Construction</b>	Date	<b>6-8-15</b>
--------------	-------------------------------------	------	---------------

Corrective Action Report Required:  Yes  No  
This site has been found to be:  In Compliance  Non-Compliant  
Reason for non-compliance:

Inspector Signature:  Date: 6, 8, 15

Comments:  
The slope was mowed last week, instead of clearing and grubbing due to land owner requirements. Silt fence was installed at all down gradient perimeters as a temporary sediment control measure. I recommended additional stakes at the low corner for additional strength. The drill cuttings pit is currently being excavated. The access road had base course placed on top and the pad will have base course placed beginning tomorrow. Base course perimeter berms and a small sediment detention structure will be constructed soon.

"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."

LANL  
Print name and title:  Signature: Michael R. Alexander Date: 6-10-15

Subcontractor  
Print name and title:  Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Data is for tower ta53.

This file was obtained from the LANL Weather Machine, <http://weather.lanl.gov>.

Request made on Mon Jun 08 06:01:38 2015 MST.

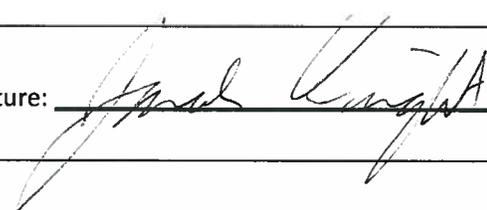
All data times are MST.

month mm	day dd	year yyyy	hour hh	minute mm	doy ddd	precip in
6	7	2015	10	45	158	0
6	7	2015	11	0	158	0
6	7	2015	11	15	158	0
6	7	2015	11	30	158	0
6	7	2015	11	45	158	0
6	7	2015	12	0	158	0.27
6	7	2015	12	15	158	0.02
6	7	2015	12	30	158	0
6	7	2015	12	45	158	0
6	7	2015	13	0	158	0
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6	7	2015	14	0	158	0
6	7	2015	14	15	158	0
6	7	2015	14	30	158	0
6	7	2015	14	45	158	0
6	7	2015	15	0	158	0
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6	7	2015	16	30	158	0
6	7	2015	16	45	158	0
6	7	2015	17	0	158	0
6	7	2015	17	15	158	0
6	7	2015	17	30	158	0
6	7	2015	17	45	158	0
6	7	2015	18	0	158	0
6	7	2015	18	15	158	0.01
6	7	2015	18	30	158	0
6	7	2015	18	45	158	0
6	7	2015	19	0	158	0
6	7	2015	19	15	158	0
6	7	2015	19	30	158	0
6	7	2015	19	45	158	0
6	7	2015	20	0	158	0
6	7	2015	20	15	158	0
6	7	2015	20	30	158	0

# NPDES Construction General Permit Stormwater Site Inspection Report

Project Name	SIMR-2 Well Pad Construction	Inspection Date	6-15-15
Inspector(s) Name and Title	Jacob Knight, CISEC	Time of Inspection	3:00
Others Present	Johnny Salazar, Ray Hurtado	Present Phase of Construction	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Stabilization
Type of inspection	<input checked="" type="checkbox"/> 7-Day ✓ <input type="checkbox"/> Monthly <input type="checkbox"/> 14-Day <input checked="" type="checkbox"/> Precipitation Event <i>1 day rain was 0.21"</i> <small>*See attached precipitation data</small>	Are there any discharges occurring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <small>*See attached visual assessment</small>
<b>Stabilization</b> Has area disturbance ceased for a period of 14 or more days? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A  Initiated: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Functioning: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Equipment/Material Storage Area:</b> Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper Housekeeping: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper controls installed to prevent discharge: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Waste Management</b> Proper Concrete Washout: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Adequate Containment: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Good Housekeeping: <input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Perimeter Controls:</b> Installed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Functional: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<b>Porta-Potty</b> <input type="checkbox"/> Anchored <input type="checkbox"/> Unanchored <input checked="" type="checkbox"/> N/A	<b>Spills</b> <input type="checkbox"/> Present <input checked="" type="checkbox"/> None Spill Kit On Site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Sediment Track Out</b> Stabilized Entrance: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Track out observed: <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Discharge points:</b> Visible erosion or sedimentation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Stockpiles</b> <input type="checkbox"/> Present Are proper BMPs in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<b>50 Foot Buffer</b> Required: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Additional Controls Needed: <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Erosion, Pollution, Sediment Controls:</b> <input checked="" type="checkbox"/> All Operational <input type="checkbox"/> Required Controls Installed <input type="checkbox"/> Significant Repair/Replacement <input type="checkbox"/> Routine Maintenance required <input type="checkbox"/> Additional control required	<b>SWPPP</b> <input type="checkbox"/> No updates required <input type="checkbox"/> Map updates required <input checked="" type="checkbox"/> Land disturbance log update required <input type="checkbox"/> BMP Log update required Corrective Action Documentation Updated: <input type="checkbox"/> Yes <input type="checkbox"/> No Other: _____	

# NPDES Construction General Permit Stormwater Site Inspection Report Cont.

Project Name	<b>SIMR-2 Well Pad Construction</b>	Date	<b>6-15-15</b>
Corrective Action Report Required: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No This site has been found to be: <input checked="" type="checkbox"/> In Compliance <input type="checkbox"/> Non-Compliant Reason for non-compliance:			
Inspector Signature: <u></u> Date: <u>6-15-15</u>			
Comments: Cuttings pit is installed, lined, and berms stabilized with base course. The pad is in the final stages of grading and compacting base course. Compacted berms have been installed around the perimeter of the well pad as well as the small sediment detention pond with rip rap armored outlet. Everything looks good. I advised they could remove the silt fence outside the berms if they wish so that it doesn't become a maintenance issue during the drilling project. The base course stabilization, berms and small pond meet sediment and erosion control requirements.			
"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."			
LANL Print name and title: <u><b>Michael R. Alexander</b></u> Signature: <u></u> Date: <u>7-16-15</u>			
Subcontractor Print name and title: <u></u> Signature: _____ Date: _____			

# NPDES Construction General Permit Stormwater Site Inspection Report

Project Name	<b>SIMR-2 Well Pad Construction</b>	Inspection Date	<b>6-22-15</b>
Inspector(s) Name and Title	Jacob Knight, CISEC	Time of Inspection	2:45
Others Present	Steve Maze	Present Phase of Construction	<input type="checkbox"/> Active <input checked="" type="checkbox"/> Stabilization
Type of inspection	<input checked="" type="checkbox"/> 7-Day <input type="checkbox"/> 14-Day <input type="checkbox"/> Monthly <input type="checkbox"/> Precipitation Event <small>*See attached precipitation data</small>	Are there any discharges occurring?	<input type="checkbox"/> Yes <small>*See attached visual assessment</small> <input checked="" type="checkbox"/> No
<b>Stabilization</b> Has area disturbance ceased for a period of 14 or more days? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A  Initiated: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Functioning: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Equipment/Material Storage Area:</b> Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper Housekeeping: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Proper controls installed to prevent discharge: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Perimeter Controls:</b> Installed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Functional: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<b>Waste Management</b> Proper Concrete Washout: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Adequate Containment: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Good Housekeeping: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Porta-Potty</b> <input type="checkbox"/> Anchored <input type="checkbox"/> Unanchored <input type="checkbox"/> N/A		<b>Spills</b> <input type="checkbox"/> Present <input checked="" type="checkbox"/> None Spill Kit On Site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Sediment Track Out</b> Stabilized Entrance: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Track out observed: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Discharge points:</b> Visible erosion or sedimentation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>50 Foot Buffer</b> Required: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Additional Controls Needed: <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Stockpiles</b> <input type="checkbox"/> Present Are proper BMPs in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<b>Erosion, Pollution, Sediment Controls:</b> <input checked="" type="checkbox"/> All Operational <input type="checkbox"/> Required Controls Installed <input type="checkbox"/> Significant Repair/Replacement <input type="checkbox"/> Routine Maintenance required <input type="checkbox"/> Additional control required		<b>SWPPP</b> <input checked="" type="checkbox"/> No updates required <input type="checkbox"/> Map updates required <input type="checkbox"/> Land disturbance log update required <input type="checkbox"/> BMP Log update required Corrective Action Documentation Updated: <input type="checkbox"/> Yes <input type="checkbox"/> No Other: _____	

**NPDES Construction General Permit Stormwater Site Inspection Report Cont.**

Project Name	<b>SIMR-2 Well Pad Construction</b>	Date	<b>6-22-15</b>		
Corrective Action Report Required: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
This site has been found to be: <input checked="" type="checkbox"/> In Compliance <input type="checkbox"/> Non-Compliant					
Reason for non-compliance:					
Inspector Signature:		Date:	<u>6/22/15</u>		
Comments:					
Well pad, perimeter berms, and small sediment detention pond are stabilized with compacted base course. The pond has a rip rap outlet. The temporary silt fence was removed. The drillers are on-site and the drill rig is operating. The Well pad construction project has reached final stabilization and will no longer be inspected unless soil disturbing activities resume.					
<small>"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 contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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."</small>					
LANL	<b>Michael R. Alexander</b>	Signature:		Date:	<u>7-16-15</u>
Subcontractor		Signature:	_____	Date:	_____