Alaska Department of Transportation and Public Facilities

Alaska Storm Water Pollution Prevention Plan Guide

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1. Introduction

1.1. Purpose of Guide

The Alaska Department of Transportation and Public Facilities (DOT&PF) prepared this guide to help contractors, consultants, and the public understand and comply with the requirements for a Storm Water Pollution Prevention Plan (SWPPP). Any reference to "you" or to "the Contractor" in this guide refers to the Contractor or Contractor's designee. The term "operator" or "site operator" refers to the person or persons in charge of the day-to-day activities at a construction site.

Construction activities may disturb the earth and allow soil particles (sediment) to be easily washed away during a storm. A SWPPP is a document that describes the nature and extent of a construction activity and the measures that are used to ensure that sediment and other pollutants are not carried into the storm water discharges from the construction site. In order to control these pollutants, the Contractor can use a variety of measures, referred to as Best Management Practices, or BMPs. The BMPs form the basis of the SWPPP, and the Contractor must select them based upon the conditions at the construction location. In order for a SWPPP to be effective, the Contractor must properly design, construct, and maintain the BMPs during the life of the project. See Appendix F of this guide for types of BMPs and their applications.

1.2. Summary of Applicable Water Quality Laws and Regulations

The federal and state governments have passed numerous laws to minimize environmental harm from storm water discharge at construction sites. Some of these laws and subsequent regulations require the implementation of erosion and sediment control measures, while others mandate that construction activities maintain water quality. The two most important water quality related laws and regulations are the Federal Clean Water Act and the State of Alaska Water Quality Standards, as defined in the Alaska Administrative Code (18 AAC 70).

The 1972 amendments to the Federal Water Pollution Control Act (known as the Clean Water Act or CWA), form the primary law controlling construction site discharges and setting water quality standards. The CWA, implemented by the Environmental Protection Agency (EPA), required site operators to comply with either a General Permit or an individual National Pollutant Discharge Elimination System (NPDES) permit. In 1990, the EPA published regulations classifying construction projects that disturb more than 2 hectares (5 acres) as industrial dischargers. From 1990 until 1998, a Contractor had to either obtain an individual NPDES permit or comply with the stipulations of a General Permit. In 1992, the EPA issued a Construction General Permit for Alaska, Permit Number AK-R-10. This permit required the site operator to prepare a Storm Water Pollution Prevention Plan detailing the operator's erosion and sediment control plan, permanent storm water management plan, and waste control plan, then file a Notice of Intent with EPA before the start of any earth-disturbing activities. In 1998, EPA reissued the General Storm Water Permit for Construction Activities. This is the current controlling authority for SWPPP requirements, and it applies to all construction projects.

For complete regulatory information on the General Permit for Storm Water Discharges from Construction Activities, visit the following Web site: http://cfpub1.epa.gov/npdes/stormwater/const.cfm?program_id=6

The Alaska Department of Environmental Conservation (DEC) sets water quality standards for Alaskan waters and regulates discharges to these waters. All discharges of storm water from construction projects authorized under the EPA General Permit for Construction Activities must also meet DEC standards for turbidity as defined in 18 AAC 70.020, unless a temporary variance is obtained. Even then, the Contractor must minimize potentially harmful water quality impacts by using best management practices to control erosion and sedimentation.

Other federal and state laws and regulations applicable to storm water discharges from construction activities are as follows:

- **The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)**
  Section 1057 of this Act requires the U.S. Department of Transportation to develop erosion control guidelines for the construction of all federally-funded highway projects. To satisfy the provisions of Section 1057, the Federal Highway Administration (FHWA) has adopted the American Association of State Highway and Transportation Officials (AASHTO) "Highway Drainage Guidelines," which address erosion and sediment control. Every state highway agency must comply with these AASHTO guidelines for projects that use federal highway funds.

- **The Coastal Zone Act Reauthorization Amendments of 1990**
  This Act requires that every state participating in the federal Coastal Management Program use erosion and sediment control management measures. Alaska's Coastal Management Program (ACMP) requires that estuaries, wetlands, tide flats, lagoons, rivers, streams, and lakes be managed to protect natural vegetation, water quality, important fish and wildlife habitat, and natural water flow. The ACMP states in part that contractors for projects within the coastal zone must use "all feasible and prudent steps to maximize conformance" with this requirement. State and federal resource agencies that issue permits often require erosion control measures to ensure that a project will be consistent with the ACMP.

- **Section 404 Permit of the Clean Water Act**
  This regulation is administered by the U. S. Army Corps of Engineers (COE). The 404 permit is required for dredging, grubbing, excavating, or filling in rivers, streams, lakes, ponds, tidelands, and wetlands. The 404 permit usually requires erosion and sediment controls to ensure minimal harm to jurisdictional areas.

- **Alaska Statute 16.05.870, Protection of Fish and Game**
  Construction activities that will affect the state's fish, game, and aquatic plant resources are regulated by the Alaska Department of Fish and Game (ADF&G). Any activity that will pollute or change the natural flow or bed of a stream important for the spawning, rearing, or migration of anadromous fish must be approved by ADF&G to assure that the construction plans and specifications will protect fish and game. Often, the ADF&G permit requires an erosion and sediment control plan.

2. Storm Water Pollution Prevention Plan Process

2.1. Introduction

The primary requirement of the EPA NPDES general storm water permit for construction activities is the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a written storm water management plan to preserve water quality by minimizing or eliminating the pollutants in the storm water discharges from construction activities. EPA requires the preparation of a SWPPP before the start of any construction activities. While EPA requires a SWPPP only for projects that disturb more than 2 hectares (5 acres) of land, DOT&PF also requires a SWPPP for projects disturbing 2 hectares (5 acres) or less.

DOT&PF requires that an Alaska-registered professional engineer working for the Contractor develop and stamp a SWPPP.

2.2. General Process

The success of a SWPPP requires a cooperative effort between DOT&PF and the Contractor. Both parties have responsibilities during the process to ensure that the SWPPP will be effective. The process of developing and implementing a SWPPP for construction activities is outlined in the EPA guidance document "Storm Water Management For Construction Activities, Developing Pollution Prevention Plans And Best Management Practices" and consists of the following five phases:

1. Site evaluation and assessment
2. Plan design and selection of storm water controls (BMPs)
3. Notification
4. Construction and implementation
5. Final stabilization and termination

2.2.1 Site Evaluation and Assessment

During the project design, DOT&PF will partially address the initial requirements for phase 1 and phase 2 by developing Erosion and Sediment Control Plans (ESCPs) for all earth-disturbing projects, which will be included in the Plans, Specifications, and Estimate (PS&E) package. An ESCP is a document that explains site conditions and illustrates measures to control erosion and pollution. It provides a practicable plan while giving the Contractor enough latitude to develop a sequence of operations based on season, site conditions, personnel, and equipment. The ESCP gives bidders a basis for cost estimating and ultimately provides the awarded Contractor information and guidance for developing an acceptable SWPPP.

Between contract award and the preconstruction conference, the Contractor must review the ESCP for its suitability with the construction plan, schedule, and equipment. Using the information provided in the ESCP, the Contractor must provide a draft version of the SWPPP and deliver it to the Project Engineer at least five (5) calendar days prior to the preconstruction conference. The draft SWPPP must address the sequence of major earth-disturbing activities and the sequence of installation of all controls specified for the project. It must also account for erosion control measures while performing excavation and embankment construction. When reviewed and approved by the Department, this becomes the Contractor's and the Department's Storm Water Pollution Prevention Plan (SWPPP), with the Contractor and the Department being co-permittees, since both meet the definition of operator on a construction project. The SWPPP is a dynamic document, and the Contractor shall modify it as conditions dictate.

2.2.2 Plan Design and Selection of Storm Water Controls (BMPs)

There are a variety of controls (BMPs) that can be used on a construction project. See the following World Wide Web sites for descriptions and applications:
http://h2osparc.wq.ncsu.edu:80/descprob/construc.html
or http://abe.msstate.edu/csd/p-dm/index.html

Also, see Appendix F of this guide for a list of 17 commonly used BMPs, along with application, design, construction, inspection, maintenance, and removal guidelines.

The SWPPP must include a description and location of the BMPs to be implemented at the construction site as well as the party (Contractor, Subcontractor, etc.) responsible for implementing each item. In addition, the SWPPP must clearly describe major

earth-disturbing activities (excavating, grading, filling) and their sequence during the construction process.

Types of BMPs

There are stabilization (erosion control) BMPs for disturbed areas, structural BMPs to divert runoff and remove sediment, storm water management measures, and other measures. The Contractor must base the selection of a BMP upon the soil properties, terrain characteristics, intensity and duration of rainfall, and the volume and characteristics of the storm water flow at the location. The following is a brief description of the types of BMPs and examples of each:

Stabilization (erosion control) BMPs are measures that are used to prevent or minimize the loss of soil from land surfaces. They are also known as erosion control BMPs. Examples include:

- temporary or permanent seeding
- sodding
- mulching
- surface roughening
- rolled erosion control products
- preserving existing grass, trees, or other vegetation

Structural BMPs are measures to divert flows away from disturbed areas, to store flows, or to limit the discharge of pollutants from the site. They are used for:

1. velocity control
   - interception /diversion ditch
   - slope drain
   - outlet protection
   - storm water conveyance channel
   - rock check dam

2. sediment control
   - check dam
   - temporary sediment trap
   - brush barrier
   - straw bale barrier
   - inlet protection
   - silt fence

Storm water management measures control pollutants in storm water after construction is completed. These permanent controls, which DOT&PF will include in the ESCP, are designed into the project and may include one or more of the following:

- retention pond
- detention pond
- infiltration measures
- vegetated swales
- natural depressions

Other measures to address other potential pollutant sources that may exist on the site include:

- Ensure proper disposal of construction site waste materials.
- Treat or dispose of sanitary wastes that are generated on-site, in accordance with state or local requirements.
- Minimize off-site tracking of sediments and generation of dust.

2.2.3 Notification (Only Required if More Than 2.0 hectares (5 Acres) Will be Disturbed)

After the Contractor finalizes the SWPPP and DOT&PF approves it, the Contractor must submit the EPA Notice of Intent (NOI) form to the Project Engineer, to provide notice that construction activities are about to begin. In the event of a change in Contractor during the project, the original Contractor must submit a Notice of Termination (NOT) form and the new Contractor must submit a new NOI form, both to the Project Engineer. When the project is finished, the Contractor must submit a Notice of Termination (NOT) form to the Project Engineer, to provide notice that construction activities have been completed and the area has been stabilized. The Project Engineer, through the Department's Environmental Section, will submit all forms to the EPA.

2.2.4 Construction and Implementation

During construction, the Contractor must inspect and maintain the storm water controls and management practices. Based on these inspections, the Contractor may need to update or modify the SWPPP if there are any changes in the construction or if the plan is ineffective in controlling pollutants. In addition to the inspection and maintenance records, the Contractor must keep records of the construction activity on the site.

2.2.5 Final Stabilization and Termination

The SWPPP remains in effect until the construction activities are completed and the disturbed areas are stabilized to prevent further erosion of the soil. Final stabilization means that all earth-disturbing activities at the project site have been completed and stabilized through the use of mechanical or vegetative means. Mechanical means include

- paving
- riprap
- retaining structures
- free draining processed aggregate
- any naturally non-erodible surfaces such as bedrock and porous parent material

Vegetative means include planting a uniform perennial vegetative cover with a density of 70% of the native background cover.

3. SWPPP Plan Requirements

3.1. Introduction

Federal and state laws, regulations, and water quality standards require that any DOT&PF earth-disturbing construction activities (highway, airport, or building) address erosion and sediment control measures. Earth-disturbing activities are defined as clearing, grubbing, excavating, or filling that disturbs the ground surface and results in earth (not aggregate or asphalt materials) being exposed to potential erosion from precipitation. An aggregate roadway exposed by removing asphalt is not considered to be disturbed ground.

3.2. SWPPP Plan Details

To satisfy the requirements for a SWPPP, the Contractor must complete two items:

- Plan Contents – site specific information for the project
- Administrative Requirements – notices, forms, and records that must be filed or retained at the project site

The scope of the plan contents and the number of administrative requirements are determined by the following acreage categories:

1. Projects disturbing 2.0 hectares (5 acres) or less
2. Projects disturbing more than 2.0 hectares (5 acres)

3.2.1 Projects Disturbing 2.0 Hectares (5 Acres) or Less

Plan Contents

The Contractor must include the following information: [As part of the ESCP, DOT&PF will typically supply information for items followed by an asterisk * .]

a. Site Description

- Estimate, to the nearest 0.1-hectare, the total ground surface area likely to be exposed by excavation, grading, or other activities. This includes off-site material sources and disposal sites.* (The Department's estimate will include project area and state designated material sources and disposal sites.)
- Include a site map indicating drainage patterns, areas of soil disturbance, location(s) of major structural and nonstructural erosion, sediment, and pollution controls, location of areas where stabilization practices are expected, location of all surface waters, and locations where storm water is discharged to surface water.*
- Note the location of storm water discharges from asphalt or concrete plants dedicated to the project. Do not include commercial plants in the SWPPP requirements; they must satisfy their own SWPPP requirements.
- Identify all receiving waters and wetlands, within or adjacent to the site, that will be disturbed or receive discharges from disturbed areas of the project.* You must protect sensitive wetlands (open ponds), but you can use non-sensitive wetlands (peat bogs, forested, scrub-shrub) as vegetative buffers if authorized by the Corps of Engineers.
- Note the location of any impaired waters.* You may find a list at the following web site:

http://www.state.ak.us/local/akpages/ENV.CONSERV/dawq/tmdl/98onepage.htm

b. Control Measures

Describe the appropriate control measures (BMPs) to be implemented at the construction site and the off-site areas. Include stabilization BMPs, structural BMPs, storm water management measures, and other measures.

c. Maintenance

Describe procedures for the timely maintenance of SWPPP BMPs.

d. Inspections

Describe the plan for inspection of the project's BMPs and identify the Contractor personnel responsible for these inspections.

You may find project specific requirements in Section 641 of the construction contract special provisions.

e. ***Contractor and Subcontractor (Responsible Parties)***
Identify the prime Contractor's and Subcontractor's (if applicable) personnel responsible for implementing each erosion and sediment control measure.

Administrative Requirements

The Contractor must compile and retain the following records at the construction site.

- **Inspection and Maintenance Records**
List inspection results on the SWPPP Construction Inspection Report Form 25D-100, found in the DOT&PF Construction Manual and in Appendix A of this guide. Include project name, inspection date, name of inspectors (DOT&PF and Contractor), type of inspection, site status, site conditions, deficiencies noted and recommended actions to correct them, follow-up actions to be taken, and signatures by both DOT&PF and Contractor's representatives. The Contractor must maintain records until project acceptance by DOT&PF.

- **Release of Reportable Quantities of Oil or Hazardous Substances**
Because construction personnel may handle oil and certain hazardous substances, spills in amounts that reach Reportable Quantity (RQ) levels are possible. If a spill of oil reaches any surface waters or if a spill of certain hazardous substances exceeds the RQ level, the Contractor must notify the Project Engineer, the National Response Center, and the Alaska Department of Environmental Conservation. See Appendix E of this guide for reporting requirements and a list of hazardous substances and their RQ levels.

3.2.2 Projects Disturbing More Than 2.0 Hectares (5 Acres)

The Contractor must include the following information, as required by the EPA General Permit for Construction Activities: [As part of the ESCP, DOT&PF will typically supply information for items followed by an asterisk * .]

Plan Contents

a. Site Description

- Describe the construction activity, including the nature and extent of all new construction and/or reconstruction earth-disturbing activities for buildings, airport runways or taxiways, highways (including shoulders), bridges, curb and gutter, sidewalks, and drainage systems.*

- Describe the intended sequence of major activities that disturb soils on major portions of the site within the project and right-of-way limits, including grubbing, excavation, and grading.

- Estimate, to the nearest 0.1-hectare, both the total area likely to be disturbed by excavation, grading, or other activities and the total area of the project. For total project area on highway projects, include the area within the right-of-way and any known off-site disturbed areas supplied as materials sources, stockpile sites, and borrow/quarry sites. For total project area on airport projects, include the area within the airport boundaries, and any known off-site disturbed areas supplied as materials sources, stockpile sites, and borrow/quarry sites. List the on-site and off-site areas of each project separately.* (The Department's estimate will include project area and state designated material sources and disposal sites.)

- Estimate the design rainfall and the runoff coefficients at the site for pre- and post-construction conditions.*

- Include a general area location map and a site map indicating:

a. drainage patterns and approximate slopes anticipated after major grading activities
b. locations of all structural and nonstructural controls identified in the plan
c. locations where stabilization activities are expected to occur
d. locations of off-site material, waste, borrow, or equipment storage areas; surface waters, including wetlands; and locations where storm water discharges to a surface water.

- Give the location and describe any discharge associated with industrial activity other than construction, including asphalt and concrete plants dedicated solely to the project. Do not include commercial plants and sources (i.e. those pre-established plants and sources that serve other projects and remain in place after the project is completed).

- Give the name of the receiving water(s) and the extent of wetlands or other aquatic sites.* The requirement for the protection of sensitive wetlands, previously described for smaller projects, also applies for projects disturbing more than 2.0 hectares (5 acres).

- Indicate the location of any impaired waters. * You may find a list of these waters at the following web site: http://www.state.ak.us/local/akpages/ENV.CONSERV/dawq/tmdl/98onepage.htm

- Provide information on endangered or threatened species, including (1) whether any listed species or designated critical habitat, as defined by the U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS) (see Appendix D for addresses), are near the project area and the Contractor's off-site material or disposal areas, and (2) whether such species may be affected by the storm water discharges from these areas. You may obtain this information from the Regional Environmental Coordinator. In the case of Contractor-supplied material sources and disposal areas, contact either the U.S. Fish and Wildlife Service or NMFS (see Appendix D for addresses) or visit the USF&WS web site at http://endangered.fws.gov/.

The Project Engineer cannot give project authorization until a Section 7 consultation has concluded that the action will not harm the listed species. The Section 7 consultation may take from six to twelve months. If endangered species are present, you must satisfy the permit eligibility requirements by filling in the appropriate area of the Notice of Intent Form, as detailed below:

a. Check one or more of the boxes a, b, c, or d. It is unlikely you would ever check box b or c for a supplied material site or disposal site. Check box a if there are no threatened or endangered species in the project area (i.e. disposal area and material sites). Check box d if the material sites and disposal areas are within the DOT&PF Section 7 clearance for the project area.
b. If the Contractor's material site(s) and disposal area(s) don't fall under box a or d, you must consult with the Project Engineer and Regional Environmental Coordinator to fill out the form.

- Give information on historic sites, including (1) if any sites listed on the National Register of Historic Places may be affected by storm water discharges, and (2) if any written agreement is in place with the State Historic Preservation Officer (see Appendix D for address). If you find historic or archeological resources at a proposed material or disposal site, then you must notify the Project Engineer, who will consult with the State Historic Preservation Officer. Project clearance could take from one to six months. If an historic or archaeological resource is eligible for the National Register of Historic Places, you must use an alternative material or disposal site if practical.

- Include a copy of the permit requirements. For further details, see Appendix G of this guide for Federal Register, Volume 63, Number 31, Tuesday, February 17, 1998, pages 7901-7917.

b. Control Measures

Describe the appropriate control measures (BMPs) you will implement at the construction site and the off-site areas. Include stabilization (erosion control) BMPs, structural BMPs, storm water management measures, and other measures.

c. Maintenance

Describe the procedures that will be used to maintain the vegetation, the erosion and sediment control measures, and other protective measures. Such practices may include removing sediment from structural controls (such as sediment ponds/traps, silt fences, or bale check dams) when 50% design capacity is reached, reinforcing and repairing silt fences, or reseeding areas as needed. You must also describe winter shutdown maintenance procedures to ensure all control measures will remain functional during that time.

d. Inspections

Describe the plan for inspection of the project's BMPs and identify the personnel responsible for these inspections. You may find project specific requirements in Section 641 of the construction contract special provisions.

e. Non-Storm Water Discharges

You must identify all sources of non-storm water that are combined with storm water discharges from the construction activity, except for flows from fire-fighting activities. Examples are:

- a water truck that is used to control dust at the construction site
- water from water line flushings
- waters used to wash vehicles and equipment (no detergents are permitted), and
- pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred)

You must also identify pollution prevention measures, such as routing the non-storm water discharges to a sediment basin prior to discharge.

f. Contractor and Subcontractor (Responsible Parties)

Identify the prime Contractor's and Subcontractor's (if applicable) personnel responsible for implementing the SWPPP and each control measure. You must list all Contractors (prime or sub) who perform earth-disturbing activities or install and maintain erosion and sediment control measures.

Administrative Requirements

The Contractor must compile and retain the following records at the construction site:

- **Inspection and Maintenance Records**

  List inspection results on the SWPPP Construction Inspection Report Form 25D-100, found in the DOT&PF Construction Manual. Include project name, inspection date, name of inspectors (DOT&PF and Contractor), type of inspection, site status, site conditions, deficiencies noted and recommended actions to correct deficiencies, follow-up actions to be taken, and signatures by both DOT&PF and Contractor's representatives.

- **Construction Records (Foreman's Report)**

  a. The dates of major grading activities in a particular area.
  b. The dates construction activities cease in an area, either temporarily or permanently.
  c. The dates an area is stabilized, either temporarily or permanently.

- **Plan Location**

  You must keep a copy of the SWPPP at the construction site from the time construction begins until the site is finally stabilized.

- **Retention of Records**

  You must retain the following for 3 years after the completion of final site stabilization:
  a. a copy of the SWPPP
  b. inspection records detailing dates of

earth-disturbing activities, end of construction, and stabilization
c. a copy of the NOI and NOT

- **Access**
  You must post the following at the construction site, or at the nearest DOT&PF construction office:
  a. EPA NPDES Permit number, if available, and a copy of the NOI
  b. Name and phone number of Contractor's local contact person
  c. Location of the SWPPP for viewing by the public

- **Release of Reportable Quantities of Oil or Hazardous Substances**
  Because construction personnel may handle oil and certain hazardous substances, spills in amounts that reach Reportable Quantity (RQ) levels are possible. If a spill of oil reaches any surface waters or if a spill of certain hazardous substances exceeds the RQ level, the Contractor must notify the Project Engineer, the National Response Center, and the Alaska Department of Environmental Conservation. See Appendix E of this guide for reporting requirements and a list of hazardous substances and their RQ levels.

- **Other Administrative Requirements**
  You must comply with the following additional administrative requirements, mandated by the General Storm Water Permit for Construction Activities:

  a. Notice of Intent (NOI)
  Before construction begins, the Contractor must submit a copy of the NOI and the SWPPP to the DOT&PF Project Engineer. The NOI (see Appendix B) is a one-page form that requests general information about the operator in charge of the day-to-day operations of the construction site, the location of the site, the name of receiving waters or the municipal separate storm sewer system, the estimated start date and completion date of the project, and other miscellaneous information about the site.

  The Project Engineer will submit the Contractor's NOI along with the Department's NOI to the US Environmental Protection Agency by Certified Mail.

  The Project Engineer will notify the Contractor when construction may begin. The Contractor may not begin earth-disturbing operations until 48 hours after the NOI postmark date.

  b. Notice Of Termination (NOT)
  The EPA NPDES general storm water permit for construction activities remains in effect until the construction activities are completed and the disturbed areas are stabilized to prevent further erosion of the soil. Final stabilization means that all earth-disturbing activities at the project site have been completed and stabilized through the use of mechanical or vegetative means. Mechanical means include
  - paving
  - riprap
  - retaining structures
  - free draining processed aggregate
  - any naturally non-erodible surfaces such as bedrock and porous parent material

  Vegetative means include planting a uniform perennial vegetative cover with a density of 70% of the native background cover.

  The Project Engineer, in consultation with the Regional Environmental Section, will determine when final stabilization has been achieved. Then the Contractor must submit the NOT (see Appendix C) to the Project Engineer for projects that required an NOI. The Project Engineer will submit the Contractor's and the Department's NOT to EPA.

  c. SWPPP Modification
  For a construction activity to be in full compliance with its EPA NPDES storm water permit, and for the SWPPP to be effective, the plan must accurately reflect

current site features and operations. When it does not, the plan must be amended. During the construction process, the Contractor must inspect and maintain the storm water controls and management practices. Based on these inspections, the Contractor may need to update or modify the SWPPP if there are any changes in the construction or if the plan is ineffective in controlling pollutants. The Contractor must complete SWPPP amendments within seven (7) calendar days of a storm or an inspection.

d. Alaska Department of Environmental Conservation Requirements

The DOT&PF Project Engineer must submit copies of the Storm Water Pollution Prevention Plan (SWPPP), the Notice Of Intent (NOI), and the Notice of Termination (NOT) to the Alaska Department of Environmental Conservation for informational purposes only.

Appendix A. DOT&PF Construction Inspection Form (25D-100)

National Pollutant Discharge Elimination System
Construction Activity
SWPPP Inspection Report Form 25D-100
Date:

Project No.

Project Name:

Inspectors:

Contractor:

Type of Inspection (check one): Weekly: ☐ 0.5 inches or greater rainfall: ☐ Monthly: ☐

Site Status (check one): ☐ Active ☐ Inactive ☐ Completed

Site Conditions: In Compliance with approved plan? ☐ Yes ☐ No
Approved plan is adequate for the site? ☐ Yes ☐ No

If no, explain deficiencies and list corrective actions on a continuation sheet (Form 25D-065)

1. Are erosion control measures identified in the SWPPP such as silt fence, straw bale dikes, diversion channels, etc., functioning properly? Yes ☐ No ☐ If no, explain deficiencies and list corrective actions on a continuation sheet (Form 25D-065).

2. Are any vehicles tracking sediment offsite? Yes ☐ No ☐ If yes, explain deficiencies and list corrective actions on a continuation sheet (Form 25D-065).

3. Are any significant signs of erosion or sediment entering receiving waters adjacent to the project that are associated with the construction activity? Yes ☐ No ☐ If yes, explain deficiencies and list corrective actions on a continuation sheet (Form 25D-065).

4. Is there any potential for pollutants to enter adjacent receiving waters from material storage areas or disposal sites? Yes ☐ No ☐ If yes, explain deficiencies and list corrective actions on a continuation sheet (Form 25D-065).

Note: Corrective actions listed may require an amendment to the SWPPP.

Actions to be taken:
No Action necessary. Continue routine inspections ☐
Correct noted site deficiencies by (Date)
Submit SWPPP modifications as noted in written comments by (Date)
Final Inspection, project completed (Date)

I certify under penalty of law that this document and all of the 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 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.

DOT & PF Project Engineer: Contractor's Designated Representative:

Signature:_____ Signature:_____

Form 25D-100 (revised 8/01) Page 1 of

Appendix B. Notice of Intent Form

THIS FORM REPLACES PREVIOUS FORM 3510-6 (8-98)
See Reverse for Instructions

Form Approved. OMB No. 2040-0188

NPDES FORM

EPA

United States Environmental Protection Agency
Washington, DC 20460

Notice of Intent (NOI) for Storm Water Discharges Associated with CONSTRUCTION ACTIVITY Under a NPDES General Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a NPDES permit issued for storm water discharges associated with construction activity in the State/Indian Country Land identified in Section II of this form. Submission of this Notice of Intent also constitutes notice that the party identified in Section I of this form meets the eligibility requirements in Part I.B. of the general permit (including those related to protection of endangered species determined through the procedures in Addendum A of the general permit), understands that continued authorization to discharge is contingent on maintaining permit eligibility, and that implementation of the Storm Water Pollution Prevention Plan required under Part IV of the general permit will begin at the time the permittee commences work on the construction project identified in Secion II below. IN ORDER TO OBTAIN AUTHORIZATION, ALL INFORMATION REQUESTED MUST BE INCLUDED ON THIS FORM. SEE INSTRUCTIONS ON BACK OF FORM.

I. Owner/Operator (Applicant) Information

Name: Phone:

Address: Status of Owner/Operator: P

City: State: Zip Code:

II. Project/Site Information

Is the facility located on Indian Country Lands? Yes ☐ No ☐

Project Name:

Project Address/Location:

City: State: Zip Code:

Latitude: Longitude: County:

Has the Storm Water Pollution Prevention Plan (SWPPP) been prepared? Yes ☐ No ☐

Optional: Address of location of SWPPP for viewing ☐ Address in Section I above ☐ Address in Section II above ☐ Other address (if known) below:

SWPPP Address: Phone:

City: State: Zip Code:

Name of Receiving Water:

Month Day Year — Estimated Construction Start Date

Month Day Year — Estimated Completion Date

Estimate of area to be disturbed (to nearest acre):

Estimate of Likelihood of Discharge (choose only one):

1. ☐ Unlikely
2. ☐ Once per month
3. ☐ Once per week
4. ☐ Once per day
5. ☐ Continual

Based on instruction provided in Addendum A of the permit, are there any listed endangered or threatened species, or designated critical habitat in the project area?

Yes ☐ No ☐

I have satisfied permit eligibility with regard to protection of endangered species through the indicated section of Part I.B.3.e.(2) of the permit (check one or more boxes):

(a) ☐ (b) ☐ (c) ☐ (d) ☐

III. Certification

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 gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this 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.

Print Name: Date:

Signature: _____

EPA Form 3510-9 replaced 3510-6 (8-98)

EPA

Instructions – EPA Form 3510-9

Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity to be Covered Under a NPDES Permit

Form Approved. OMB No. 2040-0188

Who Must File a Notice of Intent Form

Under the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et.seq.; the Act), except as provided by Part I.B.3 the permit, Federal law prohibits discharges of pollutants in storm water from construction activities without a National Pollutant Discharge Elimination System Permit. Operator(s) of construction sites where 5 or more acres are disturbed, smaller sites that are part of a larger common plan of development or sale where there is a cumulative disturbance of at least 5 acres, or any site designated by the Director, must submit an NOI to obtain coverage under an NPDES Storm Water Construction General Permit. If you have questions about whether you need a permit under the NPDES Storm Water program, or if you need information as to whether a particular program is administered by EPA or a State agency, write to or telephone the Notice of Intent Processing Center at (703) 931-3230.

Where to File NOI Form

NOIs must be sent to the following address:

Storm Water Notice of Intent (4203)
USEPA
401 M. Street, SW
Washington, D.C. 20460

Do not send Storm Water Pollution Prevention Plans (SWPPPs) to the above address. For overnight/express delivery of NOIs, please include the room number 2104 Northeast Mall and phone number (202) 260-9541 in the address.

When to File

This form must be filed at least 48 hours before construction begins.

Completing the Form

OBTAIN AND READ A COPY OF THE APPROPRIATE EPA STORM WATER CONSTRUCTION GENERAL PERMIT FOR YOUR AREA. To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks (abbreviate if necessary to stay within the number of characters allowed for each item). Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions on this form, call the Notice of Intent Processing Center at (703) 931-3230.

Section I. Facility Owner/Operator (Applicant) Information

Provide the legal name, mailing address, and telephone number of the person, firm, public organization, or any other entity that meet either of the following two criteria: (1) they have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (2) they have the day-to-day operational control of those activities at the project necessary to ensure compliance with SWPPP requirements or other permit conditions. Each person that meets either of these criteria must file this form. Do not use a colloquial name. Correspondence for the permit will be sent to this address.

Enter the appropriate letter to indicate the legal status of the owner/operator of the project: F = Federal; S = State; M = Public (other than federal or state); P = Private.

Section II. Project/Site Information

Enter the official or legal name and complete street address, including city, county, state, zip code, and phone number of the project or site. If it lacks a street address, indicate with a general statement the location of the site (e.g., Intersection of State Highways 61 and 34). Complete site information must be provided for permit coverage to be granted.

The applicant must also provide the latitude and longitude of the facility in degrees, minutes, and seconds to the nearest 15 seconds. The latitude and longitude of your facility can be located on USGS quadrangle maps. Quadrangle maps can be obtained by calling 1-800 USA MAPS. Longitude and latitude may also be obtained at the Census Bureau Internet site: http://www.census.gov/cgi-bin/gazetteer.

Latitude and longitude for a facility in decimal form must be converted to degrees, minutes and seconds for proper entry on the NOI form. To convert decimal latitude or longitude to degrees, minutes, and seconds, follow the steps in the following example.

Convert decimal latitude 45.1234567 to degrees, minutes, and seconds.

1) The numbers to the left of the decimal point are degrees.
2) To obtain minutes, multiply the first four numbers to the right of the decimal point by 0.006. 1234 x .006 = 7.404.
3) The numbers to the left of the decimal point in the result obtained in step 2 are the minutes: 7'.
4) To obtain seconds, multiply the remaining three numbers to the right of the decimal from the result in step 2 by 0.06: 404 x 0.06 = 24.24. Since the numbers to the right of the decimal point are not used, the result is 24".
5) The conversion for 45.1234 = 45° 7' 24".

Indicate whether the project is on Indian Country Lands.

Indicate if the Storm Water Pollution Prevention Plan (SWPPP) has been developed. Refer to Part IV of the general permit for information on SWPPPs. To be eligible for coverage, a SWPPP must have been prepared.

Optional: Provide the address and phone number where the SWPPP can be viewed if different from addresses previously given. Check appropriate box.

Enter the name of the closest water body which receives the project's construction storm water discharge.

Enter the estimated construction start and completion dates using four digits for the year (i.e. 05/27/1998).

Enter the estimated area to be disturbed including but not limited to: grubbing, excavation, grading, and utilities and infrastructure installation. Indicate to the nearest acre; if less than 1 acre, enter "1." Note: 1 acre = 43,560 sq. ft.

Indicate your best estimate of the likelihood of storm water discharges from the project. EPA recognizes that actual discharges may differ from this estimate due to unforeseen or chance circumstances.

Indicate if there are any listed endangered or threatened species, or designated critical habitat in the project area.

Indicate which Part of the permit that the applicant is eligible with regard to protection of endangered or threatened species, or designated critical habitat.

Section III. Certification

Federal Statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner of the proprietor, or

For a municipality, state, federal, or other public facility: by either a principal executive or ranking elected official. An unsigned or undated NOI form will not be granted permit coverage.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 3.7 hours. This estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Director, OPPE Regulatory Information Division (2137), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460. Include the OMB control number on any correspondence. Do not send the completed form to this address.

Appendix C. Notice of Termination Form

THIS FORM REPLACES PREVIOUS FORM 3510-7 (8-92)
Please See Instructions Before Completing This Form

Form Approved. OMB No. 2040-0086
Approval expires: 8-31-98

NPDES FORM

EPA

United States Environmental Protection Agency
Washington, DC 20460

Notice of Termination (NOT) of Coverage Under a NPDES General Permit for Storm Water Discharges Associated with Industrial Activity

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the NPDES program. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

I. Permit Information

NPDES Storm Water General Permit Number: ☐☐☐☐☐☐☐☐☐☐☐☐

Check Here if You are No Longer the Operator of the Facility: ☐

Check Here if the Storm Water Discharge is Being Terminated: ☐

II. Facility Operator Information

Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Phone: ☐☐☐☐☐☐☐☐☐☐

Address: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

City: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ State: ☐☐ ZIP Code: ☐☐☐☐☐-☐☐☐☐

III. Facility/Site Location Information

Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Address: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

City: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ State: ☐☐ ZIP Code: ☐☐☐☐☐-☐☐☐☐

Latitude: ☐☐☐☐☐ Longitude: ☐☐☐☐☐☐ Quarter: ☐☐ Section: ☐☐ Township: ☐☐☐ Range: ☐☐☐

IV. Certification

I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a NPDES general permit have been eliminated or that I am no longer the operator of the facility or construction site. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act.

Print Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Date: ☐☐☐☐☐☐

Signature: _____

Instructions for Completing Notice of Termination (NOT) Form

Who May File a Notice of Termination (NOT) Form

Permittees who are presently covered under an EPA-issued National Pollutant Discharge Elimination System (NPDES) General Permit (including the 1995 Multi-Sector Permit) for Storm Water Dicharges Associated with Industrial Activity may submit a Notice of Termination (NOT) form when their facilities no longer have any storm water discharges associated with industrial activity as defined in the storm water regulations at 40 CFR 122.26(b)(14), or when they are no longer the operator of the facilities.

For construction activities, elimination of all storm water discharges associated with industrial activity occurs when disturbed soils at the construction site have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with industrial activity from the construction site that are authorized by a NPDES general permit have otherwise been eliminated. Final stabilization means that all soil-disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

Where to File NOT Form

Send this form to the the following address:

Storm Water Notice of Termination (4203)
401 M Street, S.W.
Washington, DC 20460

Completing the Form

Type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about this form, telephone or write the Notice of Intent Processing Center at (703) 931-3230.

EPA Form 3510-7 (8-98)

Instructions - EPA Form 3510-7
Notice of Termination (NOT) of Coverage Under The NPDES General Permit
for Storm Water Discharges Associated With Industrial Activity

Section I Permit Information

Enter the existing NPDES Storm Water General Permit number assigned to th e facility or site identified in Section III. If you do not know the permit number , telephone or write your EPA Regional storm water contact person.

Indicate your reason for submitting this Notice of Termination by checking th e appropriate box:

If there has been a change of operator and you are no longer the operator of the facility or site identified in Section III, check the corresponding box.

If all storm water discharges at the facility or site identified in Section III have been terminated, check the corresponding box.

Section II Facility Operator Information

Give the legal nam e of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation, rather than the plant or sit e manager. Do not use a colloquial nam e. Enter the complete address and telephone number of the operator.

Section III Facility/Site Location Information

Enter the facility's or site's official or legal name and complete address, including city, state and ZIP code. If the facility lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter , section, township, and range (to the nearest quarter section) of the approximat e center of the site.

Section IV Certification

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed a s follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principa l business function, or any other person who performs similar policy or decisio n making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, State, Federal, or other public facility: by either a principa l executive officer or ranking elected official.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 0.5 hours pe r application, including time for reviewing instructions, searching existing dat a sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Chief , Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, or Director, Office of Information an d Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Appendix D. Endangered or Threatened Species, Critical Habitat, and Historic Landmark Contacts

Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
300 Vintage Blvd., Suite 201
Juneau, AK. 99801

Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
605 West 4th Avenue, Room G-62
Anchorage, AK. 99501

Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
101 12th Avenue, Box 19 (Room 232)
Fairbanks, AK. 99701

National Marine Fisheries Service
Protected Resources section
222 W. 7th Avenue, #43
Anchorage, AK 99513

National Marine Fisheries Service
Protected Resources Section
PO Box 21668
Juneau, AK 99802

Office of History & Archaeology
Department of Natural Resources
State Historic Preservation Officer
550 West 7th Ave Suite 1310
Anchorage AK 99501-3565

Appendix E. Oil and Hazardous Materials Reporting Requirements

In the event of a spill of oil that reaches any surface waters, or a spill on land of certain hazardous substances (listed on the following pages) exceeding the Reportable Quantity (RQ) level, the Contractor must:

- Notify the Project Engineer
- Notify the National Response Center in Washington, D.C., immediately at (800) 424-8802
- Within 14 days, submit a written description of the release to the EPA regional office providing the date and circumstances of the release and the steps to be taken to prevent another release.
- Modify the SWPPP to include the information listed above.
- Notify the Alaska Department of Environmental Conservation (ADEC) at one of the following telephone numbers, depending upon project location:
  - Central (Anchorage) 907-269-3063
  - Northern (Fairbanks) 907-451-2121
  - Southeast (Juneau) 907-465-5340
  - Outside normal business hours, call: 1-800-478-9300
- Complete an Oil and Hazardous Substances Spill Form and submit it to ADEC after telephone notification. (A copy of the form appears after the list of hazardous substances below.)

Table 117.3
Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)
Aniline	D	5,000 (2,270)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)

Material	Category	RQ in pounds (kilograms)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)
Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	C	1,000 (454)
Dichloropropene	B	100 (45.4)
Dichloropropene-Dichloropropane (mixture)	B	100 (45.4)
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dimethylamine	C	1,000 (454)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (45.4)
Dinitrotoluene	A	10 (4.54)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	D	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA)	D	5,000 (2,270)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)
Formaldehyde	B	100 (45.4)
Formic acid	D	5,000 (2,270)
Fumaric acid	D	5,000 (2,270)
Furfural	D	5,000 (2,270)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate	C	1,000 (454)
Kepone	X	1 (0.454)

Material	Category	RQ in pounds (kilograms)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)
Lead iodide	A	10 (4.54)
Lead nitrate	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic Acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)
2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)

Material	Category	RQ in pounds (kilograms)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

[50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION

PERSON REPORTING	PHONE NUMBER	REPORTED HOW? (e.g., phone)

DATE/ TIME OF SPILL	DATE/TIME DISCOVERED	DATE/TIME REPORTED

LOCATION	SUBSTANCE SPILLED

QUANTITY SPILLED	QUANTITY CONTAINED	QUANTITY RECOVERED	QUANTITY DISPOSED
☐ gallons _____ ☐ pounds	☐ gallons _____ ☐ pounds	☐ gallons _____ ☐ pounds	☐ gallons _____ ☐ pounds

POTENTIAL RESPONSIBLE PARTY C-Plan Holder? YES ☐ NO ☐	OTHER POTENTIAL RESPONSIBLE PARTIES, IF ANY

SOURCE OF SPILL

CAUSE OF SPILL

CLEANUP ACTIONS

DISPOSAL METHODS AND LOCATION

ENVIRONMENTAL DAMAGE (check one) YES ☐ NO ☐	SURFACE AREA AFFECTED (square feet)	SURFACE TYPE (describe area affected)

COMMENTS

DEC USE ONLY

SPILL #	FILE #	LC	C-PLAN MGR NOTIFIED YES ☐ NO ☐

SPILL NAME, IF ANY	NAMES OF DEC STAFF RESPONDING

DEC RESPONSE ☐ phone follow-up ☐ field visit ☐ took report	CASELOAD CODE ☐ First and Final ☐ Open/No LC ☐ LC assigned	CLEANUP CLOSURE ACTION ☐ NFA ☐ Monitoring ☐ Transferred to CS or STP

COMMENTS

REPORT PREPARED BY	DATE REPORT PREPARED

G:\SPAR\Spar-Prevention and Emergency Response\Web\PERP\docs\spillfrm2.doc revised April 20, 2000

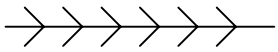
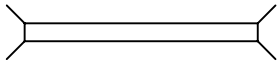
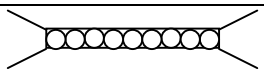
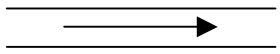
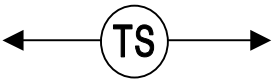
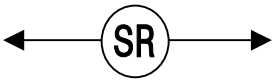
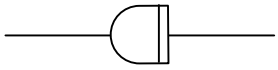
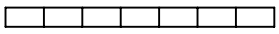
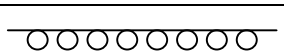
Appendix F. Examples of Best Management Practices

Introduction

Appendix F is a discussion of the more commonly used erosion and sediment control practices. Objectives and applications are outlined for each practice. Use considerations, common failures, alternate measures, and relationship with other erosion and sediment control practices are described. Finally, design, materials, installation, inspection, maintenance, and removal are described for each measure. The measures described here are by no means all-inclusive. There are many variations to these practices according to site-specific conditions, and in addition there may be manufactured products available that will satisfy a particular need for erosion and sediment control. Table F-1 lists a matrix of uses for selected erosion control practices, and suggested symbology to be used on plans.

It is crucial to the success of erosion and sediment control at construction sites that individual measures be designed, constructed, and maintained with regard to the site, to other measures, and construction methods being used. Revegetation, either temporary or permanent, is integral to the process, and is discussed in detail in Section 16.8 of the *Alaska Highway Drainage Manual*.

Table F-1
Matrix of Uses and Suggested Drawing Symbols

Erosion and Sediment Control Measures	Pg.	Structural Measures		Stabilization (Erosion Control)	Temporary/ Permanent	Symbol
		Velocity Control	Sediment Control			
Interception/ Diversion Ditch	F-3	X			T, P	
Slope Drain	F-6	X			T	
Rock Flume	F-9	X			T, P	
Outlet Protection	F-11	X			T, P	
Stormwater Conveyance Channel	F-14	X			T, P	
Rock Check Dam	F-18	X			T, P	
Mulching	F-21			X	T	
Temporary Seeding	F-23			X	T	
Surface Roughening and Terracing	F-25			X	T	
Rolled Erosion Control Products	F-30			X	T, P	
Temporary Sediment Trap	F-34		X		T	
Vegetative Buffer Strip	F-37		X		T, P	
Silt Fence	F-40		X		T	
Inlet Protection	F-44		X		T	
Straw Bale Barrier	F-50		X		T	
Brush Barrier	F-53		X		T	
Vehicle Tracking Entrance/Exit	F-56		X		T	

1. Interception/Diversion Ditch

Objectives and Applications

An interception/diversion ditch, berm or excavated channel, or combination berm and channel constructed across a slope that functions to intercept runoff and divert it to a stabilized area where it can be safely discharged.

This measure should be used in construction areas where runoff can be diverted and disposed of properly to control erosion, sedimentation, or flood damage. Specific locations and conditions include above disturbed existing slopes, and above cut or fill slopes to prevent runoff over the slope; across unprotected slopes, as slope breaks, to reduce slope length; below slopes to divert excess runoff to stabilized outlets; where needed to divert sediment laden water to sediment traps; at or near the perimeter of the construction area to prevent sediment from leaving the site; above disturbed areas before stabilization to prevent erosion and maintain acceptable working conditions; around buildings or areas that are subject to damage from runoff, and during culvert installations where water must be temporarily diverted around the construction area. Diversions may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

- Berm not properly compacted during construction, resulting in uneven settling.
- Sediment accumulation against berm/channel not removed periodically, resulting in berm not functioning properly.

Other Considerations

- Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 ac.
- Interception/diversion ditches should be carefully designed where longitudinal ditch slopes are steeper than 10 per cent.

Diversions are preferable to other types of man-made storm water conveyance systems because they more closely simulate natural flow patterns and characteristics, and flow velocities are generally kept to a minimum.

Relationship to Other ESC Measures

Diverted runoff should outlet to a stabilized area such as a sediment basin, detention or retention basin, or stabilized outlet, which should be established prior to introducing runoff from the diversion.

Alternate Sediment Control Measures

Slope Drain (can be used in association with this measure).

Other Names

Interceptor Ditch, Crown Ditch

Design

Location: *Should be determined by considering outlet conditions, topography, land use, soil type, and length of slope.*

Capacity: *permanent: 10 year peak runoff storm. temporary: 2 year peak runoff storm.*

Berm

Berm Top Width: *minimum 2 ft.*
Berm Base Width: *minimum 4.5 ft.*
Berm Height: *minimum 18 in.*
Berm Side Slopes: *2:1 or flatter*

Ditch

Channel Freeboard: *minimum 6 in.*
Channel Side Slopes: *2:1 or flatter*

Materials

Compacted soil or coarse aggregate, riprap, filter fabric, plastic lining, seed and mulch, sandbags

Installation

Interception Ditch

Remove and properly dispose of all trees, brush, stumps, or other objectionable material. Fill and compact all ditches, swales, or gullies that that will be crossed to natural ground level. Excavate, shape, and stabilize the diversion to line, grade, and cross section as required in the plans. Compact the berm to prevent unequal settlement and to provide stability against seepage. Stabilize the diversion with vegetation after installation.

Diversions for Culvert Installations

Excavate the diversion channel to the specified dimensions, leaving temporary plugs at both ends. Place channel lining and stabilize with riprap or sandbags. Remove plugs at both ends (down-stream first) and divert water into the diversion with sandbags. After installation of the culvert is complete, replug the diversion, salvage the diversion lining, and backfill in the channel.

Inspection

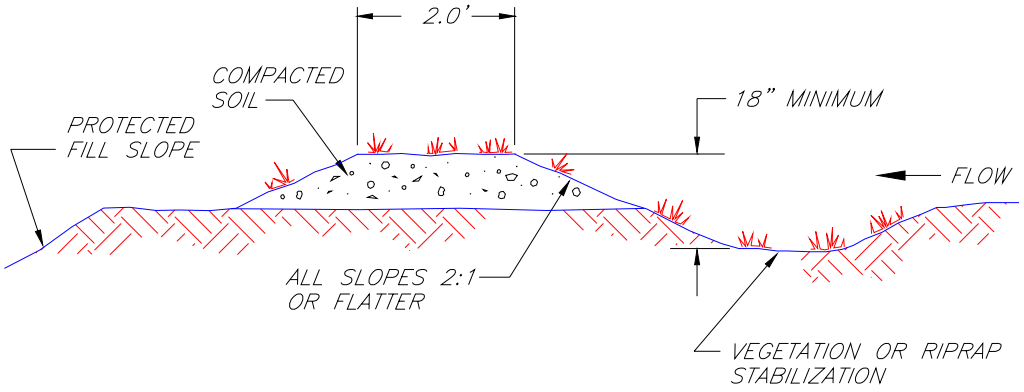
Inspect the diversion every week and after each rainfall during construction operations.

Maintenance

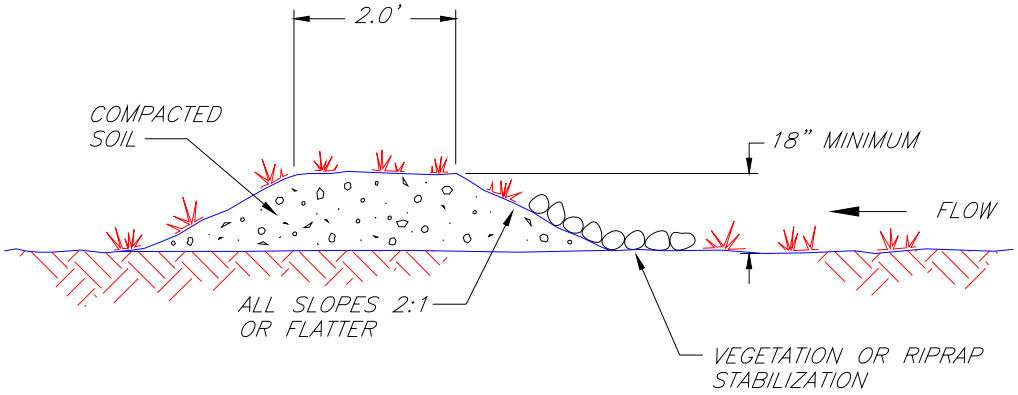
Remove any sediment or other obstructions from the diversion channel. Check outlets and make repairs as necessary. Reseed areas that fail to establish a vegetative cover.

Removal

Temporary installations – Restore to existing or constructed grade. Seed and mulch.



TYPICAL FILL DIVERSION



TYPICAL TEMPORARY DIVERSION DIKE

NOTES:
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE DIKE SHALL BE STABLILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.

FILE: TEMPDIKE

INTERCEPTION/DIVERSION DITCH

2. Slope Drain

Objectives and Applications

A slope drain is a flexible tubing or conduit extending temporarily from the top to the bottom of a cut or fill slope.

The purpose of a slope drain is to temporarily conduct concentrated storm water runoff safely down the face of a cut or fill slope without causing erosion on or below the slope. These are temporary measures that are used during grading operations, until the permanent drainage structures are installed, and until the slopes are permanently stabilized. The pipe material is typically corrugated plastic or flexible tubing, and is used in conjunction with temporary diversion dikes along the top edge of newly constructed slopes, that function to direct storm water runoff into the slope drain.

Common Failures - Generally due to faulty installation or maintenance.

- Slope drain sections not securely fastened together; fittings not water tight, resulting in leakage.
- Slope drain sections not securely anchored to the slope, resulting in displacement of the structure.
- Materials placed on, or construction traffic across slope drain, resulting in damage to the structure.

Other Considerations

- Provide both inlet and outlet protection to minimize erosion at these locations.
- Slope drains should be used in conjunction with diversion dikes to convey runoff from the drainage area.
- The entrance section must be securely entrenched, all connections must be watertight, and the conduit must be securely staked.

Relationship to Other ESC Measures

Slope drains are used with temporary diversion dikes to facilitate channeling of runoff into the structure. Inlet and outlet protection are required to minimize erosion and scour.

Alternate Sediment Control Measures

Diversion

Other Names

Downdrain; Drop Pipe

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area*: should not exceed 5 acres per slope drain. If contributing drainage area exceeds this amount, consider using a more permanent installation such as a rock-lined flume, etc.*

Capacity: *2 year peak runoff or the design discharge of the water conveyance structure, whichever is greater*

Slope drain size (minimum)	
Drainage area (Acres)	**Pipe diameter (Inches)**
0.5 ac.	12 in.
1.5 ac.	18 in.
3.5 ac.	24 in.
5.0 ac.	30 in.

Flexible conduit: *heavy duty flexible material, such as corrugated plastic pipe or plastic tubing*

Inlet section: *standard flared end section for metal pipe culverts, or geotextile, for inlet protection*

Diversion dike height: *minimum 12 in. higher than the top of the drain pipe*

Island over inlet height: *minimum 18 in. higher than the top of the drain pipe*

Outlet section: *riprap or geotextile, for outlet protection*

Materials

Flexible corrugated plastic pipe or specially designed plastic tubing; grommets or stakes (for fastening); riprap, geotextile

Installation

Place slope drains on undisturbed ground or well-compacted fill at locations specified on the plans. Place the entrance of the drain in a 6 in. sump at the top of the slope. Hand tamp the soil under and around the entrance in 6 in. lifts. Ensure that fill over the top of the drain has minimum dimensions of 18 in. height, 4 ft. top width, and 3:1 side slopes. Install inlet protection using end section for pipes or geotextile. Use watertight fittings at all slope drain connections. Securely fasten the exposed section of the pipe with grommets or stakes at 10 ft. spacings. Extend the drain beyond the toe of the slope and provide riprap or geotextile outlet protection. Construct the diversion dike 12 in. above the top of the pipe entrance. Compact and stabilize the dike.

Inspection

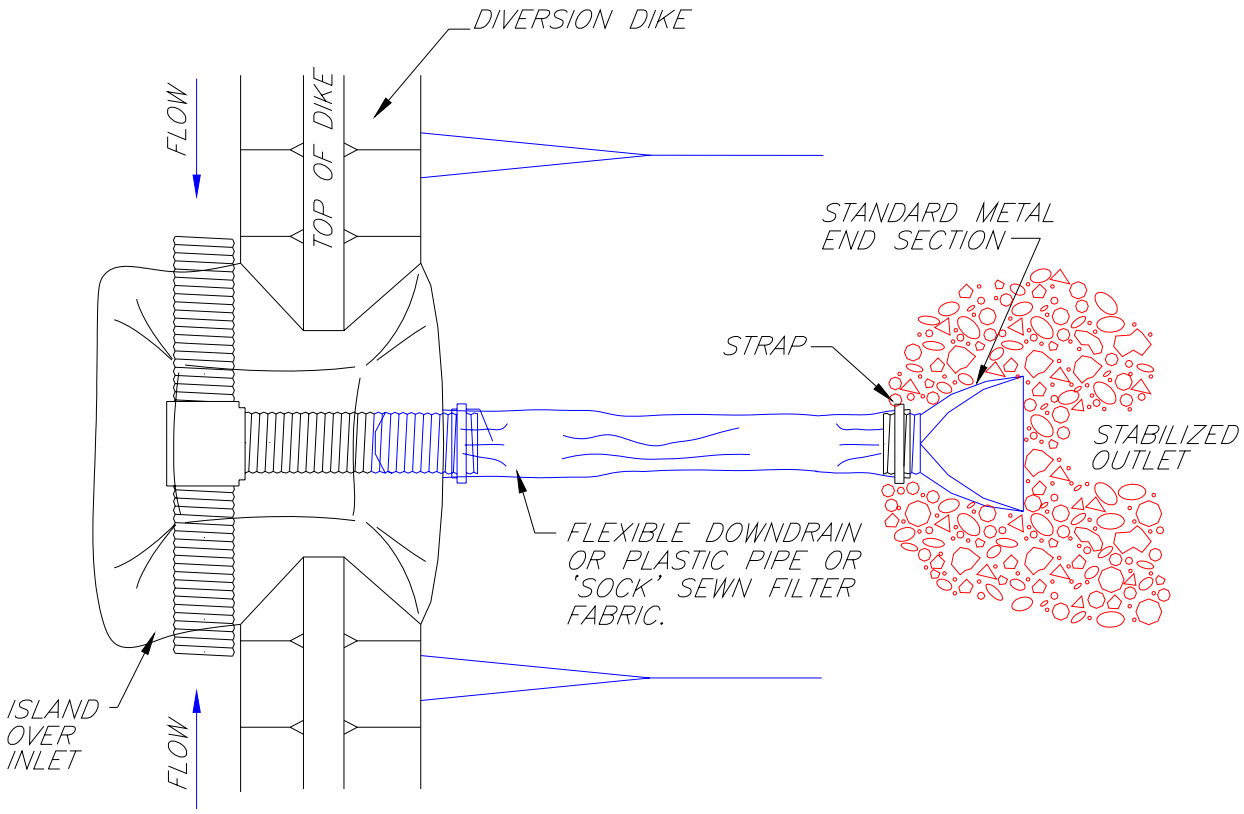
Inspect slope drains weekly and immediately after each rainfall that produces runoff for erosion around the inlet and outlet that could result in undercutting or bypassing. Inspect the pipe for breaks or clogs.

Maintenance

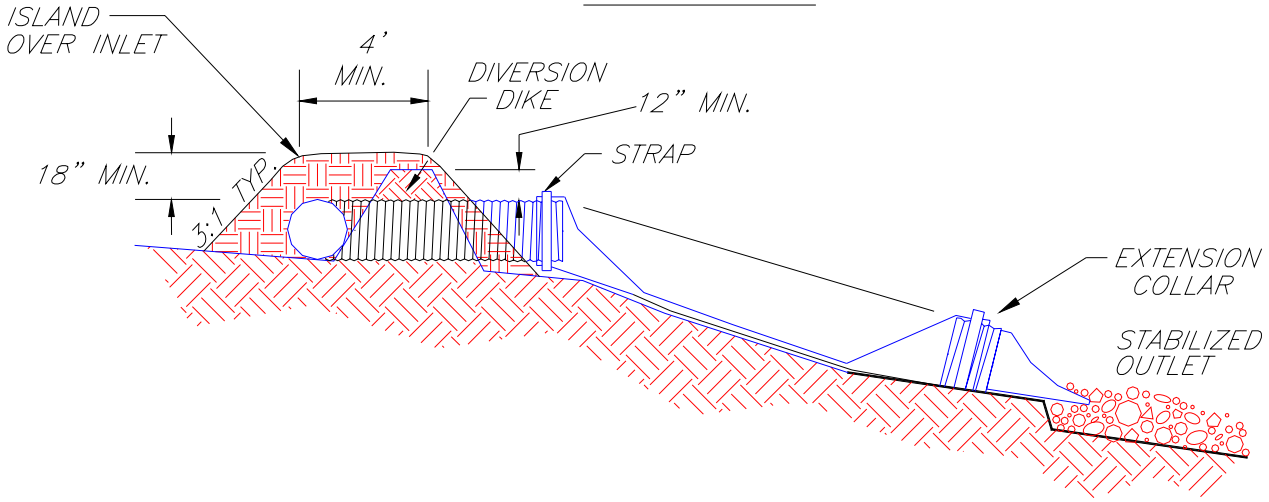
Immediately repair any erosion around the inlet or outlet; install a headwall, riprap, or sandbags if necessary. Promptly repair any breaks in the pipe and clear any clogs that reduce flow through the structure.

Removal

After the slope has been permanently stabilized and the permanent drainage system has been installed, remove the slope drains and stabilize the remaining disturbed areas.



PLAN VIEW



SECTION

SLOPE DRAIN

3. Rock Flume

Objectives and Applications

A rock flume is a riprap-lined channel to convey water down a relatively steep slope without causing erosion problems on or below the slope.

Flumes serve as stable, permanent elements of a storm water system receiving drainage from above a relatively steep slope, typically conveyed by diversions, channels, or natural drainageways. Drainage will flow down the rock culvert and into a stabilized outlet, sediment trap, or other conveyance measure.

Common Failures - Generally due to faulty installation or maintenance.

- Stone size too small or backslope too steep, resulting in stone displacement.
- Sediment accumulation in flume channel, resulting in reduced capacity.
- Channel width too narrow, resulting in over topping and erosion.

Other Considerations

- Provide both inlet and outlet protection to minimize erosion at these locations.
- Rock flumes should be used in conjunction with diversion dikes to convey runoff from the drainage area.
- When planning rock flumes, consider flow entrance conditions, soil stability, outlet energy dissipation, and downstream stability.

Relationship to Other ESC Measures

Rock flumes assist in the second, conveyance, stage of a BMP system. Rock flumes are used with diversion dikes to facilitate channeling of runoff into the structure

Alternate Sediment Control Measures

Storm water conveyance channel

Other Names

Rock chute, rock downdrain

Design

Contributing flow drainage area*: not to exceed 10 acres per rock flume.*

Capacity*: 10 year peak runoff or the design discharge of the water conveyance structure, whichever is greater.*

Flume Channel Lining	
Drainage Area (Acres)	Riprap Sizes (Class)
5.0 ac	Class I
10.0 ac	Class II

Slope: *not to exceed 1.5:1 (67 %)*

Depth: *minimum 1 ft.*

Alignment: *straight*

Inlet section: *riprap and geotextile, or flared metal end section for inlet protection*

Outlet section*: riprap and geotextile, for outlet protection*

Materials

Riprap, geotextile, flared metal end section

Installation

Remove all unsuitable material, such as trees, brush, roots, or other obstructions prior to installation. Shape the channel to proper grade and cross-section as shown in the plans, with no abrupt deviations from design grade or horizontal alignment. Compact all fills to prevent unequal settlement. Place geotextile prior to placement of riprap.

Inspection

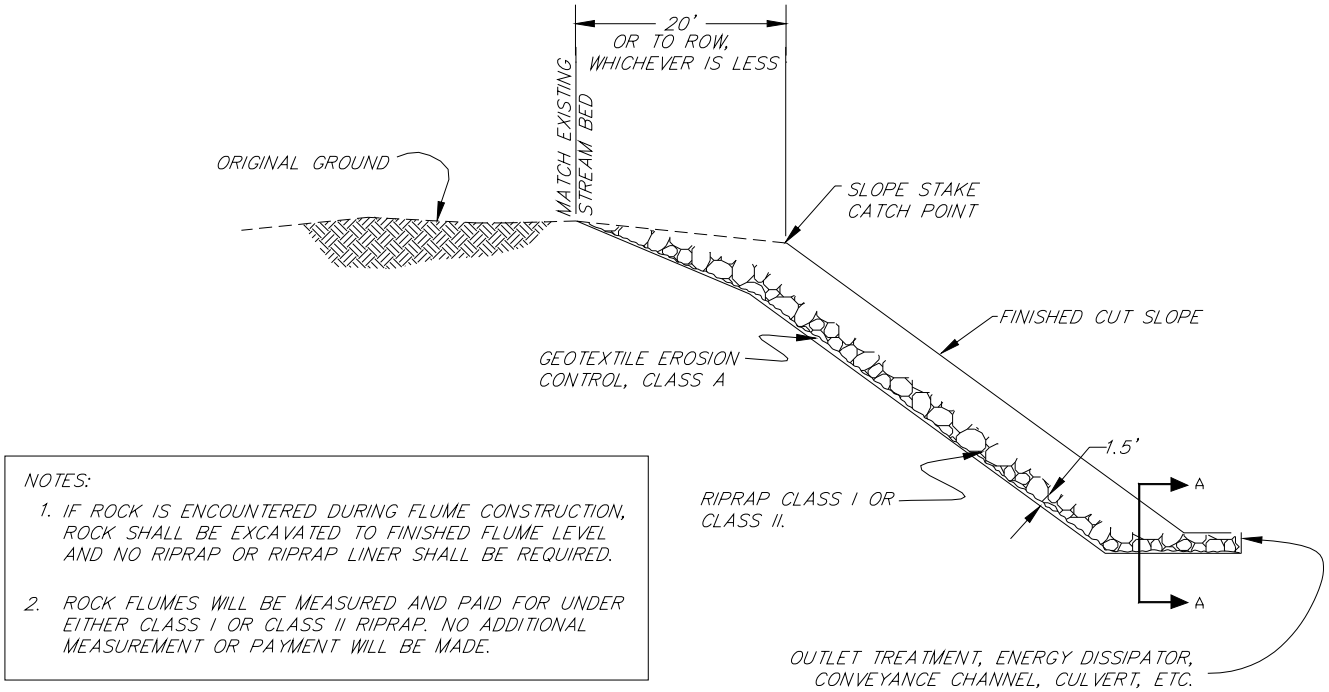
Inspect flume channels at regular intervals as well as after major rains for sediment accumulation, material displacement, bank failures, and scour at inlet and outlet sections.

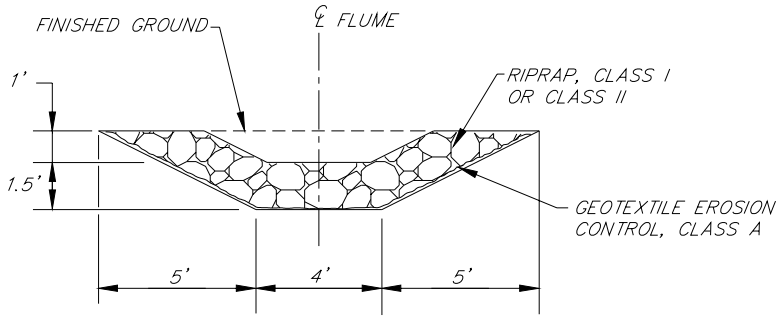
Maintenance

Rock flume channels should be checked periodically to ensure that scouring is not occurring beneath the fabric underlying the riprap layer, or that the stones have not been displaced by the flow. Sediment should be removed from the riprap lined channel if it reduces the capacity of the channel.

Removal

Rock flumes will normally be left in place after construction is completed.





SECTION A–A

ROCK FLUME DETAIL

Rock Flume

4. Outlet Protection

Objectives and Applications

An outlet protection is a structure designed to control erosion at the outlet of a pipe by reducing flow velocity and dissipating flow energy.

This measure should be used where the discharge velocity of a pipe exceeds the tolerances of the receiving channel or disposal area. To prevent scour and undermining, an outlet protection structure is needed to absorb the impact of the flow and reduce the velocity to non-erosive levels. A riprap lined apron is the most commonly used practice for this purpose because of its low cost and ease of installation. Designs will vary based on discharge specifics and receiving stream conditions. Outlet Protection may be temporary or permanent.

***Common Failures** - Generally due to faulty design, installation or maintenance.*

- Inadequate apron length, resulting in scouring
- Riprap rock that is too small for runoff velocities

Other Considerations

- The riprap apron should be extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control
- If the pipe discharges into a well defined channel, the side slopes of the channel shall not be steeper than 1:2 (horizontal:vertical)
- Riprap stilling basins or plunge pools should be considered in lieu of aprons where pipe outlets are perched or where high flows would require excessive apron length. Design guidelines for stilling basins can be found in Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT, FHWA (1983).

Relationship to Other ESC Measures

Outlet protection may be installed at the discharge points of grassed waterways or swales, storm water conveyance channels, sediment basins, and wet ponds.

Alternate Sediment Control Measures

Other structural energy dissipators, such as riprap stilling basins, baffle wall basins or T-fitting on the end of corrugated metal pipe.

Other Names

Stabilized Outlet.

Design

Capacity: *2 year peak runoff or the design discharge of the water conveyance structure, whichever is greater. Determine the maximum allowable velocity for the receiving stream, and design the riprap apron to reduce the flow to this velocity*

Apron Length: *The apron length shall be six times the diameter of the outlet pipe.*

Apron Width: *The apron width shall be four times the diameter of the outlet pipe.*

Materials: *The apron should be lined with riprap. The riprap should consist of a well-graded mixture of stone, with larger stones predominating. The diameter of the largest stone shall be no greater than the 1.5 times the median stone size. Geotextile filter cloth shall be placed between the riprap and the underlying soil.*

Grade: *The apron shall be less than or equa*l *to the receiving channel grade, preferably a flat (0%) slope. Steeper grades may require alternative measures such as riprap stilling basins, or other energy dissipators.*

Alignment: *The apron shall be straight throughout the entire length.*

Additional Design Guidelines: *Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT.*

Materials

Rock riprap; geotextile filter cloth.

Installation

Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan.

Compact any fill required in the subgrade to the density of the surrounding undisturbed material. The riprap must conform to the specified grading limits shown on the plan. Filter cloth must meet the design requirements and be properly protected from punching or tearing during installation.

Riprap may be placed by equipment, but take care not to damage the filter cloth. Ensure that the riprap consists of a well-graded mixture of stones. The diameter of the largest stone should be no greater than 1.5 times the median stone size. The minimum thickness of the riprap apron should be 1.5 times the maximum stone diameter. Riprap may be field stone or rough quarry stone, and should be hard, angular, weather resistant, and well graded. Make the top of the riprap at the downstream end level with the receiving area or slightly below it. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. Stabilize all disturbed areas with vegetation immediately after construction.

Inspection

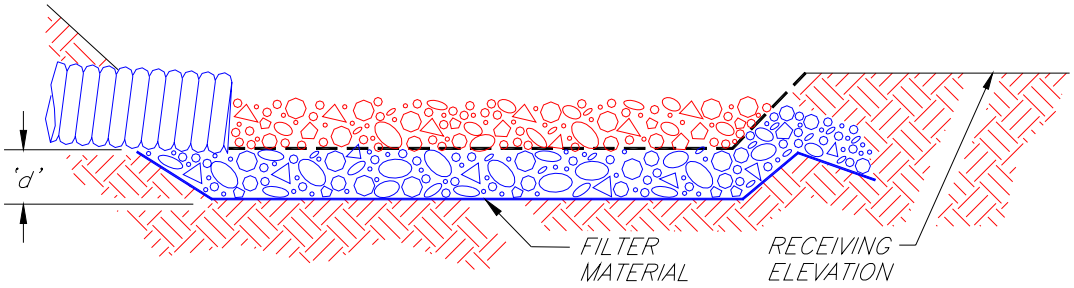
Inspect outlet protection weekly and after heavy rains to look for erosion around or below the riprap, dislodged stones, and scouring. Outlet protection should also be monitored for sediment accumulation filling the voids between rocks.

Maintenance

Make immediate repairs if any conditions noted under inspection are found. Sediment should be removed when it fills the voids between rocks.

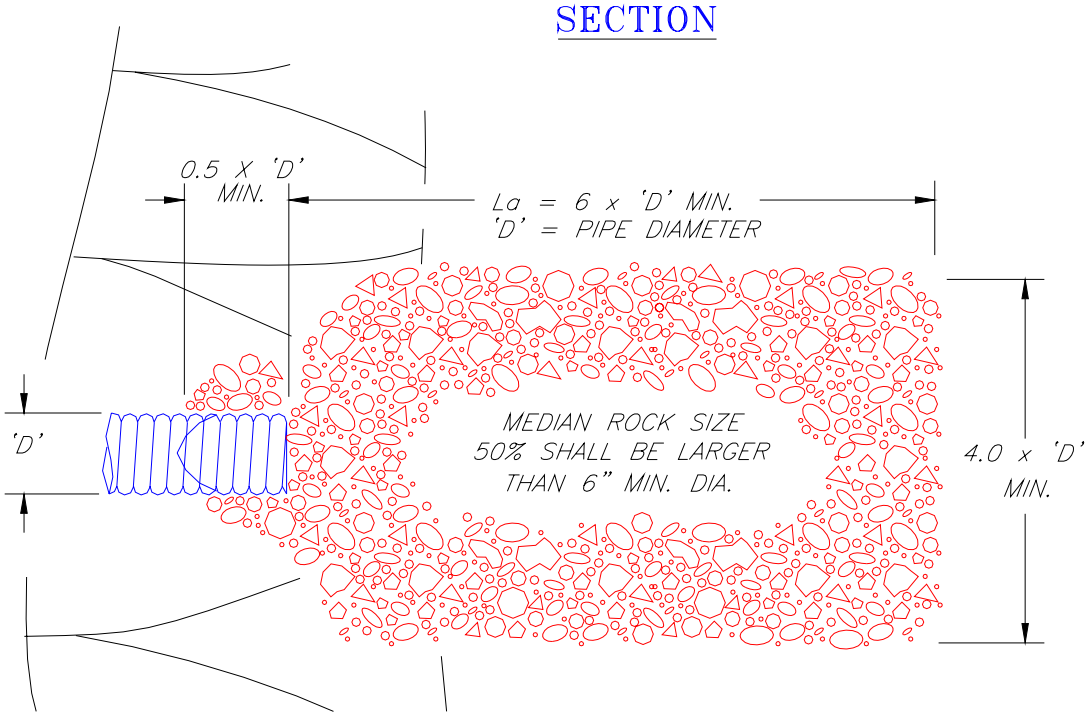
Removal

Restore ground to existing or constructed grade. Revegetated measures may be left in place only if specifications specifically allow it.



THICKNESS ('d') = 1.5 x MAX. ROCK DIAMETER – 6" MIN.

SECTION



PLAN

NOTES:

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM GRADED GRAVEL LAYER.

FILE: ENRGYDIS

OUTLET PROTECTION

5. Storm Water Conveyance Channel

Objectives and Applications

A storm water conveyance is a channel lined with vegetation, riprap, or other flexible material designed for the conveyance and safe disposal of concentrated surface runoff to a receiving system without damage from erosion.

The main design considerations are the volume and velocity of the water expected in the channel. All conveyance channels should be designed to carry at least the appropriate peak flow. Other factors to be considered include availability of land, aesthetics, safety, maintenance requirements, and soil characteristics. There are two types of cross sections for channel linings, trapezoidal and triangular ("V" shaped). All channels should discharge through a stabilized outlet that should be designed to handle the expected runoff velocities and volumes from the channel without resulting in scouring.

Channel linings function to protect drainage channels against erosion through the use of flexible linings (vegetation, riprap, gravel, or flexible, porous mats), and may be used as either a temporary or a permanent sediment control measure. The selection of a type of lining should be based upon the design flow velocities.

Common Failures *- Generally due to faulty maintenance.*

- Sediment accumulation – channel capacity is reduced, resulting in over topping and erosion
- Failure of lining

Other Considerations

- Channels should be located to conform with and use the natural drainage system.
- Grass lined channels should not be subject to sedimentation from disturbed areas.
- Grass-lined channels may be unsuitable if channel slopes over 5% predominate, continuous or prolonged flows occur, potential exists for damage from traffic (people or vehicles), or soils are erodible.
- Channel side slopes should be 2:1 or flatter in the case of rock-riprap lining. Vegetated channel side slopes should be 4:1 or flatter.
- When using riprap as a liner, a geotextile filter blanket or one or more layers of granular filter should be placed before placing the riprap. The thickness and gradation of the granular filter, or specifications for the geotextile, should be included in the plans.
- Vegetation in grass lined channels should be established before flows are introduced.

Relationship to Other ESC Measures

All channels should discharge through a stabilized outlet. The outlet should be designed so that it will handle the expected runoff velocities and volumes without scouring. An energy dissipator may be needed if flow velocities exceed the allowable velocity of the receiving channel.

Alternate Sediment Control Measures

Grass Lined Swale

Other Names

Channel Stabilization

Design

The following information is needed to design channel linings.

- *Expected runoff peak flow*
  Temporary: 2-year frequency storm
  Permanent: 10-year frequency storm
- *Desired channel capacity*
- *Slope of the channel*
- *The type of cross-sectional design of channel*
- *The type of lining*
- *Design depth or design cross sectional area*

Design Guidelines – *Design procedures should be consistent with steps outlined in chapter 8.6.3.1 of the Alaska Highway Drainage Manual. Basic steps will include:*

1. *Establish a roadside plan*
2. *Obtain or establish cross section data*
3. *Determine initial channel grades*
4. *Check flow capacities and adjust as necessary*
5. *Determine channel lining/protection needed (following procedures in FHWA Hydraulic Engineering Circular No. 15, "Design of Roadside Channels with Flexible Linings")*
6. *Analyze outlet points and downstream effects*

Materials

Filter blanket or geotextiles, flexible, porous mats (fiberglass, plastic, or jute), staples, riprap, gravel, seed, fertilizer, mulch.

Installation

Remove all unsuitable material, such as trees, brush, roots, or other obstructions prior to installation. Shape the channel to proper grade and cross-section as shown in the plans, with no abrupt deviations from design grade or horizontal alignment. Compact all fills to prevent unequal settlement. Remove any excess soil and dispose of properly.

Grass lined channels – Seed, fertilize and mulch.

Riprap lined channels – Place a geotextile filter blanket or a granular filter, prior to placement of riprap.

Mat lined Channels –Seed and fertilize. Apply the matting from the upper end of the channel and continue downgrade. Secure the top end of the matting by excavating a 6 in. trench, followed by back-filling and compacting. Overlap rolls of matting at least 6 in.. Excavate a 6 in. x 6 in. trench every 35 ft. and inset a fold of the mat into the trench. Staple securely on 6 in. centers, using minimum 6 in. long staples, then backfill and compact. Roll channel lining with a heavy roller after seeding, mat placement, and stapling are complete.

Inspection

Inspect channels weekly as well as after major rains for sediment accumulation, material displacement, bank failures, and scour at inlet and outlet sections.

Maintenance

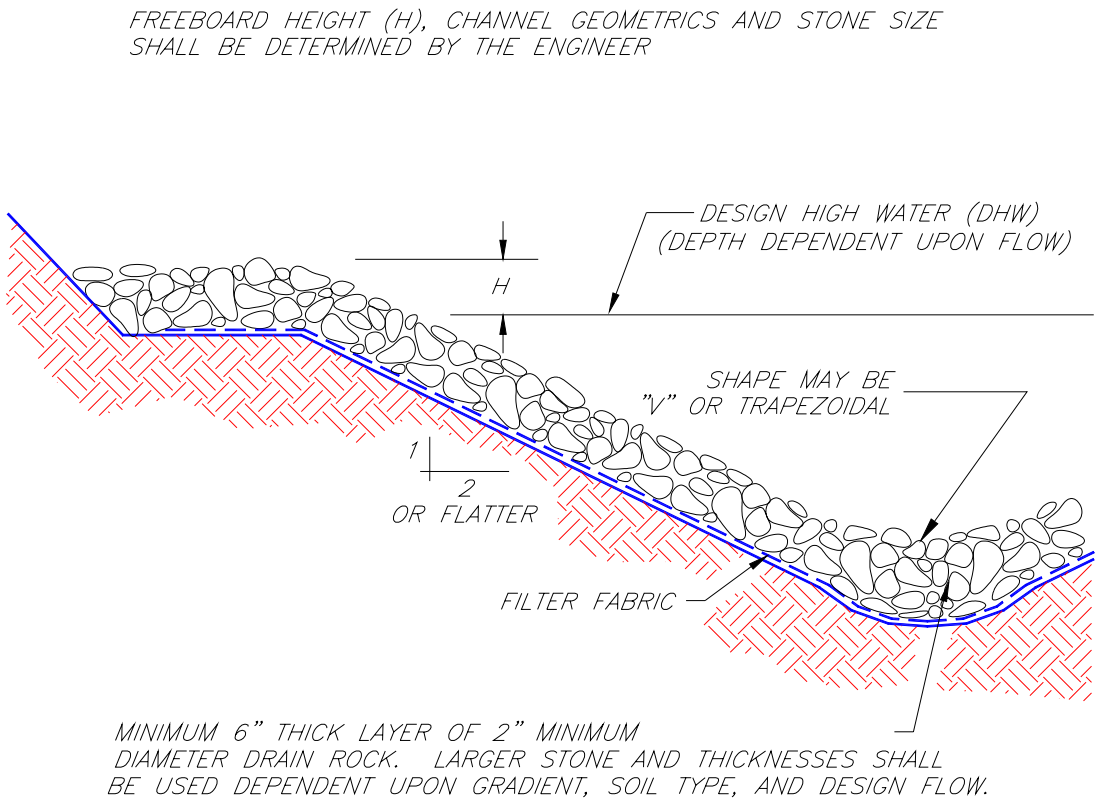
Grass Lined Channels – During the initial establishment, grass lined channels should be repaired immediately and grass re-established if necessary. After grass has become established, the channel should be checked periodically to determine if the grass is withstanding the flow velocities without damage. The channel should be repaired if scour is found to be present, and any debris or sediment accumulation should be removed.

Riprap Lined Channels – Riprap lined channels should be checked periodically to ensure that scouring is not occurring beneath the fabric underlying the riprap layer, or that the stones have not been displaced by the flow. Sediment should be removed from the riprap lined channel if it reduces the capacity of the channel.

Mat Lined Channels – Inspect channel linings following each major storm or snowmelt event and repair as necessary. If the desired grass has not become established through a mat, replace the matting, taking care not to disturb any areas of established grass.

Removal

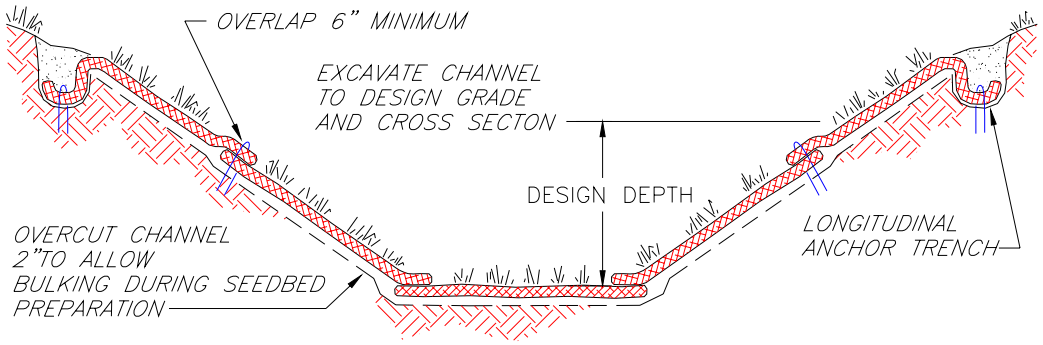
Temporary channels - Provide and compact fill to existing or constructed grade. Seed and mulch.

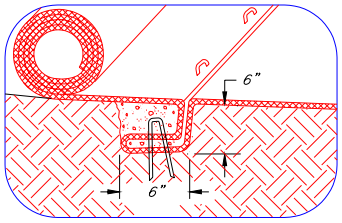


TYPICAL SECTION

FILE: RCKCHNEL

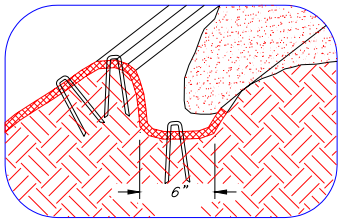
STORM WATER CONVEYANCE CHANNEL, RIPRAP



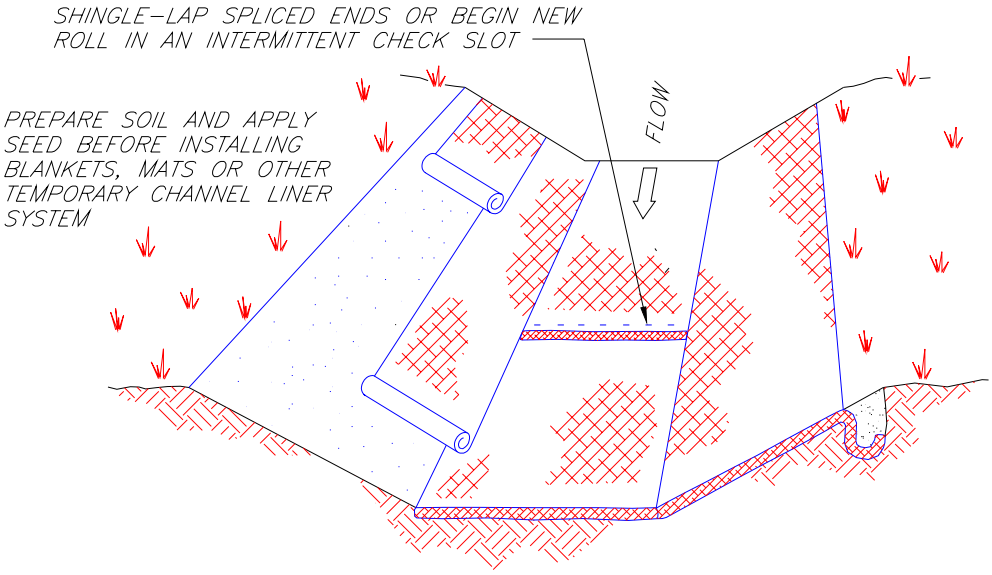


INTERMITTENT CHECK SLOT

TYPICAL INSTALLATION
WITH EROSION CONTROL
BLANKETS OR TURF
REINFORCEMENT MATS



LONGITUDINAL ANCHOR TRENCH



NOT TO SCALE

NOTES:
1. DESIGN VELOCITIES EXCEEDING 2.0 FT/SEC REQUIRE TEMPORARY BLANKETS, MATS OR SIMILAR LINERS TO PROTECT SEED AND SOIL UNTIL VEGETATION BECOMES ESTABLISHED.
2. GRASS–LINED CHANNELS WITH DESIGN VELOCITIES EXCEEDING 6.0 FT/SEC SHOULD INCLUDE TURF REINFORCEMENT MATS.

FILE: GRSSINST

STORM WATER CONVEYANCE CHANNEL, MAT

6. Rock Check Dam

Objectives and Applications

A rock check dam is an expedient (or emergency) temporary measure to protect narrow erosion-susceptible waterways and/or reduce the sediment loads in channeled flows. Check dams may also be used as permanent measures.

Temporary check dams are placed in series in ditches, swales, gullies, or other minor drainageways intended to be filled or stabilized at a later time. They are used to slow stormwater velocities and direct scouring flows away from channel surfaces. The dam configuration supports sediment settling from silted waters pooled behind the weir. Small sediment particles become lodged in the dam's interior.

Permanent check dams may be used as gradient control structures in ditches adjacent to elevated roadway sections.

Common Failures - Check dams are vulnerable to failure from concentrated flow.

- Undercut/washout of channel banks beside the structure due to improper installation (e.g. dam not built high enough onto the banks).
- Increased bank erosion (e.g. at channel bends) or inadequate protection of channel surfaces due to improper location or installation of check dams.
- Water backup and bank overflow due to overly tall dam structure.
- Rocks washed downstream may clog culverts, misdirect flow, etc.
- Check dams installed in grass lined structures may kill the vegetative lining if siltation is excessive or the dam remains submerged for extended periods of time.

Other Considerations

- Coupling check dams with adjacent upstream sumps facilitates sediment removal.
- Rock check dams are used in narrow ditches and gullies. Straw bales are used primarily in wide swales.
- Rock check dams may be more costly to install than straw bale check dams.
- Check dam rocks interfere with the establishment of vegetation.
- Rock check dams left as permanent structures interfere with grass mowing (maintenance).
- Steep channel slopes reduce effectiveness.
- Coupling check dams with a small adjacent upstream sump improves velocity slowing and sediment trapping ability.
- The area downstream from the last dam should be stabilized or flow diverted.

Relationship to Other ESC Measures

As part of the perimeter control ESC network, check dams are used for channel protection prior to establishment of permanent or stabilized erosion controls. Although check dams do some sediment filtering, they are not intended to replace filters or sediment basins. A depression in the bottom of the channel at the upstream edge of a check dam augments velocity slowing and sediment removal. Digging a sump through stabilized in-channel protection (e.g. grassed lining) should be avoided, however. Check dams interfere with localized vegetative channel protection. Rocks prohibit establishment of in-situ vegetation and the protective lining is subject to disturbance/ destruction during check dam removal.

Alternate Sediment Control Measures

- Drainage diversion during channel stabilization.
- Protective channel linings (e.g. grassed waterway, concrete or rock-lined ditch, erosion control blankets or mattings), straw bales, sediment settling ponds, permanent ditch blocks, sand bag check dams, brush barriers or combinations or these measures.

Other Names

In Stream/Channel Energy Dissipator

Design

The design of rock check dams (high at channel banks, lower in the middle) directs overtopping flows centrally to avert scouring of channel surfaces. The dam is keyed into channel slopes to prevent bank undercut and erosion.

Spacing between dams is based on waterway grade, height of adjacent check dams and desired length of backwater effect. The distance shown in the table below has been calculated for the protection of channel banks between successive structures. Placement of check dams at abrupt bends should be avoided since erosive waters could be misdirected by the check dam into channel banks.

Check dam structures are sized to stay in place during peak flow and should pass 2-year storm runoff without overtopping the roadway or ditch side-slopes. Generally, dams are not constructed higher than recommended as follows since excessive weir depth seriously impacts the flow characteristics of the ditch.

The following dimensions may be modified for site-specific applications:

Standard Check Dam

Maximum drainage area: *not to exceed 10 acres*

Normal flow velocity*: no greater than* 6 ft/sec.

Maximum height at dam center*: not greater than 2 ft. or one half the channel depth*

Minimum height difference between center and (bank) sides*: 6 in.*

Structure slope*: 1:2*

Maximum spacing between standard (2 ft. high) check dams: *align top of check dam level with toe elevation of the upstream dam*

Channel Slope (%)				
2	*3*	*4*	*5*	*6*
Spacing (ft.)				
100	*67*	*50*	*40*	*33*

Materials

Clean hard angular (e.g. crushed, shot) rock graded according to expected flows. Two- to three-inch stone is usually adequate.

Alternate materials: logs, brush and twigs, sandbags partially filled with pea gravel. Use only clean materials. Avoid introduction of fines.

Installation

Install dams as soon as drainage routes are established. Place rock by hand or mechanical means, distributing smaller rocks to the upstream side to prevent transport. Check structures key into a trench that spans the complete width of the channel. Extend dams high onto the channel banks (above anticipated high water level) to prevent localized undermining and erosion. In unlined channels, a small sump dug at the upstream side of the dam facilitates sediment collection and removal.

Inspection

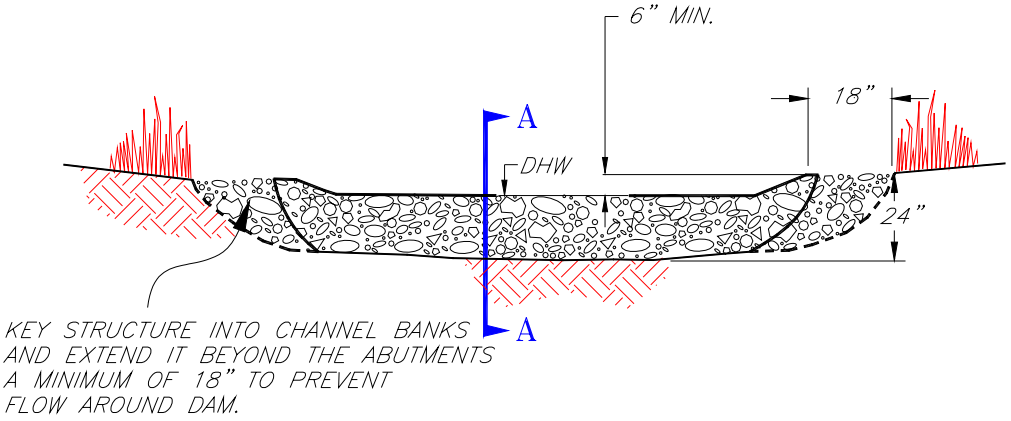
Observe dam function during/after each rainfall event that produces runoff and note conditions of channel surfaces. Visually compare upstream and downstream flows to determine relative turbidity levels and effectiveness of velocity checks. Inspect channel banks for evidence of undermining and erosion. Look for dam deterioration and for migration of structural components downstream. Observe level of sediment buildup behind dam. It should not exceed ½ dam height. Observe ESC effectiveness during flows to determine if adjunct measures are needed. The dam should be stable and appropriately sized to withstand high velocity events.

Maintenance

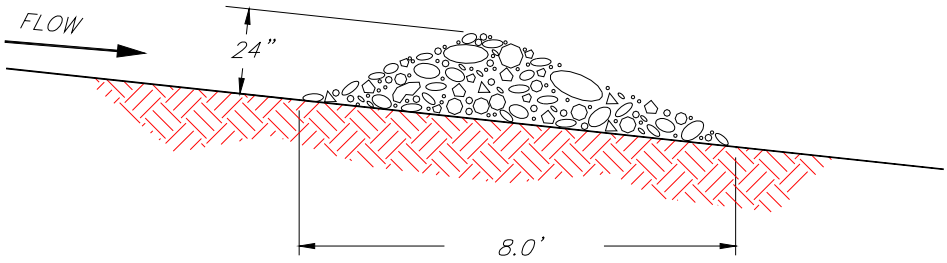
Repair check dam voids and bank undercuts. Fortify disintegrating dams and install additional dams or other ESC measures as needed. Correct undesirable effects of rock migration (e.g. clogged culvert, flow construction). Periodically remove sediment deposits.

Removal

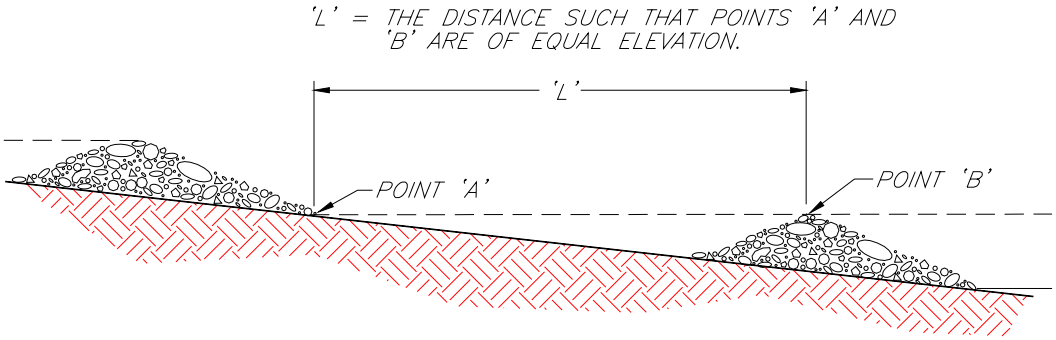
Care should be taken since the waterway surfaces are susceptible to damage during check dam removal. Damaged or unprotected areas should be seeded immediately or other forms of protection provided as warranted. Some check dams are left as a permanent control measure. Removal may be indicated because of unsightliness or interference with maintenance activities.



VIEW LOOKING UPSTREAM



SECTION A – A



SPACING BETWEEN CHECK DAMS

NOT TO SCALE

FILE: RCKCHKDM

ROCK CHECK DAM

7. Mulching

Objectives and Applications

Mulching is the application of a uniform protective layer of straw, wood fiber, wood chips, or other acceptable material on or incorporated into the soil surface of a seeded area to allow for the immediate protection of the seed bed.

The purpose of mulching is to protect the soil surface from the forces of raindrop impact and overland flow, foster the growth of vegetation, increase infiltration, reduce evaporation, insulate the soil, and suppress weed growth. Mulching also helps hold fertilizer, seed, and topsoil in place in the presence of wind, rain, and runoff, and reduces the need for watering. Mulching may be utilized in areas that have been seeded either for temporary or permanent cover.

There are two basic types of mulches, organic mulches and chemical mulches. Organic mulches include straw, hay, wood fiber, paper fiber, wood/ paper fiber blends, peat moss, wood chips, bark chips, shredded bark, manure, compost and corn stalks. This type of mulch is usually spread by hand or by machine (mulch blower) after seed, water, and fertilizer have been applied. Chemical mulches, also known as soil binders or tackifiers, are composed of a variety of synthetic materials, including emulsions or dispersions of vinyl compounds, rubber, asphalt, or plastics mixed with water. Chemical mulches are usually mixed with organic mulches as a tacking agent to aid in the stabilization process, and are not used as a mulch alone, except in cases where temporary dust and erosion control is required. Hydroseeding, sometimes referred to as hydromulching, consists of mixing a tackifier, specified organic mulch, seed, water, and fertilizer together in a hydroslurry and spraying a layer of the mixture onto a surface or slope with hydraulic application equipment. The choice of materials for mulching should be based on soil conditions, season, type of vegetation, and the size of the area.

Common Failures - Generally due to faulty installation or maintenance.

- Mulches are not properly watered after application, resulting in drying out and possible blowing or washing away of materials.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Mulch should be applied immediately after seeding to improve seed germination.
- Hydroseeding can be performed in one step, and is effective provided that materials are properly mixed and equipment is in good working order.
- Depth of the applied mulch should be not less than 1 in. and not more than 2 in.
- Chemical soil stabilizers or soil binders, when used alone, are less effective than other types of mulches. These products are primarily useful for tacking organic mulches.
- A tackifier should be used in conjunction with seeding, fertilizing, and mulching or hydro-seeding on any slopes steeper than 3:1.
- Check labels on chemical mulches and binders for environmental concerns. Take precautions to avoid damage to fish, wildlife, and water resources.
- Some materials such as wood chips may absorb nutrients necessary for plant growth.

Relationship to Other ESC Measures

Mulching may be performed in conjunction with seeding, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from mulched areas.

Alternate Sediment Control Measures

Erosion Control Blankets; Sodding

Other Names

Hydromulching; Chemical Stabilization

Design

Design life: *1 season (6 months) or less*

Site applicability: *Areas which have been disturbed and require temporary or permanent cover*

Materials and application rates: *as per Section 619 and Section 727 of Alaska Standard Specifications for Highway Construction, and Special Provisions for project*

Materials

Most Commonly Specified Mulches – Wood Fiber, Paper Fiber, Wood/Paper Fiber Combination Blends, Peat Moss

Other Mulches – Straw, Hay, Wood Chips, Bark Chips, Shredded Bark, Corn Stalks, Compost, Manure

Tackifiers – Vinyl Compounds, Rubber, Asphalt, or Plastics mixed with water

Installation

Complete the required grading as shown on the plans and ensure that erosion control measures intended to minimize runoff over the area to be mulched are in place. Apply mulch at the rates specified in the special provisions either by hand or by machinery immediately after the seed and fertilizer have been applied (two step method), or as part of the hydroslurry incorporating seed, fertilizer, mulch, and water (one step method). Apply specified tackifier if not already incorporated into the mulch matrix or hydroslurry. Provide additional watering as specified to ensure optimal seed germination conditions.

Inspection

Inspect all mulches weekly, and after each rainstorm to check for rill erosion, dislocation, or failure.

Maintenance

Replace mulch that has been loosened or dislodged. In addition, reseed areas if necessary. Water mulched areas periodically to ensure that moisture content will be maintained and seed germination and grass growth will continue.

Removal

Mulching is usually left in place to naturally decompose and become part of the soil structure.

8. Temporary Seeding

Objectives and Applications

To establish a temporary vegetative cover on disturbed areas by seeding with appropriate and rapid growing annual grasses, usually annual ryegrass.

The purpose of temporary seeding is to stabilize the soil and reduce damage from wind and/or water until permanent stabilization is accomplished. Seeding is applicable to areas that are exposed and subject to erosion for more than 30 days, and is usually accompanied by surface preparation, fertilizer, and mulch. Temporary seeding may be accomplished by hand or mechanical methods, or by hydraulic application (hydroseeding), which incorporates seed, water, fertilizer, and mulch into a homogeneous mixture (slurry) that is sprayed onto the soil.

Common Failures - Generally due to faulty installation or maintenance.

- Seed is not properly watered after application, resulting in drying out and low germination rates.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry is not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Proper seedbed preparation and the use of high quality seed are essential to the success of this practice.
- Temporary seeding should take place as soon as practicable after the last ground-disturbing activities in an area.
- Once seeded, protect the area from foot and equipment traffic.
- Temporary seeding is not recommended if permanent seeding will be completed in the same growing season. Other temporary stabilization measures should be considered.

Relationship to Other ESC Measures

Seeding should be performed in conjunction with mulching, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from seeded areas using diversions.

Alternate Sediment Control Measures

Erosion Control Matting, Plastic Sheeting

Other Names

Temporary Stabilization

Design

Seed Selection: *Annual Ryegrass (Lolium multiflorum)*

Seed Application Rate: *60 lbs/acre (average rate, site specific conditions may require more or less)*

Fertilizer Application Rate: *600 lbs/acre 20-20-10 (nitrogen-phosphorous-potassium [average rate, site specific conditions may require more or less])*

Materials

Seed, water, fertilizer, mulch

Installation

Grade as needed where it's feasible to permit the use of equipment for seedbed preparation. Prepare the seedbed by using surface roughening if soil has been compacted by machinery or heavy foot traffic. If using hand or mechanical methods, apply fertilizer in order to optimize growing conditions, followed by seed, mulch, and water. If using hydroseeding, mix seed, mulch, fertilizer, and water as per the manufacturer's recommendations. Apply slurry as per the manufacturer's recommendations.

Inspection

Inspect newly seeded areas on a regular basis and after each storm event to check for areas where protective measures (mulch) have failed or where plant growth is not proceeding at the desired rate.

Maintenance

Water seeded areas daily until initial ground cover is established if rainfall does not provide moisture for seed germination. Reseed areas where growth is absent or inadequate. Provide additional fertilizer if needed.

Removal

Removal of temporary vegetation is usually not necessary. Continue inspections and remedial action until the site is stabilized by permanent vegetation.

9. Surface Roughening and Terracing

Objectives and Applications

Surface roughening and terracing includes establishing a rough soil surface by creating horizontal grooves, furrows, depressions, steps, or terraces running parallel to the slope contour over the entire face of the slope.

These measures are intended to aid in the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for sediment trapping. They provide simple, inexpensive and immediate short-term erosion control for bare soil where vegetative cover is not yet established. A rough, loose soil surface gives a mulching effect that provides more favorable moisture conditions than hard, smooth surfaces and that aids in seed germination. The measure chosen to achieve these goals depends on the grade of the slope, the type of slope (cut or fill), soil and rock characteristics, future mowing and maintenance requirements, and type of equipment available. The most common measures utilized include:

Tracking – This is done by running machinery (such as bulldozers) up and down slopes to leave horizontal depressions in the soil, and is generally limited to sandy soils in order to avoid undue compaction of the soil surface.

Groove Cutting – This is done by cutting serrations along the contour with a blade attached to a dozer or other equipment.

Contour Furrows – This is done by cutting furrows (a series of ridges and depressions) along the contour of a slope, and is applicable to any area that will safely accommodate disks, tillers, spring harrow, or the teeth of a front end loader.

Stair Step Grading – This is done by cutting "steps" along the contour of a slope, and is applicable to slopes with a gradient greater than 3:1 which have material soft enough to be bulldozed and which will not be mowed.

Gradient Terracing – This is done by constructing earth embankments or ridges and channels along the face of a slope at regular intervals to intercept surface runoff and conduct it to a stable outlet. This measure is applicable to long, steep slopes where water erosion is a problem, and should not be constructed in areas with sandy or rocky soils.

Common Failures - Generally due to faulty installation or maintenance.

- Roughening washed away by heavy rain, necessitating reroughening and reseeding.
- Failure of upslope control measures (diversions), resulting in excessive flows over area and erosion of soil.

Other Considerations

- These measures are of limited effectiveness in anything more than a moderate storm.
- These measures may not be suitable for noncohesive or highly erodible soils.
- All fills should be compacted to reduce erosion, slippage, settlement, subsidence, and other related problems.
- The finished cut and fill slopes to be vegetated should not exceed 2:1.
- Use slope breaks, such as diversions, benches, or contour furrows to reduce the length of cut and fill slopes to limit sheet and rill erosion.

Relationship to Other ESC Measures

Diversions at the upper perimeter of the area function to prevent runoff from causing erosion on the exposed soil. Silt fences and sediment basins at the lower perimeter of the area function to prevent off site sedimentation.

Alternate Sediment Control Measures

Erosion Control Blankets

Other Names

Contour Grading, Serration

Design

Measure Applicability: *Construction slopes greater than 5 vertical feet.*

Measure Selection: *Should be determined by slope grade, soil type, mowing requirements, and slope type (cut or fill).*

Materials

Construction equipment (bulldozer, front end loader, crawler tractor).

Installation

Cut Slope Roughening (Areas Not To Be Mowed)
Stair step grade or groove cut slopes that are steeper than 3:1. Use stair step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair step grading. Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall. Do not make individual vertical cuts more than 2 ft. high in soft materials or more than 3 ft. high in rocky materials. Groove the slope using machinery to create a series of ridges and depressions that run across the slope, on the contour.

Fill Slope Roughening (Areas Not To Be Mowed)
For slopes greater than 3:1, ensure that the face of the slope consists of loose, uncompacted fill 4 in. – 8 in. deep. Use contour furrows or tracking to roughen the face of the slope, if necessary. Do not blade or scrape the final slope face.

Cuts, Fills, And Graded Areas (To Be Mowed)
Make mowed slopes no steeper than 3:1. Roughen these areas with shallow grooves by using tilling, disking, or harrowing implements. Make grooves close together, less than 12 in., and not less than 1 in. deep. Avoid excessive roughness on areas to be mowed.

Roughening With Tracked Machinery
Limit roughening with tracked machinery to sandy soils in order to avoid undue compaction of the soil surface. Operate machinery up and down the slope to leave horizontal depressions in the soil. Do not back blade during the final grading operation.

Inspection

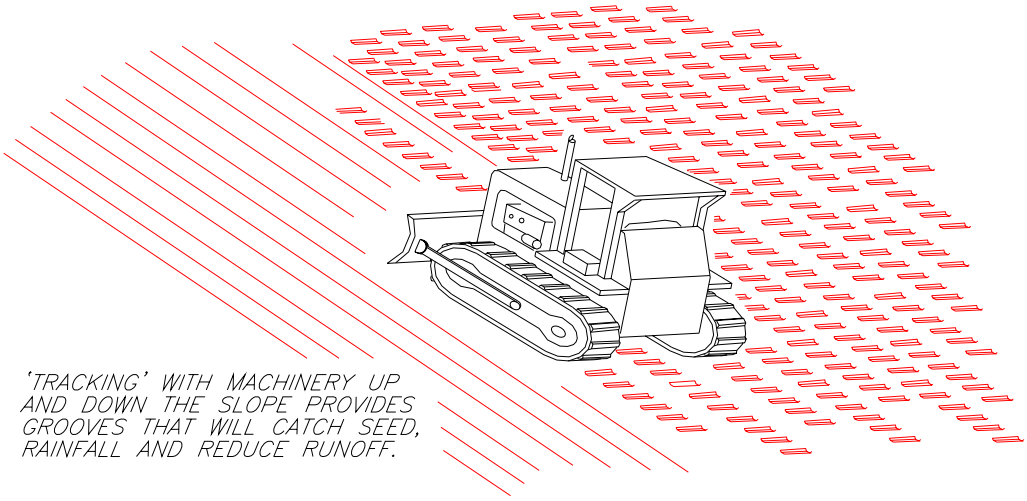
Inspect the areas every week and after each rainfall that produces runoff during construction operations.

Maintenance

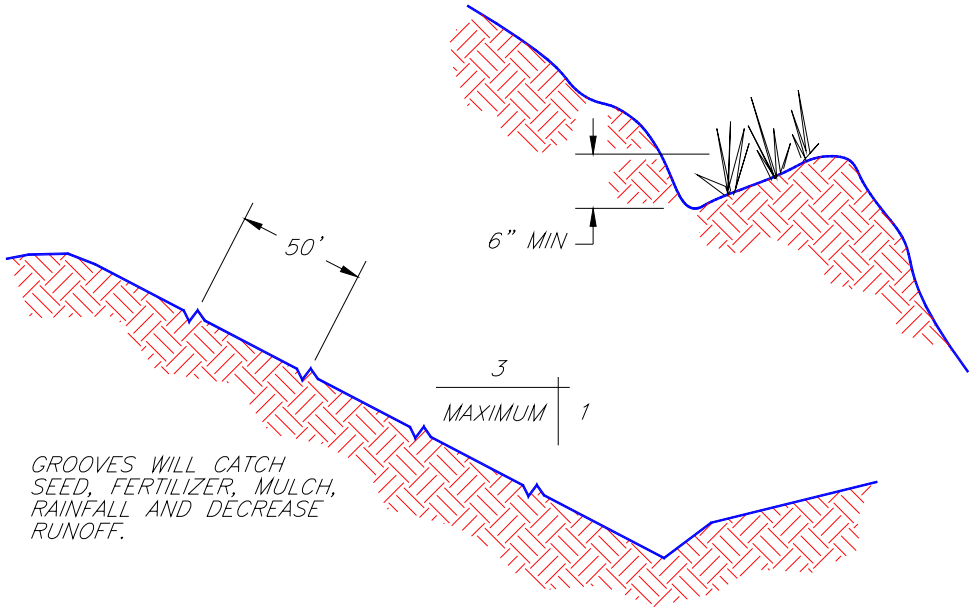
Seed, fertilize, and mulch areas which are graded as quickly as possible. Regrade and reseed immediately if rills appear.

Removal

Surface roughening and gradient terracing will remain an integral part of the slope after final stabilization with vegetation.



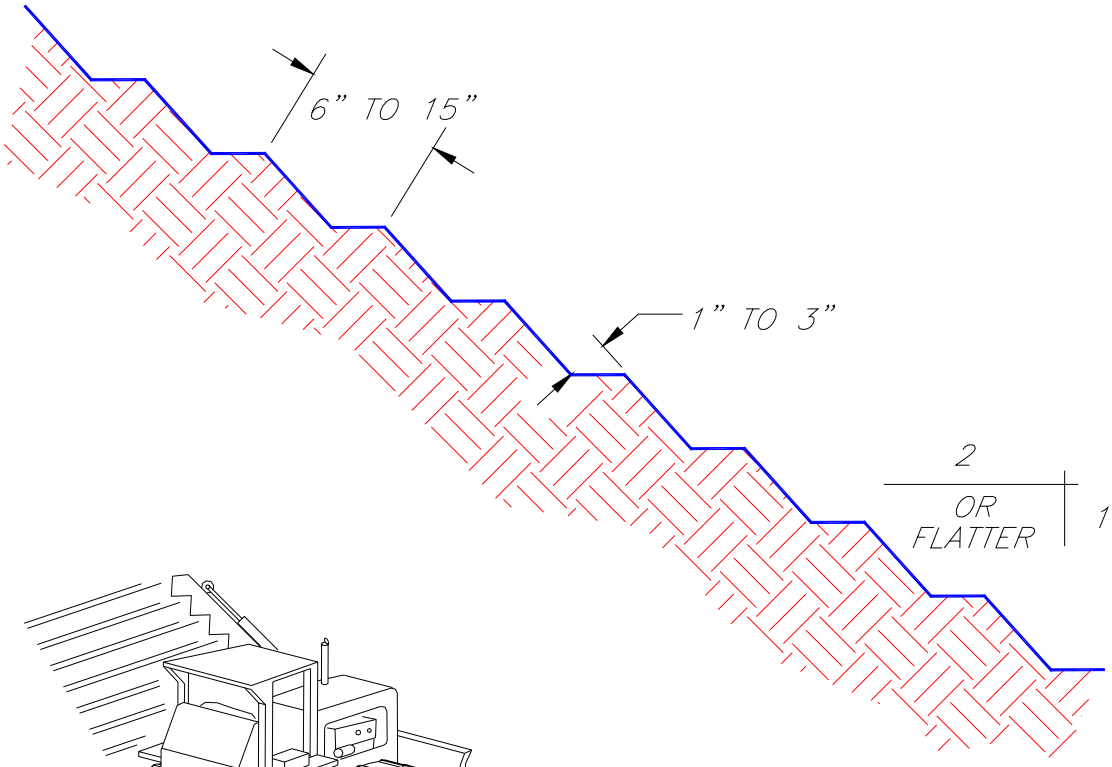
TRACKING

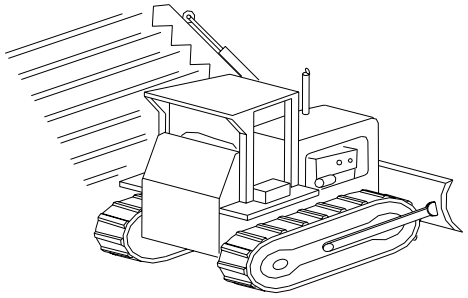


CONTOUR FURROWS

FILE: SRFROUGH

SURFACE ROUGHENING AND TERRACING



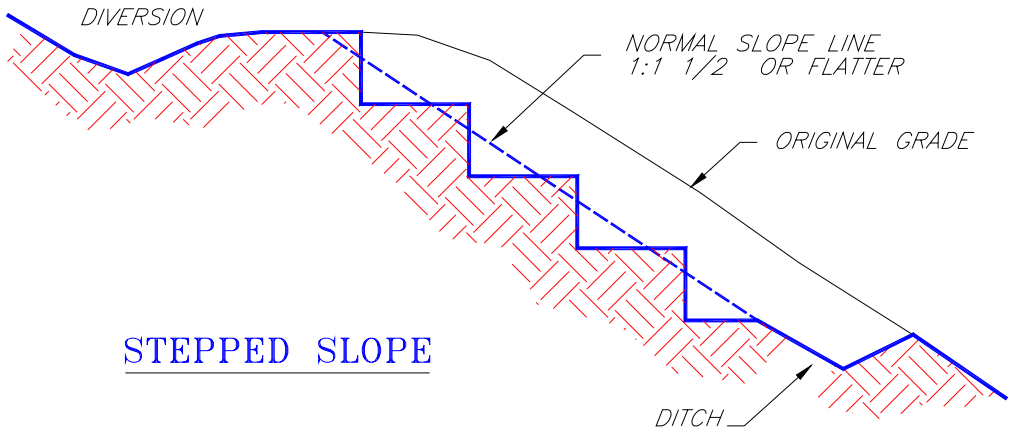


NOTE:

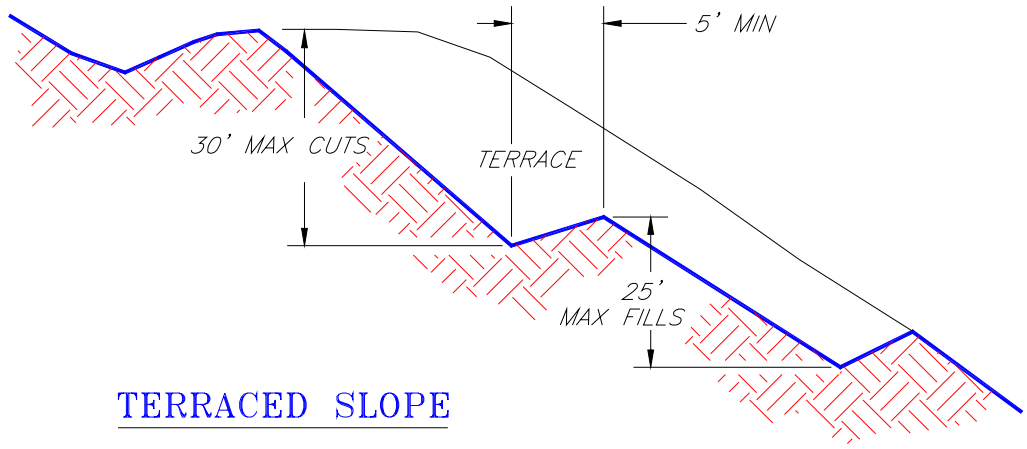
GROOVE BY CUTTING SERRATIONS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER, SEED, MULCH AND FERTILIZER.

FILE: SERSLOPE

SURFACE ROUGHENING AND TERRACING



STEPPED SLOPE



TERRACED SLOPE

NOT TO SCALE

NOTES:
1. VERTICAL CUT DISTANCE SHALL BE LESS THAN HORIZONTAL DISTANCE.
2. VERTICAL CUT SHALL NOT EXCEED
2 FT IN SOFT MATERIAL AND
3 FT IN ROCKY MATERIAL.

FILE: STPSLOPE

SURFACE ROUGHENING AND TERRACING

10. Rolled Erosion Control Products

Objectives and Applications

Rolled erosion control products (RECPs) are manufactured long sheets or coverings that can be unrolled onto unvegetated cut or fill slopes where erosion control or soil stabilization is needed. They are used where temporary seeding and mulching alone are inadequate, or where mulch must be anchored and other methods such as crimping or tackifying are unfeasible. There are many types of RECPs—and an ever-changing array of new products and manufacturers' claims. Applications range from coverings for temporarily inactive construction sites to long term protection of steep slopes.

Common RECP categories include:

Temporary RECP *designed for short term use--e.g. up to 1 year.*

Degradable (generally preferred and more prevalent) *made from naturally decomposing materials*. Different fibers yield different characteristics and breakdown patterns. RECPs are either:
photodegradable—broken down by sunlight exposure or
biodegradable—deteriorated by action of biological organisms.

Erosion control blanket(ECB): matrix of long-fibered mulch held by netting on one or both sides or sewn though the filler. Common ECB mulches are straw, wood shavings (excelsior), flax, coconut fiber (coir) and jute.
Jute matting: woven jute fiber mesh.
Netting: fixative mesh cover to keep mulch in place. Made of cotton, jute, coir or photodegradable plastics. Opening sizes vary by design purpose.

Non-degradable *does not decompose with exposure to the elements*

Plastic sheeting: occasionally used for urgent, short-term protective treatment or for overwintering disturbed slopes.

Semi-permanent RECP *lasts 4-8 years--commonly made from coir products*

Permanent RECP *does not decompose for 10 years or more*

Synthetic Turf Protection Mat: mechanically, structurally or chemically bound continuous mesh of processed or polymeric fibers. Mats are thick, heavy, long lasting. Some are designed to structurally support vegetation.

Common Failures - Generally due to faulty installation or maintenance.

- Seed washout/soil erosion due to water flow beneath poorly secured RECPs.
- Failed/inhibited growth of vegetative cover.
- Unintended RECP destruction by equipment, the elements, wildlife etc.

Other Considerations

- Expensive RECPs aren't necessarily more effective than lower cost RECPs.
- Installation requirements, surface features & preparation, installer experience.
- RECP features; suitability constraints, strength, durability, degradation rate.
- Vegetation viability practices including: soil, temperature, insulation and sunlight requirements for plant species; site suitability including topsoil adequacy; fertilizer/growth-enhancer needs; moisture and timing requirements for germination and plant growth; over-saturation; destructive moisture levels cause seed/plant mold/mildew/rot.
- RECP seasonal durability; e.g. overwintering plastic sheeting tears.
- Ease of RECP puncture (desirable for bio-remedial shoot penetrations).
- Slope length and steepness relative to vegetative support & blanket saturation, weight and durability.

- Runoff velocities, volumes, moisture infiltration rates.

- Compatibility and interaction with other on-site erosion measures. E.g. plastic netting and mattings don't retain moisture or heat useful for germination enhancement; plan means to disperse snow accumulations or high runoff volumes at the toe of plastic covered slopes.

- Visual impact, including public's perception of erosion protection needs and available levels/sophistication of erosion technologies.

- Compatibility with land use (e.g. urban or well-populated sites).

- Interactions with wildlife: habitat, susceptibility to foraging, grazing, nesting

Relationship To Other ESC Measures

RECPs can complement seeding and revegetation. Byproducts of RECP decomposition add mulch benefits and soil enhancement. RECPs can be used in conjunction with benching or other runoff velocity slowing or redirecting measures. RECPs aid dust control.

Alternate Sediment Control Measures

Stabilization measures for vegetation preservation. Crimped, tracked or tackified mulches. Benching, terracing, diversions or other means to reduce slope steepness, length and runoff velocity and volume.

Other Names

Terms used interchangeably: e.g. matting, blanket, sheet. Specified names e.g. Erosion Control Geotextile, ECB, Straw blanket, Mulch Mat

Design

Consult product distributors for recommendations regarding RECP selection and performance criteria suitable for site-specific parameters. Evaluate:

- *Duration of need--Temporary (e.g. 2 mo., 6 mo., 1 yr.) vs. Permanent (2-10 yrs.)*
- *Slope length*
- *Slope gradient (e.g. less than 1:1, 2:1, 3:1 or steeper)*
- *Soil type & erodibility*
- *Seasonal temperature & weather patterns; regional precipitation distribution*
- *Vegetation needs, especially where germination conditions are not optimal*

Blankets: on grades > 2:1 are subject to high stresses.

Synthetic turf protection mat: distribute loads across (saturated) fill slopes and reinforce root systems. Use where slope protection is needed at least 2 years. Use on highly erodible slopes (>3:1), for steep slide rehabilitation, for heavy/high velocity runoff, landfill or high elevation reclamations, drought areas, long cut/fill slopes, bridge abutments etc.

Plastic sheeting: 6 mil or thicker. Not recommended as cover for seeded slopes.

Wood fiber mat: drawbacks: bulky, difficult to place, 10–20% less effective erosion control than other mat types. May need to replace soil nitrogens leached by degrading wood.

Netting: Plastic netting doesn't hold heat or moisture, may require increased thickness of netted straw mulch 25%. Plastic netting and wood fiber mulches alone should not be used where runoff water flow exceeds 7 ft./sec.

Jute matting: Apply alone for seed germination enhancement or dust control, but not where runoff is significant.

Materials

Matting: Burlap, Jute Mesh Fabric, Woven Paper or Sisal Mesh Netting, Knitted Straw Mat, Woven/ Curled Wood Blanket.

Anchors: U-shaped wire staples, triangular wooden stakes, willow stakes.

Staples: U-shaped steel wire (normally 8 in. long, 1 in. wide, 11 gage or heavier, a 12-in. length, 9 gage or heavier).

Installation

RECPs -Excavate a 6" X 6" check slot trench at a level area well behind the slope crest or slopetop berm. Backfill and tamp over RECP roll end, leaving no gaps to allow under-blanket runoff invasion. Unroll sheeting downslope, parallel to grade and runoff path. Midslope splicings overlap successive sheets in the direction of flow so that upslope ends extend past the trench 16" anchoring the next downslope section. Stagger adjacent splicings. Anchor RECP terminal ends in slope toe key trenches and repeat the entire process until the entire slope has continuous coverage.

Lay RECPs to follow ground contours closely but do not stretch taut across surface depressions. Staple RECPs to maintain firm contact with underlying surfaces. Staple patterns vary depending upon slope length, grade, soil type and runoff rates. Staple blanket perimeters at no less than 12 in. intervals across the top and 3 ft. spacings along RECP sides and bottom. Staple intervals should be sufficient to prevent runoff flows beneath the blanket. Staple through 5 in. adjacent overlaps strips and staple every 3 ft. down sheet centerlines. Adjacent staple lines should stagger.

Plastic Sheeting - Anchor in slopetop trench (as above) to seal from runoff flow beneath sheeting. Duct tape 18 in. overlap seams to seal against wind and rain. Cover the entire exposed area. Hold sheets close to slope by suspending weights (tires, sandbags etc.) from ropes affixed to uphill anchors set no more than 10 ft. apart. Secure so wind doesn't lift the cover, expose slopes or tear plastic.

Inspection

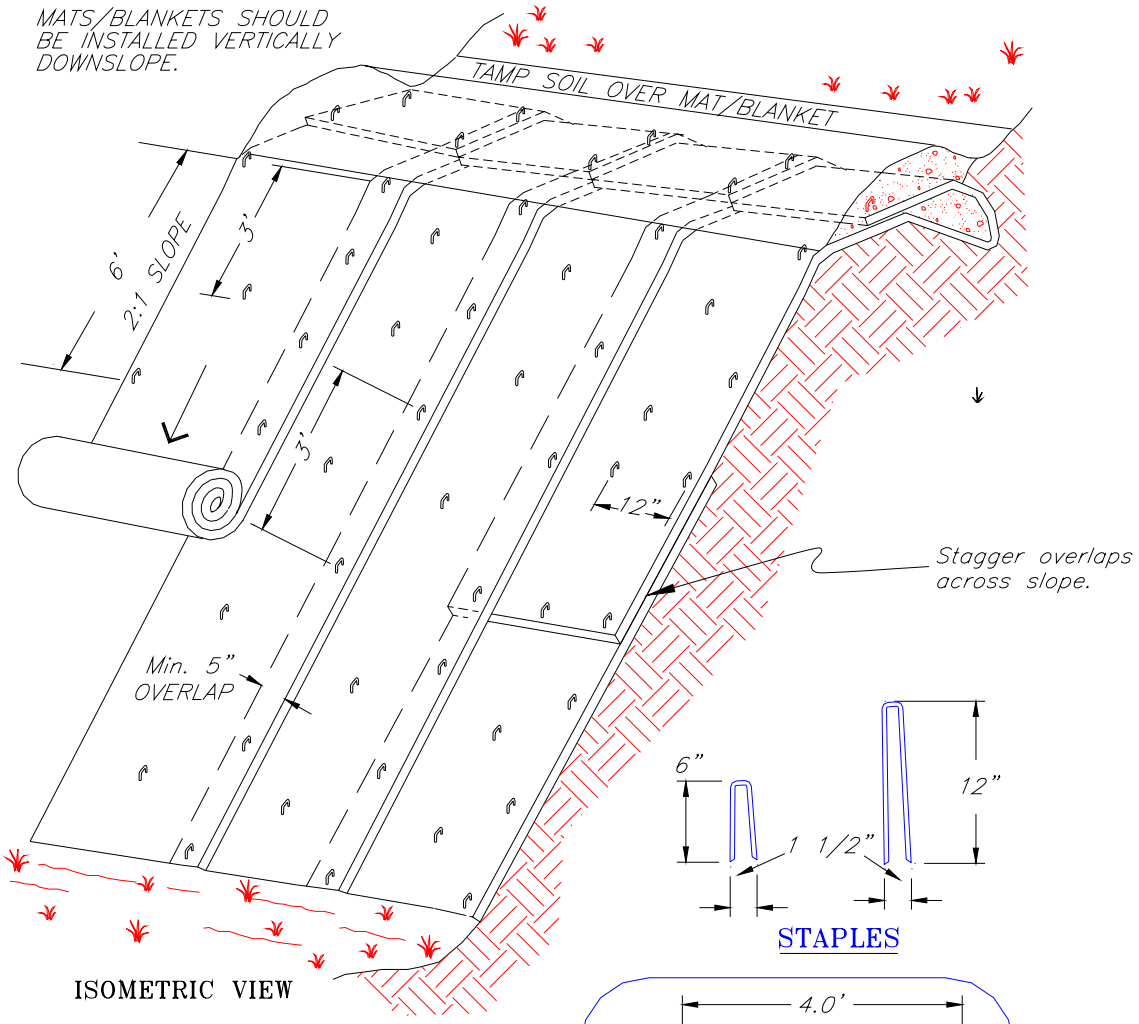
Check that surfaces adhere, fasteners remain secure and covering is in tight contact with soil surface beneath. Look for damaged areas and exposed soil surfaces. Pay special attention to seams and uphill edges.

Maintenance

Repair, re-anchor, reinstall or replace matting. Re-seed where needed. It is especially important to protect overwintering plastic covered slopes, since the saturated soils may be easily erodible upon thaw.

Removal

Non-degradable RECPS must be removed manually when no longer useful and disposed at an offsite landfill or by other approved methods. Degradable RECPs naturally deteriorate over time and can add soil enrichment.



TYPICAL SLOPE
SOIL STABLIZATION

NOT TO SCALE

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

FILE: BLNKTSLP

ROLLED EROSION CONTROL PRODUCTS

11. Temporary Sediment Trap

Objectives and Applications

A temporary sediment trap is a small temporary ponding area, with a rock outlet, formed by excavating below grade and/or by constructing an earth embankment.

A sediment trap is a temporary structure that is used to detain runoff from small drainage areas so that sediment can settle out. Sediment traps generally are used for drainage areas less than five acres, and should be located in areas where access can be maintained for sediment removal and proper disposal. A sediment trap can be created by excavating a basin, utilizing an existing depression, or constructing a dam on a slight slope downward from a project area. Sediment laden runoff from the disturbed site is conveyed to the trap via ditches, slope drains, or diversion dikes. After being treated, the flow from the structure is controlled by a rock spillway. The trap is a temporary measure, with a design life of approximately six months, and is to be maintained until the site is permanently protected against erosion by vegetation and/or structures.

Common Failures - Generally due to faulty installation or maintenance

- Inadequate spillway size; this results in overtopping of dam, poor trap efficiency, and possible failure of the structure.
- Low point in embankment caused by inadequate compaction and settling; this can result in overtopping and possible failure.
- Outlet not extended to stable grade; this can result in erosion below the dam.
- Spillway stone size too small or backslope too steep; this may result in stone displacement.
- Inadequate storage capacity; the sediment is not removed from basin frequently enough.

Other Considerations

- The location of sediment traps should be determined based on the existing and proposed topography of the site.
- As a perimeter control, locate the trap where up to 5 disturbed acres drain to one location.
- Choose a location where maximum storage can be obtained from natural topography. This will minimize excavation.
- Locations should be selected where interference with construction activities will be minimized and will allow the trap to remain in service until the site is stabilized.
- The site must be accessible for future clean-out of the trap.
- Sediment traps are most effective at removing sand particles and are less effective at removing fine silt and clay particles. Longer retention times using engineered structures such as sediment basins or retention ponds may be necessary to remove these smaller particles.

Relationship to Other ESC Measures

Sediment traps are usually located at the outlets of diversions, channels, slope drains, or other runoff conveyances that discharge sediment laden water.

Alternate Sediment Control Measures

A sediment basin should be considered if the drainage area exceeds five acres. Sediment basins may be either temporary or permanent, and due to additional and more complex design and construction considerations, should be designed by a registered engineer.

Other Names

Catch Basin

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area: *not to exceed 5 acres*

Storage volume: *minimum 134 cubic yards per acre*

Wet storage area depth: *minimum 2 ft.- 3 ft., maximum 4 ft.*

Ideal shape: *rectangular and shallow trap, with a length to width ratio of 2:1 or greater*

Berm: *compacted earth, maximum height 5 ft.*

Slopes (cut and fill): *2:1 or flatter*

Outlet*: rock spillway, crest of spillway* 1.0 ft. below top of embankment.

Spillway weir length (minimum)	
Drainage area (Acres)	**Weir length (Feet)**
1 ac.	4 ft.
2 ac.	5 ft
3 ac.	6 ft.
4 ac.	10 ft.
5 ac.	12 ft.

Stone size: *construct outlet using well graded stones with a median stone size of 9 in. and a maximum stone size of 14 inches. A 12-in. thick layer of ½ to ¾ in. aggregate should be placed on the inside face to reduce seepage flow rate.*

Materials

Filter fabric, coarse aggregate or riprap 2 inches to 14 inches in diameter; washed gravel 1/2 inch to 3/4 inch in diameter, seed and mulch for stabilization.

Installation

Clear, grub, and strip the area under the berm of any vegetation and root mat. Clear the pool area to reduce debris buildup and facilitate cleanout. Excavate as required in the plan to obtain the necessary storage volume. Use fill material for the berm that is free of roots, other woody vegetation, organic materials, and large stones. Make all cut and fill slopes 2:1 or flatter. Compact the berm in 8 in. layers by traversing with construction equipment. Construct the rock spillway to the dimensions shown on the plan, placing filter fabric beneath the rock. Provide temporary or permanent stabilization (seed and mulch) on the berm immediately after the construction.

Inspection

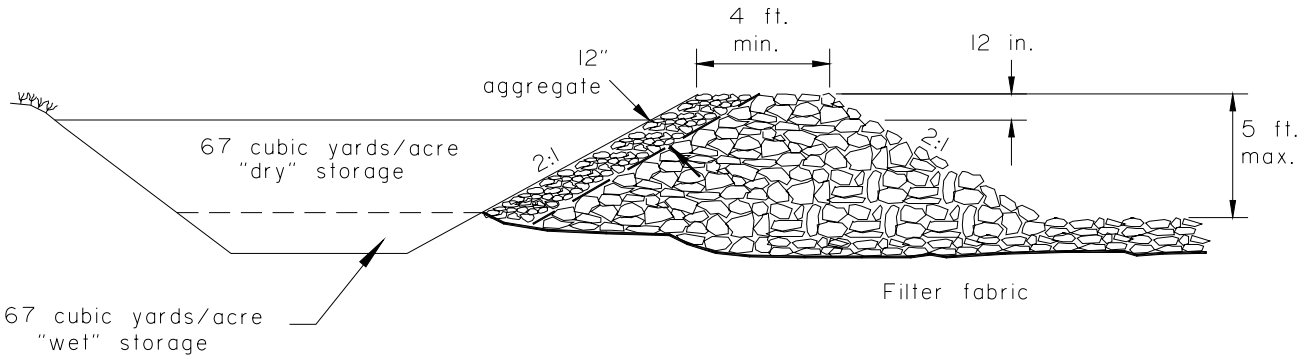
Inspect temporary sediment traps weekly and after each period of significant rainfall. Check the structure for damage from erosion, and check rocks in the outlet for clogging with sediment. Check the height of the stone outlet to ensure that the crest is at least 12 in. below the top of the berm.

Maintenance

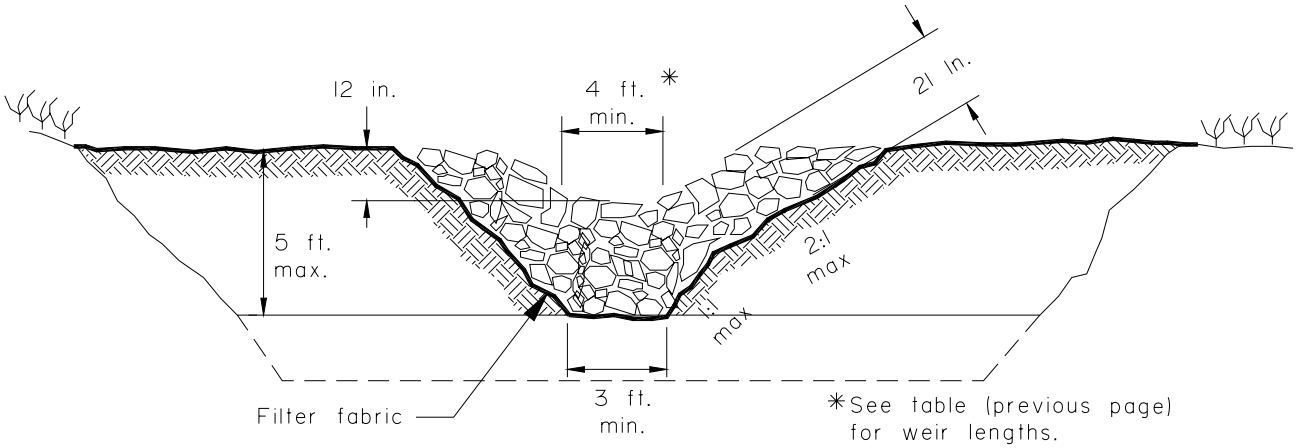
Remove sediment and restore trap to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Deposit sediment removed from the basin in a suitable area and in such a manner that it will not erode and cause sedimentation problems. Clean or replace the filter stone in the outlet structure if clogged with sediment. Adjust the height of the stone outlet if the crest is not at least 12 in. below the top of the berm.

Removal

Remove sediment traps after the contributing drainage area is stabilized. Grade and stabilize the site of the sediment trap after removal as shown in the plans.



CROSS SECTION



ELEVATION

TEMPORARY SEDIMENT TRAP

12. Vegetative Buffer Strip

Objectives and Applications

A vegetative buffer strip is an undisturbed area or strip of natural vegetation, or an established suitable planting that will provide a living filter to reduce soil erosion and runoff velocities.

Buffer strips act as living sediment filters that intercept and detain storm water runoff. They reduce the flow and velocity of surface runoff, promote infiltration, and reduce pollutant discharge by capturing and holding sediments and other pollutants in the runoff water. They may be natural, undeveloped land, or may be graded and planted with grass or other vegetation; and may be placed at many locations between the source of sediment (road surface, side slopes) and a natural or constructed waterway or other drainage area that could be impacted by deposits of sediment. Buffer strips may be used at any site that can support vegetation, but are best suited where soils are well drained and where the bedrock and water table are well below the surface. Buffer strips are particularly effective on flood plains, along stream banks, and at the top and bottom of a slope. Buffer strips may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

- Excessive sediment or oil and grease loads resulting in clogging.
- Introduction of storm water flows onto buffer strip before vegetation is established.

Other Considerations

- Not effective for filtering high velocity flows from large, paved areas, steep slopes, or hilly areas.
- May be more viable than silt fence where silt fence installation and removal will cause more harm than good.
- Avoid flow concentration
- Buffer strips generally only trap coarse sediments. Depending upon vegetative type, clay and fine silt particles will generally pass through a buffer strip during periods of heavy rain.
- Preserve natural vegetation in clumps, blocks or strips where possible, particularly in areas adjacent to waterways.
- Do not use planted or seeded ground as a buffer strip for sediment trapping until the vegetation is established.
- Extensive constructed buffers may increase development costs.

Relationship to Other ESC Measures

Buffer strips are used in conjunction with diversion measures such as earth dikes, diversions, and slope drains for slope protection. Silt fences placed upslope may prevent sediment overloading.

Alternate Sediment Control Measures

Diversion; Slope Drain

Other Names

Buffer Zone, Vegetated Filter Strip.

Design

Location: *Should be determined by considering slope, soil type, anticipated flow, and vegetation type.*

Capacity: *2 year peak runoff storm*

Width: *18 ft. - 60 ft., depending on type of vegetation and length of slope*

Grading: *smooth and uniform*

Permitting: *Wetland use as a vegetative buffer strip requires approval from the Corps of Engineers.*

Flow Distribution: *evenly distributed; avoid flow concentration*

Materials

Natural vegetation, seed or sod; fertilizer, mulch, water; fencing or flagging

Installation

Natural Vegetation

Delineate undisturbed natural areas of vegetation that have been identified on the plans with flagging prior to the start of construction activities. Ensure that other sediment control measures to be used in conjunction with the buffer strip are in place and functioning properly. Minimize construction activities and traffic in the buffer strip and immediate surrounding areas.

New Buffer Strip

Ensure that sediment control measures such as silt fence and diversions are in place to protect waterways or drainage areas until the buffer strip is established. Clear and grade the land according to the plans and specifications. Establish vegetation using specified seeding, mulching, watering, and fertilizer.

Inspection

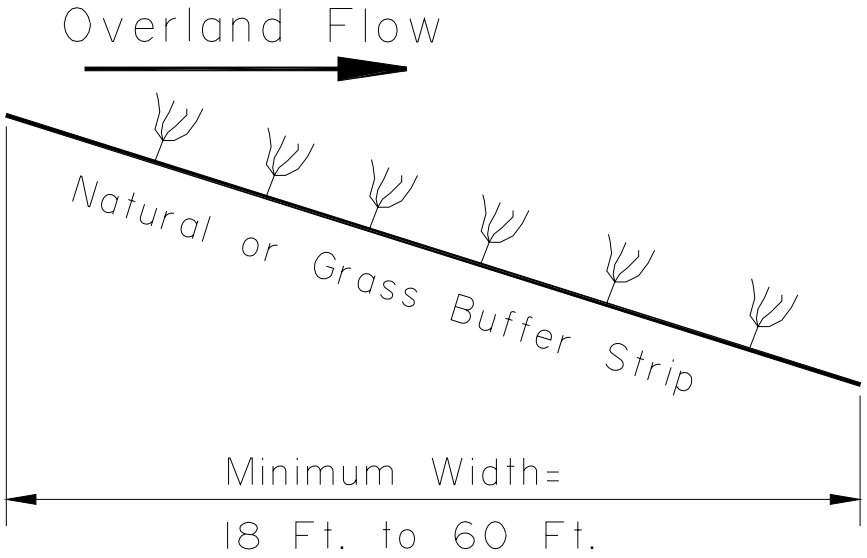
Inspect natural vegetation buffer strip areas at regular intervals to ensure that the fencing or flagging used to delineate non-disturbance areas are in place. Check for damage by equipment and vehicles. Inspect new buffer strip areas for the progress of germination and plant growth. Ensure that water flowing through the area is not forming ponds, rills, or gullies due to erosion within the buffer strip.

Maintenance

Replace or repair fencing or flagging as necessary. Repair any damage by equipment or vehicles. Provide additional seed, fertilizer, and water to ensure adequate establishment of vegetation. Repair and reseed areas damaged by erosion or ponding of water.

Removal

Temporary buffer strips - Provide and compact fill to existing or specified grade. Seed and mulch.



VEGETATIVE BUFFER STRIP

13. Silt Fence

Objectives and Applications

A silt fence is a perimeter control geotextile fence to prevent sediment in silt-laden sheet flow from entering sensitive receiving waters.

Silt fencing downslope from erosion-susceptible terrain traps sheet flow runoff before the drainage exits the project site. Intercepted drainage pools along the uphill side of the fence and standing water promote sediment settling out of suspension. Drainage in contact with the fence is filtered by the geotextile—the fabric's small pores not only block eroded particles but also severely restrict water exfiltration rates.

Barrier locations are informally chosen based on site features and conditions (e.g. soil types, climate, terrain features, sensitive areas, etc.), design plans, existing and anticipated drainage courses, and other available erosion and sediment controls. Typical barrier sites are catchpoints beyond the toe of fill or on sideslopes above waterways or drainage channels. Silt fences are not recommended for wide low-flow, low-velocity drainageways, for concentrated flows, in continuous flow streams, for flow diversion, or as check dams. Use at drop or curb inlets is not appropriate for high volumes of stormwater.

Common Failures - Generally due to faulty installation or maintenance.

- Posts installed on uphill side of trench (instead of downhill side) or fabric attached to downhill side of posts (rather than uphill side).
- Slope erosion occurs below the fenceline due to drainage that bypasses the barrier end or water build-up that "blows out" a poorly secured fence bottom.
- Fence function impairment due to sediment build-up, maintenance neglect etc.
- Fence topples due to poor installation and/or high levels of impounded back-up water or sediment.
- Inappropriate for intended function (e.g. used for check dam, flow diversion, etc.).
- Uneven distribution of pooled drainage along non-level fenceline ground reduces efficiency.
- Poor support system (e.g. soil too rocky to secure posts, fabric stapled to trees, etc.).

Other Considerations

Use of sediment control measures and the level of effort should be commensurate to the potential problem. ***Silt fence is not to be used solely as a project delineator****. (Use barriers, flagging, etc. instead.)*

- Use of a silt fence sediment control measure is usually more complex, expensive and maintenance-prone than other slope stabilization measures.
- Slope stabilization should occur at the earliest possible time.
- Fenceline proximity to sensitive areas needing protection during fence installation, maintenance, removal, etc. (e.g. avoid equipment encroachment on wetlands).
- Undesirable effects of fence placement (e.g. a trench in ground that won't readily "heal" after fence removal; undesirable effects of water back-up, ditch overflow, etc.).
- Equipment access route/space required for fence installation, maintenance and removal.

Relationship to Other ESC Measures

Sediment control measures are secondary to erosion prevention or soil stabilizing measures. Silt fences may be used as part of a sequential system with other temporary or permanent measures such as vegetation, check dams, settling ponds, etc. Occasional flow velocity increases may be offset using corrective measures such as rock berms or other redirecting energy absorbers.

Alternate Sediment Control Measures

Brush bundles or straw bales to filter small amounts of sediment in shallow gullies or ditches. Temporary settlement basin. Gravel berm. Triangular sediment filter dike (stand-alone wire mesh structure covered with filter fabric on uphill side [labor intensive to construct and maintain]).

Other Names

Geotextile for Sediment Control (sect 633 specifications), Filter Fence, Sediment Fence.

Design

Design life: *1 season (6 months) or less*

Contributing sheet flow drainage area: *not to exceed 0.25 acres/ 100 ft. of fence*

Maximum Slope Length for Silt Fence

Slope (%)	18 in. Fence	30 in. Fence
2 (or less)	250 ft.	500 ft.
5	100 ft.	250 ft.
10	50 ft.	150 ft.
15	35 ft.	100 ft.
20	25 ft.	70 ft.
25	20 ft.	55 ft.
30	15 ft.	45 ft.
35	15 ft.	40 ft.
40	15 ft.	35 ft.
45	10 ft.	30 ft.

Undisturbed buffer zone: *At least 3.5 ft. from fence to downstream sensitive area*

Support posts: *at least 18 in. in the ground. Minimum trench size (x-section): 6"x 6"*

Buried fabric: *18 in. (3 sides of trench)*

M**aximum spacing between posts**: *6 ft.*

Maximum fence height: *3 ft. above ground*

Fabric joint overlap: *minimum 6 in. at post not allowed in pooled drainage areas*

Maximum height of ponding water: *18 in.*

Maximum allowable depth of sediment accumulation against fence: *9 in.*

Materials

Geotextile fabric sect 729-2.04 specification (AASHTO M 288 for Temporary Silt Fence except that minimum permittivity is .05/sec)
Support posts wood, steel or synthetic, adequate to support fence under field conditions
Staples or other means to attach fabric to posts

Installation

Install fences after site clearing but before excavation/ fill work. Erect fenceline downslope along a level contour and perpendicular to anticipated sheet flow drainage path(s). Orient end sections uphill slightly and install sufficient length to keep drainage from spilling around barrier ends. Where ground surfaces are uneven, install shorter fences following contours (rather than install one long, contour-crossing fence that directs drainage to accumulate in low spots). Locate fence 3-10 ft. beyond toe of fill to leave room for a broad, shallow sedimentation pool and for equipment access during fence maintenance and removal. Leave buffers between fencing and sensitive receiving areas.

Drive support posts into the ground, excavate a trench on the uphill side along the line of the stakes, attach geotextile, and bury fence bottom. Soil backfill trench and compact to secure fence bottom. (Compacted soil is preferred to gravel fill. Using sandbags or cement blocks to anchor the fence bottom is undesirable because of the tendency for undermining). Keep fence fabric taut. Do not field-sew seams. Overlap joints at support posts but do not place overlapped joints across pooled drainage areas.

Inspection

A properly installed fence intercepts sheet drainage, contains sediments on site and does not permit spillover or bypass. Inspect as needed daily, weekly, or during/ following major rainfall events.

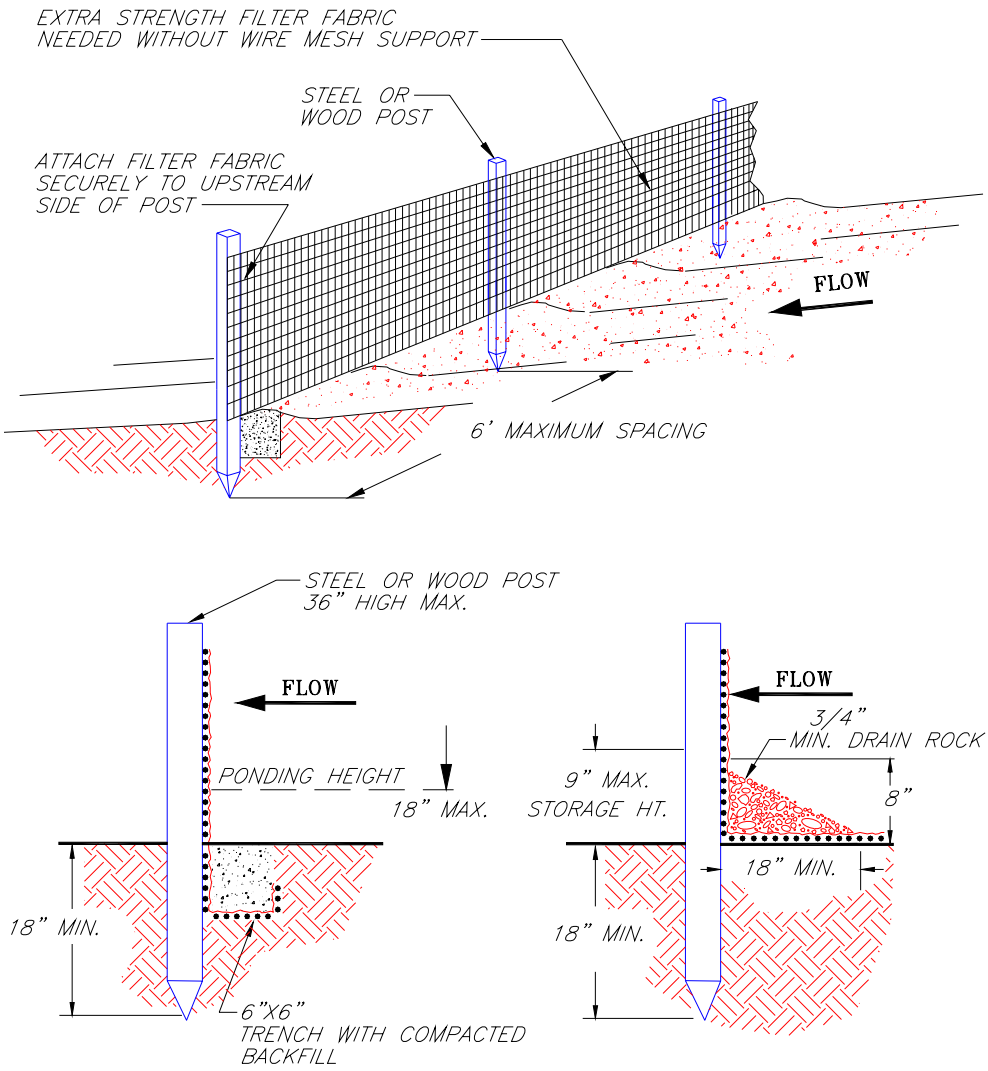
Observe for fenceline continuity. Inspect fences for collapse, damage, undermine areas, compromised integrity, or other installation or functional inadequacies. Look for evidence of sediment or erosion flow leading off the downhill edge of the fence. (This may be an indicator of drainage bypass or fence undermine.) Note depth of sediment build up at the fence. Look for signs of inadequate protection of off-site sensitive areas. Observe turbidity levels of protected waterways and determine sources of sediment/siltation.

Maintenance

Repair functional deficiencies immediately. Reinforce fenceline as needed to prevent undesirable sedimentation of sensitive areas. Replace torn or punctured fabric. Remedy fence sags as needed. Periodically remove accumulated sediment and dispose of silt waste in approved manner/location (typically in a non-erosion area).

Removal

Do not remove until the disturbed area is permanently stabilized or sediment protection is no longer needed. Unless directed otherwise, cut fabric at ground level, remove supports and spread sediment. Seed bare ground immediately. Discard filter fence as directed. Avoid damage to sensitive (e.g. wetland or surface water) areas. Stabilize areas.



TRENCH DETAIL

INSTALLATION WITHOUT TRENCHING

NOTES:

1. SILT FENCE FOLLOWS SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM SEDIMENT ACCUMULATION.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT AND CAN BE PERMANENTLY STABILIZED.

NOT TO SCALE

FILE: SILTFENC

SILT FENCE

14. Inlet Protection

Objectives and Applications

Inlet protection is a temporary filtering measure placed around a drop inlet or curb inlet to trap sediment and prevent the sediment from entering the storm drain system.

This measure is employed where storm drain inlets are to be made operational before permanent stabilization of the disturbed area, where a permanent storm drain structure is being constructed on site and there is potential for sediment accumulating in an inlet, and where ponding of storm water around the inlet structure could be a problem to the traffic on site. There are several types of sediment filters applicable for different conditions; the three most commonly used are:

filter fabric fence : applicable to drop inlets with flows 0.5 cfs or less, and flat grades (5 % or less).

block and gravel filter : applicable to drop and curb inlets with flows 0.5 cfs or more, flat grades (5 % or less), where no construction traffic will cross over the inlet.

gravel and wire mesh filter : applicable to drop and curb inlets with flows 0.5cfs or more, flat grades (5 % or less), where construction traffic will cross over the inlet.

Common Failures - Generally due to faulty installation or maintenance.

- Sediment accumulation – filtering capacity is reduced, resulting in ponding of water
- Improper installation, resulting in sediment bypassing filter and entering storm drain
- Tearing, undermining, or collapsing of filter fabric, resulting in sediment entering storm drain

Other Considerations

Inlet protection should be constructed in a manner that will facilitate cleanout and disposal of trapped sediment.

- Inlet protection should be constructed in a manner that will minimize ponding of storm water around the structure.
- Straw bale barriers should not be used for inlet protection.

Relationship to Other ESC Measures

Inlet protection is installed as a secondary measure to remove residual sediment that was not removed by other measures, such as check dams, grassed swales, and sediment traps.

Alternate Sediment Control Measures

Runoff from areas exceeding 1.0 acre or where grade is greater than 5% may require routing through a temporary sediment trap or sediment pond.

Other Names

Storm Drain Inlet Protection, Filter Inlet

Design

Drainage Area: *Not to exceed 1.0 acre*

Slope Gradient: *Not to exceed 5 %. For filter fabric fence designs, the area immediately surrounding the inlet should not exceed 1%. Gravel filters may be more appropriate for steeper slopes.*

Sediment Trapping Sump: *Where possible, a sump 12 in. – 20 in. measured from the crest of the inlet should be excavated. Side slopes should be 2:1. The recommended volume of excavation is 35 cubic yards/acre of disturbed ground.*

Orientation: *The longest dimension of the basin should be oriented toward the longest inflow area.*

Materials

Filter fabric fence – filter fabric (extra strength, filtering capacity 75 % minimum, meeting AASHTO Specification M 288 For Temporary Silt Fence); wooden stakes 2 in. x 4 in. – minimum length 3 ft.; heavy duty wire staples 1/2 in. long; washed gravel 3/4 in. – 1 ¼ in., with less than 5% fines.

Block and gravel filter – hardware cloth or wire mesh with 1/2 in. openings; filter fabric (optional) (AASHTO M 288); concrete blocks 4 in. – 12 in. wide, 12 in. – 24 in. high; washed gravel 3/4 in. – 4 in. in diameter; wood stud 2 in. x 4 in., for curb inlet applications.

Gravel and wire mesh filter - hardware cloth or wire mesh with 1/2 in. openings; filter fabric (AASHTO M 288); washed gravel 3/4 in. – 4 in. in diameter.

Installation

Filter Fabric Fence – Place a stake at each corner of the inlet no more than 3 ft. apart. Drive stakes into the ground a minimum of 12 inches. For stability, install a frame of 2 in. x 4 in. wood strips around the top of the overflow area. Excavate a trench 8 in. wide x-12 in. deep around the outside perimeter of the stakes. If a sediment trapping sump is being provided, then the excavation may be as deep as 20 inches. Staple the filter fabric to the wooden stakes with heavy duty staples; ensure that 32 in. of filter fabric extends at the bottom so it can be formed into the trench. Place the bottom of the fabric into the trench - backfill with washed gravel all the way around.

Block and Gravel Filter – Secure the inlet grate to prevent seepage. Place wire mesh over the inlet so that it extends 12 in. - 20 in. beyond the inlet structure. Place filter fabric (optional) over the mesh and extend it 20 in. beyond the inlet structure. Place concrete blocks over the wire mesh or filter fabric in a single row lengthwise on their sides, with the open ends of the blocks facing outward, not upward; ensure that adjacent ends of blocks abut. For curb inlet applications, cut a 2 in. x 4 in. wood stud the length of the curb inlet plus the width of the two end blocks and place the stud through the outer hole of the end blocks to keep the blocks in place. Place wire mesh over the outside of the vertical face (open end) of the blocks to prevent gravel from being washed through the blocks. Place gravel against the wire mesh to the top of the blocks.

Gravel and Wire Mesh Filter – Secure the inlet grate. Place wire mesh over the inlet so that the mesh extends 12 in. beyond each side of the inlet structure. Place filter fabric over the mesh, extending it 20 in. beyond the inlet structure. Place washed gravel over the fabric/wire mesh to a depth of 12 inches.

Inspection

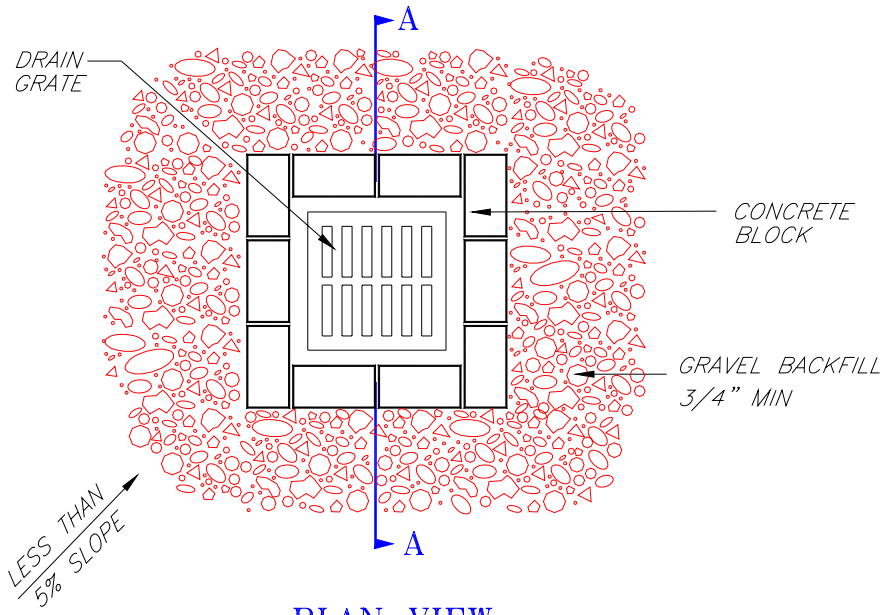
Inspect inlet protection weekly and after every storm to look for sediment accumulation and structural damage.

Maintenance

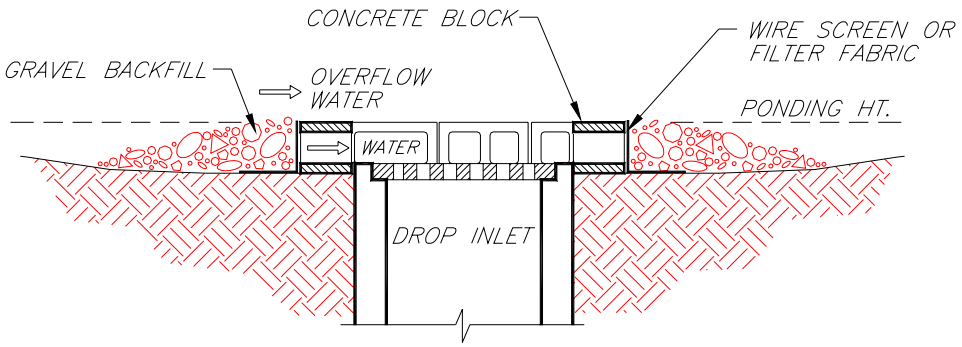
Remove sediment and restore structure to its original dimensions when sediment has accumulated to ½ the design depth. On gravel and mesh designs, clean (or remove and replace) the gravel filter or filter fabric if it becomes clogged. Repair any structural damage immediately.

Removal

Remove the filter material and support structures after the drainage areas have been completely stabilized. Remove or stabilize trapped sediment. Stabilize disturbed soil areas resulting from removal.



PLAN VIEW



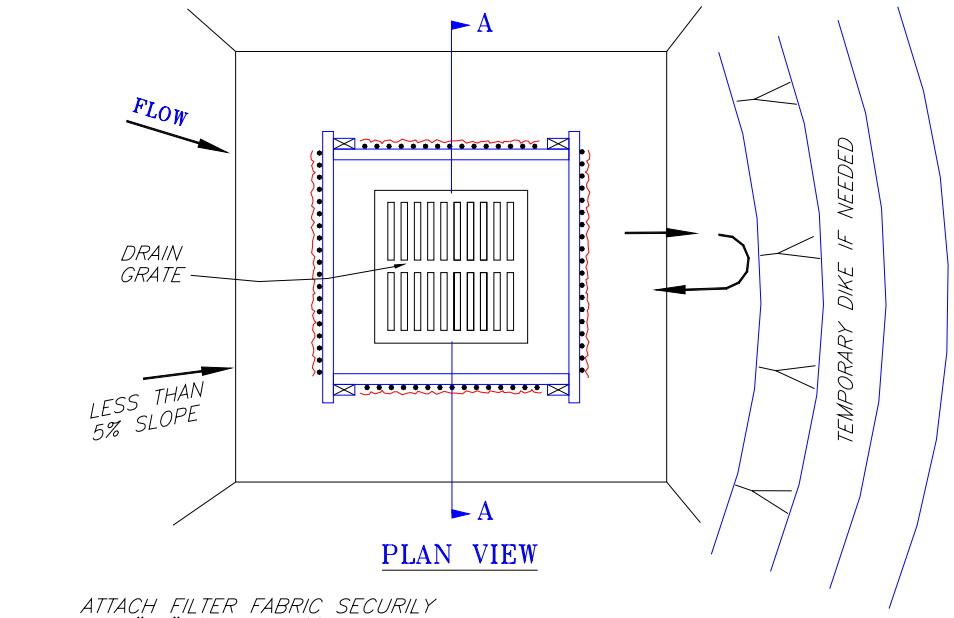
SECTION A – A

NOTES:

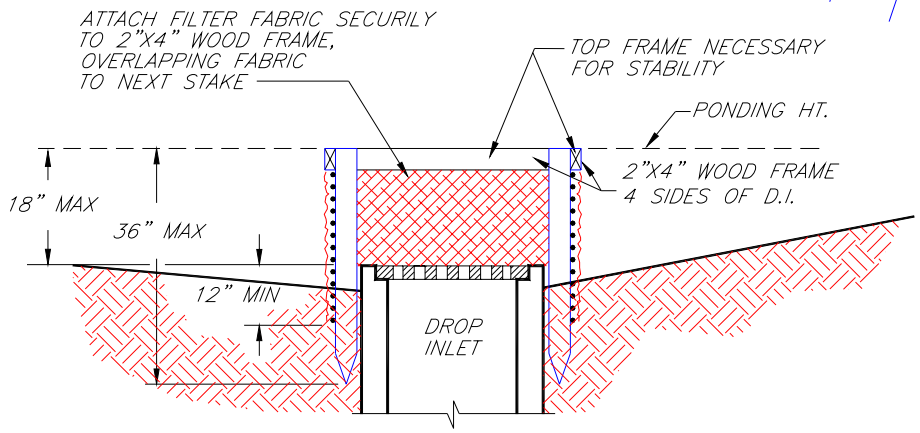
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

FILE: BGSEDBAR

INLET PROTECTION



PLAN VIEW



SECTION A–A

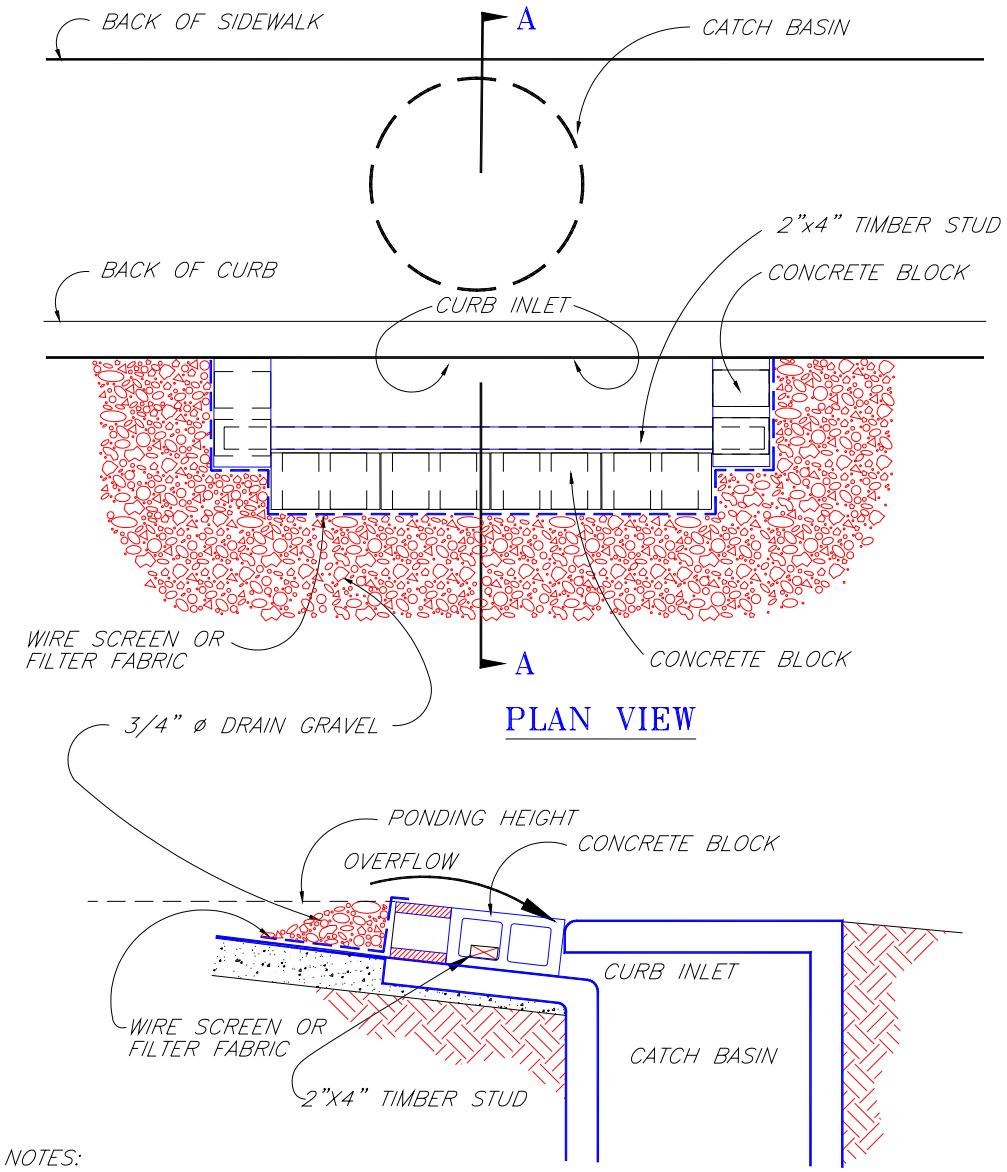
NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. USE 2"X4" WOOD OR EQUIVALENT METAL STAKES, 3' MINIMUM LENGTH.
3. INSTALL 2"X4" WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY–PASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

NOT TO SCALE

FILE: SILTFDIB

INLET PROTECTION

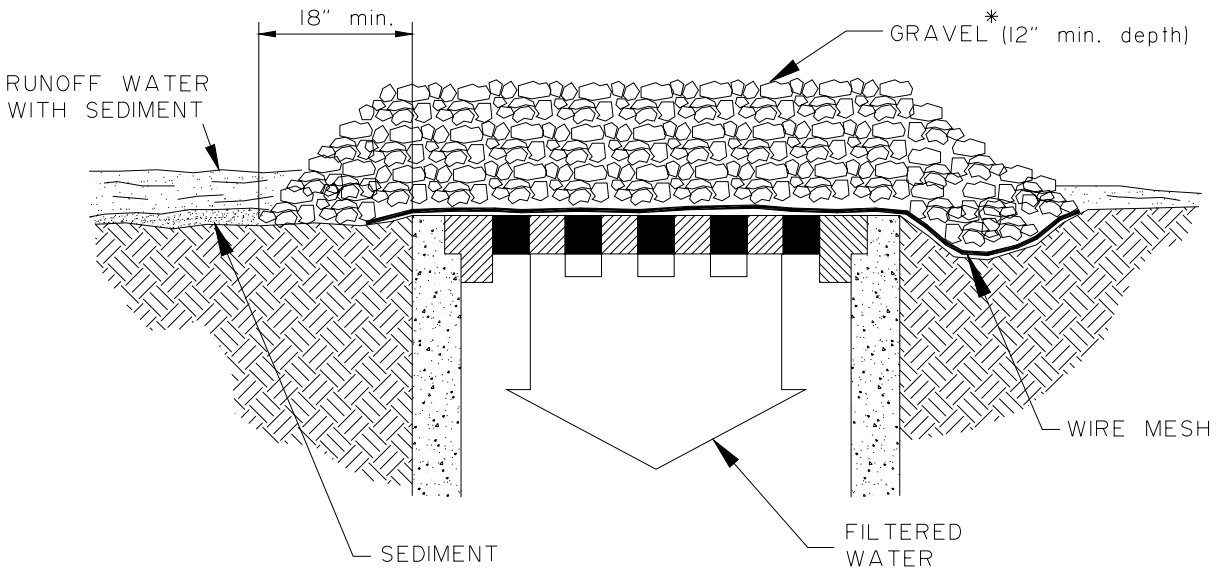


NOTES:

1. USE BLOCK AND GRAVEL TYPE SEDIMENT BARRIER WHEN CURB INLET IS LOCATED IN GENTLY SLOPING STREET SEGMENT, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. BARRIER SHALL ALLOW FOR OVERFLOW FROM SEVERE STORM EVENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

FILE: BLCKCURB

INLET PROTECTION



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

INLET PROTECTION

15. Straw Bale Barrier

Objectives and Applications

A straw bale barrier is a temporary sediment barrier consisting of a row of entrenched and anchored straw bales.

The purpose of a straw bale barrier is to intercept and retain sediment laden storm water runoff from disturbed areas of limited extent, preventing sediment from leaving the site; and to decrease the velocity of upslope sheet flows. The barrier is effective at the toe of embankment slopes, across minor swales and ditches, along property lines, and for other applications where the need for a barrier is temporary and structural strength is not required.

Common Failures - Generally due to faulty installation or maintenance.

- Lateral flanking of bales due to insufficient height or width, or due to ends of bales not flared upslope.
- Improper placement and installation, such as staking the bales directly onto the ground with no soil seal or entrenchment, allowing undercutting or end flow.
- Excessive gaps between bales are present, allowing water and sediment to escape.
- Sediment accumulation, resulting in loss of filtering capacity.

Other Considerations

- Straw bale barriers should not be constructed in streams or in swales where there is the possibility of a washout.
- Straw bale barriers should not be used on areas where rock or other hard surfaces prevents the uniform anchoring of the barrier.
- Straw bale barriers should not be constructed where flows are likely to exceed 0.3 cubic ft./second.
- Straw bale barriers should not be used where the control of sediment is critical, in high risk areas, or where ponded water could flow onto the roadway.
- Proper installation and maintenance are critical to the function of straw bale barriers.

Relationship to Other ESC Measures

Straw bale barriers may be used as silt traps and check dams. They function to reduce flow velocities and cause sediment deposition. They may also be used as a barrier to divert or direct runoff to a slope drain, sediment trap, or other control measure.

Alternate Sediment Control Measures

Silt Fence, Brush Barrier

Other Names

Erosion Bale, Straw Bale Dike, Straw Bale Sediment Trap

Design

Design life: *3 months or less*

Contributing flow drainage area: *not to exceed 0.25 acres per 100 ft. of bales*

Maximum slope steepness: *2:1*

Maximum flow path length to barrier: *150 ft.*

Materials

Straw bales (wire bound or string tied), wood or metal stakes.

Installation

Excavate a trench the width of the bale and the length of the proposed barrier to a minimum depth of 4 in. Place the bales in a single row, lengthwise on the contour, with ends of the adjacent bales tightly abutting one another. If the barrier is located at the toe of a slope, place it 5 – 6 ft. away from the slope if possible. Ensure that all bales are wire-bound or string tied. Install bales so that bindings are oriented around the sides rather than along the tops and the bottoms of the bales in order to prevent deterioration of the bindings. Place and anchor each bale with at least two wood stakes, minimum dimensions, 2 in. x 2 in. x 36 in., or with # 4 reinforcing bars, driving the first stake toward the previously placed bale to force the bales together. Drive the stakes or reinforcing bars a minimum of 12 in. into the ground. Fill any gaps between bales with tightly wedged straw. Backfill

with excavated soil to ground level on the downhill side and up to 4 in. against the uphill side of the barrier.

Inspection

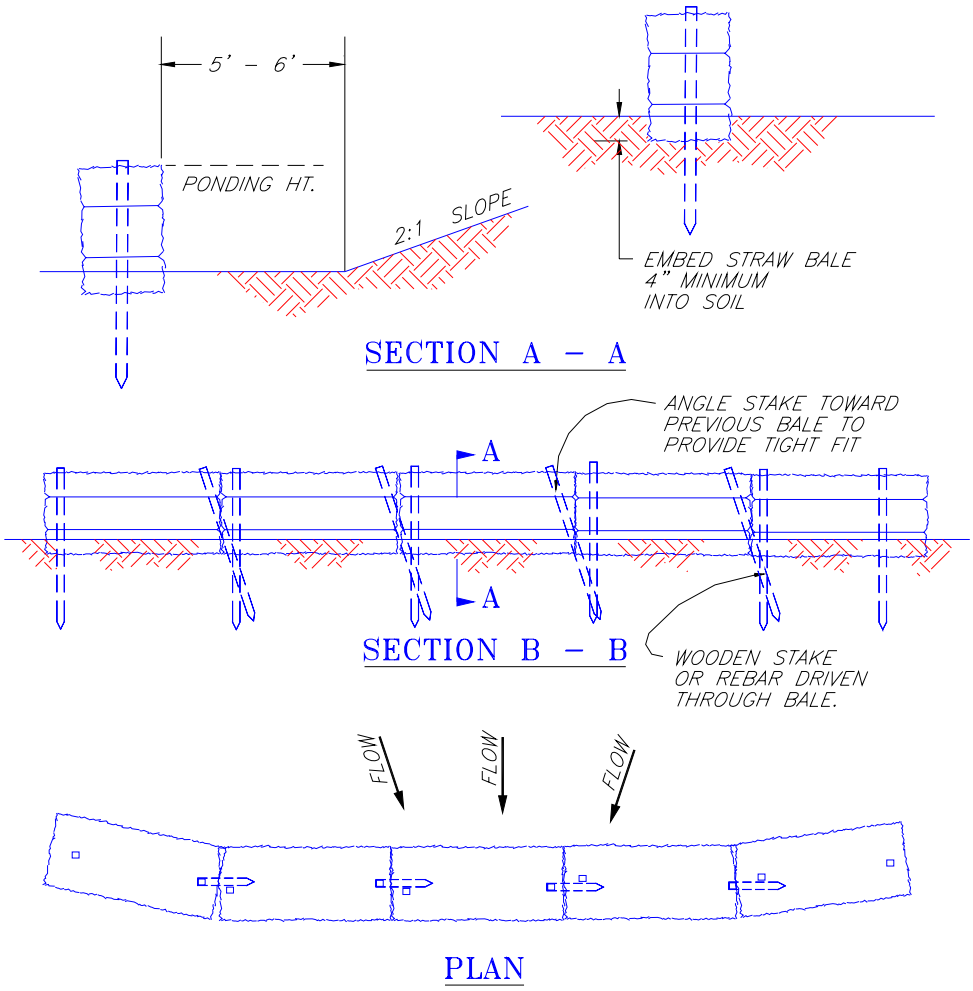
Inspect barrier weekly and immediately after each rainfall to look for sediment accumulation, damaged bales, end runs, and undercutting beneath bales.

Maintenance

Remove sediment deposits when they reach approximately one-half the height of the uphill edge of the barrier. Repair or replace damaged bales promptly.

Removal

Straw bale barriers and accumulated sediment may be spread and seeded; or may be removed after they have served their usefulness, but not before the upslope areas have been permanently stabilized with vegetation.



NOTES:

1. THE STRAW BALES SHALL BE PLACED ON SLOPE CONTOUR.
2. BALES TO BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING.
3. KEY IN BALES TO PREVENT EROSION OR FLOW UNDER BALES.

FILE: STRWDIKE

STRAW BALE BARRIER

16. Brush Barrier

Objectives and Applications

A brush barrier is a temporary sediment barrier constructed at the perimeter of a disturbed site from the residual materials available from clearing and grubbing the site.

The purpose of a brush barrier is to intercept and retain sediment laden storm water runoff from disturbed areas of limited extent, preventing sediment from leaving the site. The barrier is constructed of tree limbs, weeds, vines, root mat, soil, rock, or other cleared materials piled together to form a berm, and located across or at the toe of a slope susceptible to sheet and rill erosion.

Common Failures - Generally due to faulty installation or maintenance.

- Materials that are too large are used, creating voids where sediment can easily pass through.
- Barrier constructed too loosely, allowing water and sediment to easily pass through.
- Sediment accumulation, resulting in loss of filtering capacity.

Other Considerations

- Enough residual material should be available on site for barrier construction.
- Material larger than 6 inches in diameter should not be used since it tends to create large voids.
- Barrier should be used only in areas of sheet or very low flow.
- Barrier should not be constructed where the maximum upslope gradient exceeds 2:1.
- Brush barriers should act as a filter, not a dam. If it is impermeable, then water will flow around it and outlet treatment will be required.

Relationship to Other ESC Measures

Brush barriers are utilized to retain sediment that would otherwise be deposited in other downslope sediment control measures, such as sediment traps and sediment ponds.

Alternate Sediment Control Measures

Straw Bale Barrier; Silt Fence

Other Names

Brush Berm, Brush Bundle

Design

Design life: *1 season (6 months) or less*

Contributing flow drainage area*: not to exceed 0.25 acres*

Height: *3 ft. minimum to 5 ft. maximum*

Width: **(at base)** *5 ft. minimum to 15 ft. maximum*

Materials

Residual on site materials from clearing and grubbing activities – brush, tree limbs, root mat, weeds, vines, rock, or other cleared materials; nylon or polypropylene rope, rebar stakes; geotextile fabric (optional) meeting AASHTO specification M 288 for temporary silt fence.

Installation

Construct the barrier to the specified height and width by piling brush, stone, root mat and other material from the clearing and grubbing process into a mounded row on the contour. Ensure that barrier structure is uniform and that no significant voids are present. Cover with geotextile fabric (optional). Anchor into the ground using 1/4 in. polypropylene or nylon rope tied across the berm in a crisscross fashion and secured to 18 in. long x 3/8 in. diameter rebar stakes.

Inspection

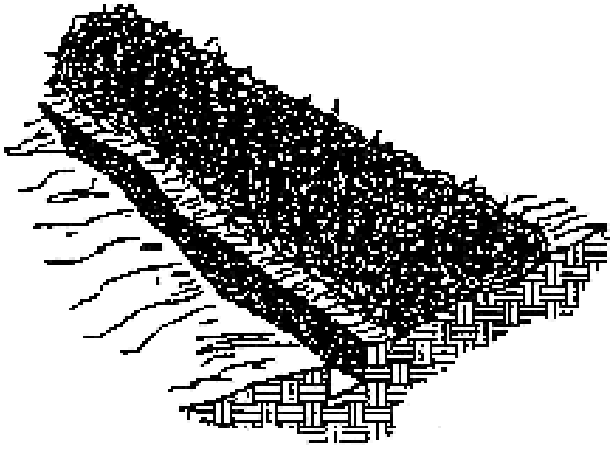
Inspect barrier weekly and after heavy rains to look for sediment accumulation.

Maintenance

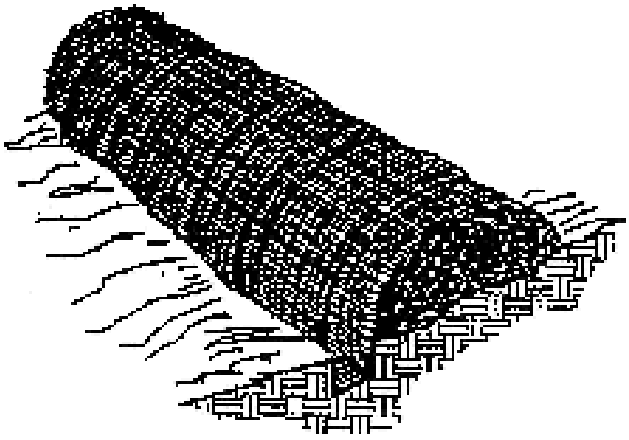
Sediment deposits should be removed when they reach approximately one-third the height of the uphill edge of the barrier.

Removal

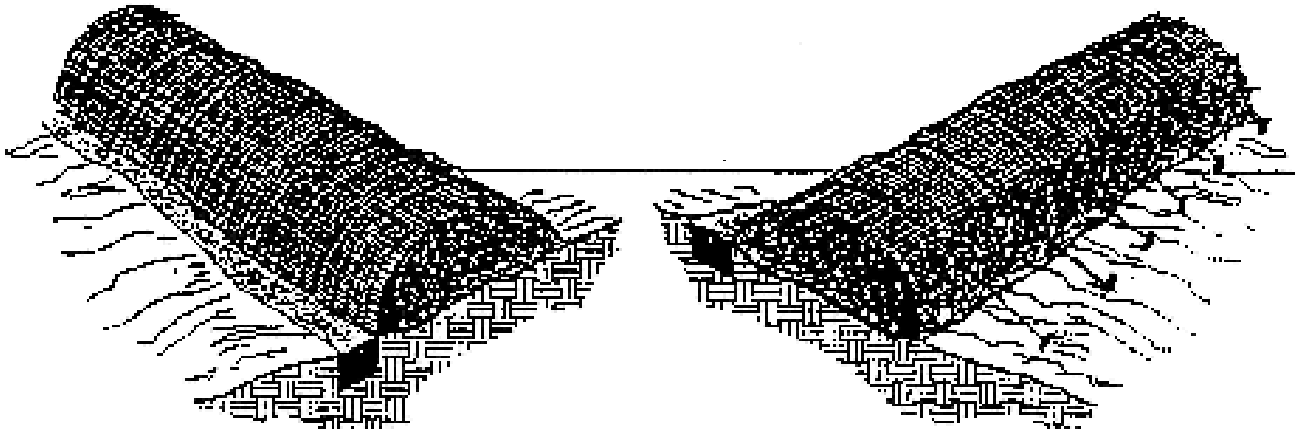
Brush barriers should be removed after they have served their usefulness, but not before the upslope areas have been permanently stabilized. Remove and stabilize trapped sediment. Stabilize disturbed soil areas resulting from removal. Brush barriers should only be left in-place if specifically allowed in the contract documents.



Excavate a 4" X 4" trench along the uphill edge of the Brush Barrier.



Drape a geotextile over the barrier and into the trench. The geotextile should be secured in the trench with stakes set approximately 36" on center.



Backfill and compact the excavated soil.

Set stakes along the downhill edge of the barrier, and anchor by tying twine from the geotextile to the stakes.

BRUSH BARRIER

17. Vehicle Tracking Entrance/Exit

Objectives and Applications

A vehicle tracking entrance/exit provides a stabilized gravel area or pad underlined with a geotextile and located where traffic enters or exits the construction site.

This measure establishes a buffer area for vehicles to deposit their mud and sediment, and minimize the amounts transported onto public roadways. Mud on a road can create a safety hazard as well as a sediment problem. This measure may be used with or without washdown, depending upon severity of problem.

Common Failures - Generally due to faulty installation or maintenance.

- Inadequate depth and length of gravel.
- Failure to periodically "top dress" (provide additional gravel) when sediment accumulates on the surface.
- Failure to repair and/or clean out any structures used to trap sediment.

Other Considerations

- Avoid entrances/exits which have steep grades or which are located where sight distance may be a problem.
- Provide drainage to carry water to sediment trap or other suitable outlet.

Design

Gravel Size*: 2 in.-3 in.*

Pad Thickness*: minimum 6 in.*

Pad Width: *minimum 12 ft.*

Pad Length: *minimum 50 ft.*

Materials

Gravel, geotextile

Installation

Clear the entrance and exit area of all vegetation, roots, and other material and properly grade it. Place geotextile prior to placement of gravel. Place the gravel to the specific grade shown on the plans, and smooth it. Provide drainage to carry water to a sediment trap or other outlet.

Inspection

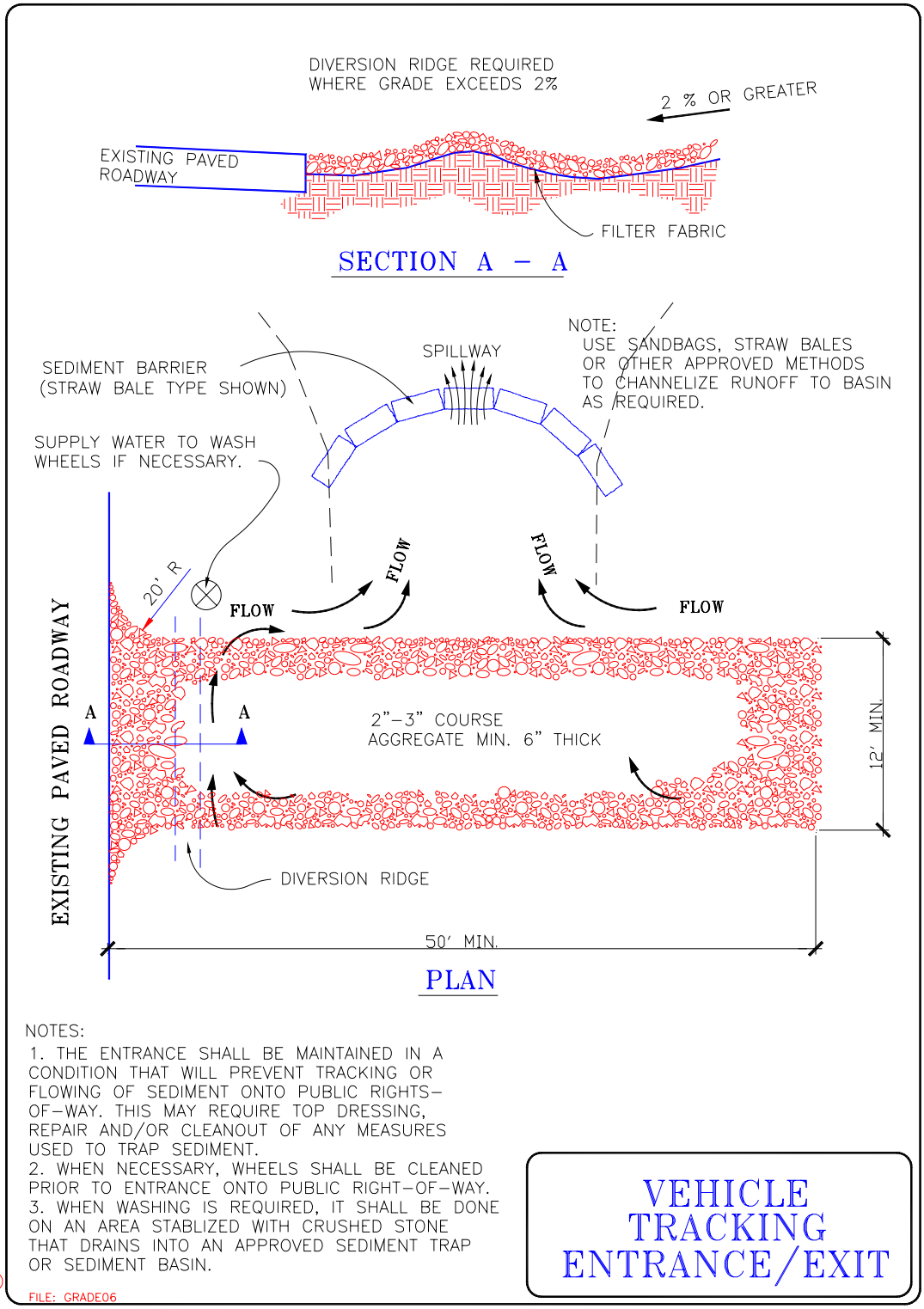
Inspect pads and sediment trapping structures daily for sediment accumulation and material displacement.

Maintenance

Maintain each entrance in a condition that will prevent tracking of mud or sediment onto public rights-of-way. Replace gravel material when surface voids are visible. Top dress with 2 in. gravel when pad becomes laden with sediment. Repair and/or clean out any structures used to trap sediment. Remove all mud and sediment deposited on paved roadways within 24 hours.

Removal

Remove pad and any sediment trapping structures after they are no longer needed, or within 30 days after final site stabilization. Remove and stabilize trapped sediment on site.



NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABLIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

FILE: GRADE06

VEHICLE TRACKING ENTRANCE/EXIT

Vehicle Tracking Entrance/Exit

Appendix G. Storm Water General Permit Requirements

U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 22nd day of January, 1998.

Thomas Maslany,

Water Management Director.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 3.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 16th day of January, 1998.

U. Gale Hutton,

Director, Water, Wetlands, and Pesticides Division, U.S. Environmental Protection Agency, Region 7.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 7.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 15th day of January, 1998.

Kerrigan G. Clough,

Assistant Regional Administrator, Office of Pollution Prevention, State and Tribal Assistance.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 8.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 29th day of January, 1998.

Alexis Strauss,

Acting Director, Water Division, Region 9.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 9.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See part I.A.]

Authorization to Discharge Under the National Pollutant Discharge Elimination System

In accordance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 20th day of January, 1998.

Philip G. Millam,

Director, Office of Water, Region 10.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 10.

NPDES General Permits for Storm Water Discharges From Construction Activities

Table of Contents

Part I. Coverage Under This Permit

A. Permit Area

The permit language is structured as if it were a single permit, with State, Indian Country land, or other area-specific conditions specified in Part X. Permit coverage is actually provided by legally separate and distinctly numbered permits covering each of the following areas:

Region 1

CTR10*##I: Indian Country lands in the State of Connecticut.

MAR10*###: Commonwealth of Massachusetts, except Indian Country lands.

MAR10*##I: Indian Country lands in the Commonwealth of Massachusetts.

MER10*###: State of Maine, except Indian Country lands.

MER10*##I: Indian Country lands in the State Maine.

NHR10*###: State of New Hampshire.

RIR10*##I: Indian Country lands in the State of Rhode Island.

VTR10*##F: Federal Facilities in the State of Vermont.

Region 2

NYR10*##I: Indian Country lands in the State of New York.

PRR10*###: The Commonwealth of Puerto Rico.

Region 3

DCR10*###: The District of Columbia.

DER10*##F: Federal Facilities in the State of Delaware.

Region 4

Coverate Not Available. Construction activities in Region 4 must obtain permit coverage under an alternative general permit.

Region 5

Coverage Not Available.

Region 6

Coverage Not Available.

Region 7

IAR10*##I: Indian Country lands in the State of Iowa.

KSR10*##I: Indian Country lands in the State of Kansas.

NER10*##I: Indian Country lands in the State of Nebraska, except Pine Ridge Reservation lands (see Region 8).

Region 8

COR10*##F: Federal Facilities in the State of Colorado, except those located on Indian Country lands.

COR10*##I: Indian Country lands in the State of Colorado, including the portion of the Ute Mountain Reservation located in New Mexico.

MTR10*##I: Indian Country lands in the State of Montana.

NDR10*##I: Indian Country lands in the State of North Dakota, including that portion of the Standing Rock Reservation located in South Dakota (except for the Lake Traverse Reservation which is covered under South Dakota permit SDR10*##I listed below).

SDR10*##I: Indian Country lands in the State of South Dakota, including the portion of the Pine Ridge Reservation located in Nebraska and the portion of the Lake Traverse Reservation located in North Dakota (except for the Standing Rock Reservation which is covered under North Dakota permit NDR10*##I listed above).

UTR10*##I: Indian Country lands in the State of Utah, except Goshute and Navajo Reservation lands (see Region 9).

WYR10*##I: Indian Country lands in the State of Wyoming.

Region 9

ASR10*###: The Island of American Samoa.

AZR10*###: The State of Arizona, except Indian Country lands.

AZR10*##I: Indian Country lands in the State of Arizona, including Navajo Reservation lands in New Mexico and Utah.

CAR10*##I: Indian Country lands in the State of California.

GUR10*###: The Island of Guam.

JAR10*###: Johnston Atoll.

MWR10*###: Midway Island and Wake Island.

NIR10*###: Commonwealth of the Northern Mariana Islands.

NVR10*##I: Indian Country lands in the State of Nevada, including the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Goshute Reservation in Utah.

Region 10

AKR10*###: The State of Alaska, except Indian Country lands.

AKR10*##I: Indian Country lands in Alaska.

IDR10*###: The State of Idaho, except Indian Country lands.

IDR10*##I: Indian Country lands in the State of Idaho, except Duck Valley Reservation lands (see Region 9).

ORR10*##I: Indian Country lands in the State of Oregon except Fort McDermitt Reservation lands (see Region 9).

WAR10*##F: Federal Facilities in the State of Washington, except those located on Indian Country lands.

WAR10*##I: Indian Country lands in the State of Washington.

B. Eligibility

1. Permittees are authorized to discharge pollutants in storm water runoff associated with construction activities as defined in 40 CFR 122.26(b)(14)(x) and those construction site discharges designated by the Director as needing a storm water permit under 122.26(a)(1)(v) or under 122.26(a)(9) and 122.26(g)(1)(i). Discharges identified under Part I.B.3 are excluded from coverage. Any discharge authorized by a different NPDES permit may be commingled with discharges authorized by this permit.

2. This permit also authorizes storm water discharges from support activities (*e.g.*, concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

a. The support activity is directly related to a construction site that is required to have NPDES permit coverage for discharges of storm water associated with construction activity;

b. The support activity is not a commercial operation serving multiple unrelated construction projects by different operators, and does not operate beyond the completion of the

construction activity at the last construction project it supports; and

c. Appropriate controls and measures are identified in a storm water pollution prevention plan covering the discharges from the support activity areas.

3. Limitations on Coverage. A. *Post Construction Discharges.* This permit does not authorize storm water discharges that originate from the site after construction activities have been completed and the site, including any temporary support activity site, has undergone final stabilization. Industrial post-construction storm water discharges may need to be covered by a separate NPDES permit.

B. *Discharges Mixed With Non-Storm Water.* This permit does not authorize discharges that are mixed with sources of non-storm water, other than those discharges which are identified in Part II.A.2. or 3. (exceptions to prohibition on non-storm water discharges) and are in compliance with Part IV.D.5 (non-storm water discharges).

C. *Discharges Covered by Another Permit.* This permit does not authorize storm water discharges associated with construction activity that have been covered under an individual permit or required to obtain coverage under an alternative general permit in accordance with Part VI.L.

d. *Discharges Threatening Water Quality.* This permit does not authorize storm water discharges from construction sites that the Director (EPA) determines will cause, or have reasonable potential to cause or contribute to, violations of water quality standards. Where such determinations have been made, the Director may notify the operator(s) that an individual permit application is necessary in accordance with Part VI.L. However, the Director may authorize coverage under this permit after appropriate controls and implementation procedures designed to bring the discharges into compliance with water quality standards has been included in the storm water pollution prevention plan;

e. *Storm water discharges and storm water discharge-related activities that are not protective of Federally listed endangered and threatened ("listed") species or designated critical habitat ("critical habitat").*

(1) For the purposes of complying with the Part I.B.3.e. eligibility requirements, "storm water discharge-related activities" include:

(a) Activities which cause, contribute to, or result in point source storm water pollutant discharges, including but not limited to: excavation, site development, grading and other surface disturbance activities; and

(b) Measures to control storm water including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent storm water pollution.

(2) Coverage under this permit is available only if the applicant certifies that it meets at least one of the criteria in paragraphs (a)–(d) below. Failure to continue to meet one of these criteria during the term of the permit will render a permittee ineligible for coverage under this permit.

(a) The storm water discharges and storm water discharge-related activities are not likely to adversely affect listed species or critical habitat; or

(b) Formal or informal consultation with the Fish and Wildlife Service and/or the National Marine Fisheries Service (the "Services") under section 7 of the Endangered Species Act (ESA) has been concluded which addresses the effects of the applicant's storm water discharges and storm water discharge-related activities on listed species and critical habitat and the consultation results in either a no jeopardy opinion or a written concurrence by the Service(s) on a finding that the applicant's storm water discharges and storm water discharge-related activities are not likely to adversely affect listed species or critical habitat. A section 7 consultation may occur in the context of another Federal action (*e.g.*, a ESA section 7 consultation was performed for issuance of a wetlands dredge and fill permit for the project, or as part of a National Environmental Policy Act (NEPA) review); or

(c) The applicant's construction activities are authorized under section 10 of the ESA and that authorization addresses the effects of the applicant's storm water discharges and storm water discharge-related activities on listed species and critical habitat; or

(d) The applicant's storm water discharges and storm water discharge-related activities were already addressed in another operator's certification of eligibility under Part I.B.3.e.(2)(a), (b), or (c) which included the applicant's project area. By certifying eligibility under Part I.B.3.e.(2)(d), the applicant agrees to comply with any measures or controls upon which the other operator's certification under Part I.B.3.e.(2)(a), (b) or (c) was based.

(3) All applicants must follow the procedures provided at Addendum A of this permit when applying for permit coverage.

(4) The applicant must comply with any applicable terms, conditions or other requirements developed in the process of meeting eligibility requirements of Part I.B.3.e.(2)(a), (b), (c), or (d) above to remain eligible for coverage under this permit. Such terms and conditions must be incorporated in the applicant's storm water pollution prevention plan.

(5) Applicants who choose to conduct informal consultation to meet the eligibility requirements of Part I.B.3.e.(2)(b) are automatically designated as non-Federal representatives under this permit. *See* 50 CFR 402.08. Applicants who choose to conduct informal consultation as a non-Federal representatives must notify EPA and the appropriate Service office in writing of that decision.

(6) This permit does not authorize any storm water discharges where the discharges or storm water discharge-related activities cause prohibited "take" (as defined under section 3 of the Endangered Species Act and 50 CFR 17.3) of endangered or threatened species unless such takes are authorized under section 7 or 10 of the Endangered Species Act.

(7) This permit does not authorize any storm water discharges where the discharges or storm water discharge-related activities are likely to jeopardize the continued existence of any species that are listed or proposed to be listed as endangered or threatened under the ESA or result in the adverse modification or destruction of habitat that is designated or proposed to be designated as critical under the ESA.

f. *Storm Water Discharges and Storm Water Discharge-Related Activities with Unconsidered Adverse Effects on Historic Properties.* (Reserved)

C. Obtaining Authorization

1. In order for storm water discharges from construction activities to be authorized under this general permit, an operator must:

a. Meet the Part I.B. eligibility requirements;

b. Except as provided in Parts II.A.5 and II.A.6, develop a storm water pollution prevention plan (SWPPP) covering either the entire site or all portions of the site for which they are operators (see definition in Part IX.N) according to the requirements in Part IV. A "joint" SWPPP may be developed and implemented as a cooperative effort where there is more than one operator at a site; and

c. Submit a Notice of Intent (NOI) in accordance with the requirements of Part II, using an NOI form provided by the Director (or a photocopy thereof). Only one NOI need be submitted to cover all of the permittee's activities on the common plan of development or sale (*e.g.*, you do not need to submit a separate NOI for each separate lot in a

residential subdivision or for two separate buildings being constructed at a manufacturing facility, provided your SWPPP covers each area for which you are an operator). The SWPPP must be implemented upon commencement of construction activities.

2. Any new operator on site, including those who replace an operator who has previously obtained permit coverage, must submit an NOI to obtain permit coverage.

3. Unless notified by the Director to the contrary, operators who submit a correctly completed NOI in accordance with the requirements of this permit are authorized to discharge storm water from construction activities under the terms and conditions of this permit two (2) days after the date that the NOI is postmarked. The Director may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information (see Part VI.L).

D. Terminating Coverage

1. Permittees wishing to terminate coverage under this permit must submit a Notice of Termination (NOT) in accordance with part VIII of this permit. Compliance with this permit is required until an NOT is submitted. The permittee's authorization to discharge under this permit terminates at midnight of the day the NOT is signed.

2. All permittees must submit an NOT within thirty (30) days after one or more of the following conditions have been met:

a. Final stabilization (see definition Part IX.I) has been achieved on all portions of the site for which the permittee is responsible (including if applicable, returning agricultural land to its pre-construction agricultural use);

b. Another operator/permittee has assumed control according to Part VI.G.2.c. over all areas of the site that have not been finally stabilized; or

c. For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

Enforcement actions may be taken if a permittee submits an NOT without meeting one or more of these conditions.

Part II. Notice of Intent Requirements

A. Deadlines for Notification

1. Except as provided in Part II.A.3, II.A.4, II.A.5 or II.A.6 below, parties defined as operators (see definition in Part IX.N) due to their operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications, must submit a Notice of Intent (NOI) in accordance with the requirements of this Part at least two (2) days prior to the commencement of construction activities (*i.e.*, the initial disturbance of soils associated with clearing, grading, excavation activities, or other construction activities).

2. Except as provided in parts II.A.3, II.A.4, II.A.5 of II.A.6 below, parties defined as operators (see definition in Part IX.N) due to their day-to-day operational control over activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan or other permit conditions (*e.g.*, general contractor, erosion control contractor) must submit an NOI at least two (2) days prior to commencing work on-site.

3. For storm water discharges from construction projects where the operator changes, including instances where an operator is added after an NOI has been submitted under Parts II.A.1 or II. A.2, the new operator must submit an NOI at least two (2) days before assuming operational control over site specifications or commencing work on-site.

4. Operators are not prohibited from submitting late NOIs. When a late NOI is submitted, authorization is only for discharges that occur after permit coverage is granted. The Agency reserves the right to take appropriate enforcement for any unpermitted activities that may have occurred between the time construction commenced and authorization of future discharges is granted (typically 2 days after a complete NOI is submitted).

5. Operators of on-going construction projects as of the effective date of this permit which received authorization to discharge for these projects under the 1992 baseline construction general permit must:

a. Submit a NOI according to Part II.B. within 90 days of the effective date of this permit. If the permittee is eligible to submit a Notice of Termination (*e.g.*, construction is finished and final stabilization has been achieved) before the 90th day, a new NOI is not required to be submitted;

b. For the first 90 days from the effective date of this permit, comply with the terms and conditions of the 1992 baseline construction general permit they were previously authorized under; and

c. Update their storm water pollution prevention plan to comply with the requirements of Part IV within 90 days after the effective date of this permit.

6. Operators of on-going construction projects as of the effective date of this permit which did *not* receive authorization to discharge for these projects under the 1992 baseline construction general permit must:

a. Prepare and comply with an interim storm water pollution prevention plan in accordance with the 1992 baseline construction general permit prior to submitting an NOI;

b. Submit a NOI according to Part II.B; and

c. Update their storm water pollution prevention plan to comply with the requirements of Part IV within 90 days after the effective date of this permit.

B. Contents of Notice of Intent (NOI)

1. Interim Use of Existing NOI Form

Until the revised NOI form is published as final in the **Federal Register**, operators must use EPA's existing NOI form [EPA Form 3510–6 (8–98)] to apply for permit coverage.

Note: The revised NOI form is pending approval by the U.S. Office of Management and Budget as of the effective date of this permit.

When using the existing NOI form, operators should only submit information that was required for parties under the baseline construction general permit. However, by completing and signing the existing NOI form to obtain permit coverage, operators are certifying that they meet all applicable eligibility requirements of Part I.B of today's permit and an informing the Director of their intent to be covered by, and comply with, the terms and conditions of this permit. When the revised NOI form is available (through final publication in the **Federal Register**), the existing NOI form will no longer be accepted for permit coverage.

2. Use of Revised NOI Form

The revised NOI form shall be signed in accordance with Part VI.G of this permit and shall include the following information:

a. The name, address, and telephone number of the operator filing the NOI for permit coverage;

b. An indication of whether the operator is a Federal, State, Tribal, private, or other public entity;

c. The name (or other identifier), address, county, and latitude/longitude of the construction project or site;

d. An indication of whether the project or site is located on Indian Country lands;

e. Confirmation that a storm water pollution prevention plan (SWPPP) has been developed or will be developed prior to commencing construction activities, and that the SWPPP will be compliant with any applicable local

sediment and erosion control plans. Copies of SWPPPs or permits should *not* be included with the NOI submission;

f. Optional information: the location where the SWPPP may be viewed and the name and telephone number of a contact person for scheduling viewing times;

g. The name of the receiving water(s);

h. Estimates of project start and completion dates, and estimates of the number of acres of the site on which soil will be distributed (if less than 1 acre, enter "1");

i. Based on the instructions in Addendum A, whether any listed or proposed threatened or endangered species, or designated critical habitat, are in proximity to the storm water discharges or storm water discharge-related activities to be covered by this permit;

j. Under which section(s) of Part I.B.3.e (Endangered Species) the applicant is certifying eligibility; and

Note that as of the effective date of this permit, reporting of information relating to the preservation of historic properties has been reserved and is not required at this time. Such reservation in no way relieves applicants or permittees from any otherwise applicable obligations or liabilities related to historic preservation under State, Tribal or local law. After further discussions between EPA and the Advisory Council on Historic Preservation, the Agency may modify the permit. Any such modification may affect future Notice of Intent reporting requirements.

C. Where To Submit

1. NOIs must be signed in accordance with Part VI.G. and sent to the following address: Storm Water Notice of Intent (4203), US EPA, 401 M. Street, SW, Washington, D.C. 20460.

Part III. Special Conditions, Management Practices, and Other Non-Numeric Limitations

A. Prohibition Non-Storm Water Discharges

1. Except as provided in Parts I.B.2 or 3 and III.A.2 or 3, all discharges covered by this permit shall be composed entirely of storm water associated with construction activity.

2. Discharges of material other than storm water that are in compliance with an NPDES permit (other than this permit) issued for that discharge may be discharged or mixed with discharges authorized by this permit.

3. The following non-storm water discharges from active construction sites are authorized by this permit provided the non-storm water component of the discharge is in compliance with Part IV.D.5 (non-storm water discharges): discharges from fire fighting activities; fire hydrant flushings; waters used to wash vehicles where detergents are not used; water used to control dust in accordance with Part IV.D.2.c.(2); potable water sources including waterline flushings; routine external building wash down which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning concentrate; uncontaminated ground water or spring water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

B. Releases in Excess of Reportable Quantities

The discharge of hazardous substances or oil in the storm water discharge(s) from a facility shall be prevented or minimized in accordance with the applicable storm water pollution prevention plan for the facility. This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117 and 40 CFR 302. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quality established under either 40 CFR 110, 40 CFR 117 or 40 CFR 302, occurs during a 24 hour period.

1. The permittee is required to notify the National Response Center (NRC) (800–424–8802; in the Washington, DC, metropolitan area call 202–426–2675) in accordance with the requirements of 40 CFR 110, 40 CFR 117 and 40 CFR 302 as soon as he or she has knowledge of the discharge;

2. The storm water pollution prevention plan required under Part IV of this permit must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

C. Spills

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.

D. Discharge Compliance With Water Quality Standards

Operators seeking coverage under this permit shall not be causing or have the reasonable potential to cause or contribute to a violation of a water quality standard. Where a discharge is already authorized under this permit and is later determined to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard, the Director will notify the operator of such violation(s). The permittee shall take all necessary actions to ensure future discharges do not cause or contribute to the violation of a water quality standard and document these actions in the storm water pollution prevention plan. If violations remain or re-occur, then coverage under this permit may be terminated by the Director, and an alternative general permit or individual permit may be issued. Compliance with this requirement does not preclude any enforcement activity as provided by the Clean Water Act for the underlying violation.

E. Responsibilities of Operators

Permittees may meet one or both of the operational control components in the definition of "operator" found in Part IX.N. Either Parts III.E.1 or III.E.2 or both will apply depending on the type of operational control exerted by an individual permittee. Part III.E.3 applies to all permittees.

1. Permittees with operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (*e.g.*, developer or owner), must:

a. Ensure the project specifications that they develop meet the minimum requirements of Part IV (Storm Water Pollution Prevention Plans (SWPPP)) and all other applicable conditions;

b. Ensure that the SWPPP indicates the areas of the project where they have operational control over project specifications (including the ability to make modifications in specifications), and ensure all other permittees implementing portions of the SWPPP impacted by any changes they make to the plan are notified of such modifications in a timely manner; and

c. Ensure that the SWPPP for portions of the project where they are operators indicates the name and NPDES permit number for parties with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other permit conditions. If these parties have not been identified at the time the SWPPP is initially developed, the permittee with operational control over project specifications shall be considered to be the responsible party until such time as the authority is transferred to another party (*e.g.*, general contractor) and the plan updated.

2. Permittee(s) with day-to-day operational control of those activities at a project which are necessary to ensure compliance with a SWPPP for the site or other permit conditions (*e.g,* general contractor) must:

a. Ensure that the SWPPP for portions of the project where they are operators meets the minimum requirements of Part IV (Storm Water Pollution Plan) and identifies the parties responsible for implementation of control measures identified in the plan;

b. Ensure that the SWPPP indicates areas of the project where they have operational control over day-to-day activities;

c. Ensure that the SWPPP for portions of the project where they are operators indicates the name and NPDES permit number of the party(ies) with operational control over project specifications (including the ability to make modifications in specifications).

3. Permittees with operational control over only a portion of a larger construction project (*e.g.,* one of four homebuilders in a subdivision) are responsible for compliance with all applicable terms and conditions of this permit as it relates to their activities on their portion of the construction site, including protection of endangered species and implementation of BMPs and other controls required by the SWPPP. Permittees shall ensure either directly or through coordination with other permittees, that their activities do not render another party's pollution control ineffective. Permittees must either implement their portions of a common SWPPP or develop and implement their own SWPPP.

Part IV. Storm Water Pollution Prevention Plans

At least one storm water pollution prevention plan (SWPPP) shall be developed for each construction project or site covered by this permit. For more effective coordination of BMPs and opportunities for cost sharing, a cooperative effort by the different operators at a site to prepare and participate in a comprehensive SWPPP is encouraged. Individual operators at a site may, but are not required, to develop separate SWPPPs that cover only their portion of the project provided reference is made to other operators at the site. In instances where there is more than one SWPPP for a site, coordination must be conducted between the permittees to ensure the storm water discharge controls and other measures are consistent with one another (*e.g.,* provisions to protect listed species and critical habitat).

Storm water pollution prevention plans shall be prepared in accordance with good engineering practices. The SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site. The SWPPP shall describe and ensure the implementation of practices which will be used to reduce the pollutants in storm water discharges associated with construction activity at the construction site and assure compliance with the terms and conditions of this permit.

When developing SWPPPs, applicants must follow the procedures in Addendum A of this permit to determine whether listed endangered or threatened species or critical habitat would be affected by the applicant's storm water discharges or storm water discharge-related activities. Any information on whether listed species or critical habitat are found in proximity to the construction site must be included in the SWPPP. Any terms or conditions that are imposed under the eligibility requirements of Part I.B.3.e and Addendum A of this permit to protect listed species or critical habitat from storm water discharges or storm water discharge-related activity must be incorporated into the SWPPP. Permittees must implement the applicable provisions of the SWPPP required under this part as a condition of this permit.

A. Deadlines for Pan Preparation and Compliance

The storm water pollution prevention plan shall:

1. Be completed prior to the submittal of an NOI to be covered under this permit (except as provided in Parts II.A.5 and II.A.6) updated as appropriate; and

2. Provide for compliance with the terms and schedule of the SWPPP beginning with the initiation of construction activities.

B. Signature, Plan Review and Making Plans Available

1. The SWPPP shall be signed in accordance with Part VI.G, and be retained on-site at the facility which generates the storm water discharge in accordance with Part V (Retention of Records) or this permit.

2. The permittee shall post a notice near the main entrance of the construction site with the following information:

a. The NPDES permit number for the project or a copy of the NOI if a permit number has not yet been assigned;

b. The name and telephone number of a local contact person;

c. A brief description of the project; and

d. The location of the SWPPP if the site is inactive or does not have an on-site location to store the plan.

If posting this information near a main entrance is infeasible due to safety concerns, the notice shall be posted in a local public building. If the construction project is a linear construction project (*e.g.,* pipeline, highway, etc.), the notice must be placed in a publicly accessible location near where construction is actively underway and moved as necessary. This permit does not provide the public with any right to trespass on a construction site for any reason, including inspection of a site; not does this permit require that permittees allow members of the public access to a construction site.

3. The permittee shall make SWPPPs available upon request to the Director, a State, Tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans, local government officials; or the operator of a municipal separate storm sewer receiving discharges from the site. The copy of the SWPPP that is required to be kept on-site or locally available must be made available to the Director for review at the time of an on-site inspection. Also, in the interest of public involvement, EPA encourages permittees to make their SWPPPs available to the public for viewing during normal business hours.

4. The Director may notify the permittee at any time that the SWPPP does not meet one or more of the minimum requirements of this Part. Such notification shall identify those provision of this permit which are not being met by the SWPPP as well as those requiring modification in order to meet the minimum requirements of this Part. Within seven (7) calendar days of receipt of such notification from the Director (or as otherwise provided by the Director), the permittee shall make the required changes to the SWPPP and shall submit to the Director a written certification that the requested changes have been made. The Director may take appropriate enforcement action for the period of time the permittee was operating under a plan that did not meet the minimum requirements of this permit.

C. Keeping Plans Current

The permittee must amend the storm water pollution prevention plan whenever:

1. There is a change in design, construction, operation, or maintenance

which has a significant effect on the discharge of pollutants to the waters of the United States which has not been addressed in the SWPPP; or

2. Inspections or investigations by site operators, local, State, Tribal or Federal officials indicate the SWPPP is proving ineffective in eliminating or significantly minimizing pollutants from sources identified under Part IV.D.1 of this permit, or is otherwise not achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity.

D. Contents of Plan

The storm water pollution prevention plan (SWPPP) shall include the following items:

1. Site Description

Each SWPPP shall provide a description of potential pollutant sources and other information as indicated below:

a. A description of the nature of the construction activity;

b. A description of the intended sequence of major activities which disturb soils for major portions of the site (*e.g.*, grubbing, excavation, grading, utilities and infrastructure installation);

c. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities including off-site borrow and fill areas;

d. An estimate of the runoff coefficient of the site for both the pre-construction and post-construction conditions and data describing the soil or the quality of any discharge from the site;

e. A general location map (*e.g.*, a portion of a city or county map) and a site map indicating the following: Drainage patterns and approximate slopes anticipated after major grading activities; areas of soil disturbance; areas which will not be disturbed; locations of major structural and nonstructural controls identified in the SWPPP; locations where stabilization practices are expected to occur; locations of off-site material, waste, borrow or equipment storage areas; surface waters (including wetlands); and locations where storm water discharges to a surface water;

f. Location and description of any discharge associated with industrial activity other than construction, including storm water discharges from dedicated asphalt plants and dedicated concrete plants, which is covered by this permit;

g. The name of the receiving water(s) and the areal extent and description of wetlands or other special aquatic sites (as described under 40 CFR 230.3(q-1)) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project;

h. A copy of the permit requirements (attaching a copy of this permit is acceptable); and

i. Information on whether listed endangered or threatened species, or critical habitat, are found in proximity to the construction activity and whether such species may be affected by the applicant's storm water discharges or storm water discharge-related activities.

2. Controls

Each SWPPP shall include a description of appropriate control measures (*i.e.*, BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. The SWPPP must clearly describe for each major activity identified in Part IV.D.1.b: (a) Appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented; and (b) which permittee is responsible for implementation (*e.g.*, perimeter controls for one portion of the site will be installed by Contractor A after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site; and perimeter controls will be actively maintained by Contractor B until final stabilization of those portions of the site up-gradient of the perimeter control; and temporary perimeter controls will be removed by the owner after final stabilization). The description and implementation of control measures shall address the following minimum components;

a. *Erosion and Sediment Controls.* (1) *Short and Long Term Goals and Criteria.* (a) The construction-phase erosion and sediment controls should be designed to retain sediment on site to the extent practicable.

(b) All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations.

(c) If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite (*e.g.*, fugitive sediment in street could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).

(d) Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%.

(e) Litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (*e.g.*, screening outfalls, picked up daily).

(f) Offsite material storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) used solely by the permitted project are considered a part of the project and shall be addressed in the SWPPP.

(2) *Stabilization Practices.* The SWPPP must include a description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include but are not limited to: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Use of impervious surfaces for stabilization should be avoided.

The following records shall be maintained and attached to the SWPPP: the dates when major grading activities occur; the dates when construction activities temporarily or permanently cease on a portion of the site; and the dates when stabilization measures are initiated.

Except as provided in Parts IV.D.2.a.(2)(a), (b), and (c) below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

(a) Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.

(b) Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site.

(c) In arid areas (areas with an average rainfall of 0 to 10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures shall be initiated as soon as practicable.

(3) *Structural Practices.* The SWPPP must include a description of structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. Structural practices may include but are not limited to: silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. Placement of structural practices in floodplains should be avoided to the degree attainable. The installation of these devices may be subject to section 404 of the CWA.

(a) For common drainage locations that serve an area with ten (10) or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from a 2 year, 24 hour storm from each disturbed acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. When computing the number of acres draining into a common location it is not necessary to include flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin.

In determining whether installing a sediment basin is attainable, the permittee may consider factors such as site soils, slope, available area on site, etc. In any event, the permittee must consider public safety, especially as it relates to children, as a design factor for the sediment basin and alternative sediment controls shall be used where site limitations would preclude a safe design. For drainage locations which serve ten (10) or more disturbed acres at one time and where a temporary sediment basin or equivalent controls is not attainable, smaller sediment basins and/or sediment traps should be used. Where neither the sediment basin nor equivalent controls are attainable due to site limitations, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area and for those side slope boundaries deemed appropriate as dictated by individual site conditions. EPA encourages the use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal.

(b) For drainage locations serving less than 10 acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a 2 year, 24 hour storm or 3,600 cubic feet of storage per acre drained is provided. EPA encourages the use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal.

b. *Storm Water Management.* A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed must be included in the SWPPP. Structural measures should be placed on upland soils to the degree attainable. The installation of these devices may also require a separate permit under section 404 of the CWA. Permittees are only responsible for the installation and maintenance of storm water management measures prior to final stabilization of the site, and are not responsible for maintenance after storm water discharges associated with construction activity have been eliminated from the site. However, post-construction storm water BMPs that discharge pollutants from point sources once construction is completed, may in themselves, need authorization under a separate NPDES permit.

(1) Such practices may include but are not limited to: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices). The SWPPP shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels.

(2) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (*e.g.* no significant changes in the hydrological regime of the receiving water).

c. *Other Controls.* (1) No solid materials, including building materials, shall be discharged to waters of the United States, except as authorized by a permit issued under section 404 of the CWA.

(2) Off-site vehicle tracking of sediments and the generation of dust shall be minimized.

(3) The SWPPP shall be consistent with applicable State, Tribal and/or local waste disposal, sanitary sewer or septic system regulations to the extent these are located within the permitted area.

(4) The SWAPPP shall include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP shall also include a description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response.

(5) The SWPPP shall include a description of pollutant sources from areas other than construction (including storm water discharges from dedicated asphalt plants and dedicated concrete plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

(6) The SWPPP shall include a description of measures necessary to protect listed endangered or threatened species, or critical habitat, including any terms or conditions that are imposed under the eligibility requirements of Part I.B.3.e.(4) of this permit. Failure to describe and implement such measures will result in storm water discharges from construction activities that are ineligible for coverage under this permit.

d. *Approved State, Tribal or Local Plans.* (1) Permittees which discharge storm water associated with construction activities must ensure their storm water pollution prevention plan is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or site permits approved by State, Tribal, or local officials.

(2) Storm water pollution prevention plans must be updated as necessary to remain consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or storm water management site plans or site permits approved by State, Tribal or local officials for which the permittee receives written notice.

3. Maintenance

All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections required by Part IV.D.4. identify BMPs that are not operating effectively, maintenance shall be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of storm water controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable.

4. Inspections

Qualified personnel (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, structural control measures, and locations where vehicles enter or exit the site, at least once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

Where sites have been finally or 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 in arid areas (areas with an average annual rainfall of 0 to 10 inches) and semi-arid areas (areas with an average annual rainfall of 10 to 20 inches) such inspections shall be conducted at least once every month.

Permittees are eligible for a waiver of monthly inspection requirements until one month before thawing conditions are expected to result in a discharge if all of the following requirements are met: (1) The project is located in an area where frozen conditions are anticipated to continue for extended periods of time (*i.e.*, more than one month); (2) land disturbance activities have been suspended; and (3) the beginning and ending dates of the waiver period are documented in the SWPPP.

a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion control measures identified in the SWPPP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations shall be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

b. Based on the results of the inspection, the SWPPP shall be modified as necessary (*e.g.*, show additional controls on map required by Part IV.D.1; revise description of controls required by Part IV.D.2) to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within 7 calendar days following the inspection. If existing BMPs need to be modified or if additional BMPs are necessary, implementation shall be completed before the next anticipated storm event. If implementation before the next anticipated storm event is impracticable, they shall be implemented as soon as practicable.

c. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, and major observations relating to the implementation of the SWPPP shall be made and retained as part of the SWPPP for at least three years from the date that the site is finally stabilized. Major observations should include: the location(s) of discharges of sediment or other pollutants from the site; location(s) of BMPs that need to be maintained; location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location; and location(s) where additional BMPs are needed that did not exist at the time of inspection. Actions taken in accordance with Part IV.D.4.b of this permit shall be made and retained as part of the storm water pollution prevention plan for at least three years from the date that the site is finally stabilized. Such reports shall identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with Part VI.G of this permit.

5. Non-Storm Water Discharges

Except for flows from fire fighting activities, sources of non-storm water listed in Part III.A.2 or 3 of this permit that are combined with storm water discharges associated with construction activity must be identified in the SWPPP. The SWPPP shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

Part V. Retention of Records

A. Documents

The permittee shall retain copies of storm water pollution prevention plans and all reports required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by request of the Director at any time.

B. Accessibility

The permittee shall retain a copy of the storm water pollution prevention plan required by this permit (including a copy of the permit language) at the construction site (or other local location accessible to the Director, a State, Tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; or the operator of a municipal separate storm sewer receiving discharges from the site) from the date of project initiation to the date of final stabilization. Permittees with day-to-day operational control over SWPPP implementation shall have a copy of the SWPPP available at a central location on-site for the use of all operators and those identified as having responsibilities under the SWPPP whenever they are on the construction site.

C. Addresses

Except for the submittal of NOIs and NOTs (see Parts II.C and VIII.B, respectively), all written correspondence concerning discharges in any State, Indian Country land or from any Federal facility covered under this permit and directed to the EPA, including the submittal of individual permit applications, shall be sent to the address of the appropriate EPA Regional Office listed below:

Region 1: CT, MA, ME, NH, RI, VT
United States EPA, Region 1, Office of Ecosystem Protection, Municipal

Assistance Unit, John F. Kennedy Federal Building-CMU, Boston, MA 02203

Region 2: NJ, NY, PR, VI
United States EPA, Region 2, Division of Environmental Planning and Protection, (2DEPP-WPB), Water Programs Branch, 290 Broadway, New York, NY 10007-1866

Region 3: DE, DC, MD, PA, VA, WV
United States EPA, Region 3, Water Management Division, (3WM55), Storm Water Staff, 841 Chestnut Building, Philadelphia, PA 19107

Region 7: IA, KS, MO, NE (except see Region 8 for Pine Ridge Reservation Lands)
United States EPA, Region 7, Water, Wetlands, and Pesticides Division, NPDES and Facilities Management Branch, Storm Water Staff, 726 Minnesota Avenue, Kansas City, KS 66101

Region 8: CO, MT, ND, SD, WY, UT (except see Region 9 for Goshute Reservation and Navajo Reservation lands), the Ute Mountain Reservation in NM, and the Pine Ridge Reservation in NE
United States EPA, Region 8, Ecosystems Protection Program (8EPR-EP), Storm Water Staff, 999 18th Street, Suite 500, Denver, CO 80202-2466

Region 9: AZ, CA, HI, NV, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the Goshute Reservation in UT and NV, the Navajo Reservation in UT, NM, and AZ, the Duck Valley Reservation in ID, Fort McDermitt Reservation in OR
United States EPA, Region 9, Water Management Division, WTR-5, Storm Water Staff, 75 Hawthorne Street, San Francisco, CA 94105

Region 10: AK, WA, ID (except see Region 9 for Duck Valley Reservation lands), OR (except see Region 9 for Fort McDermitt Reservation)
United States EPA Region 10, Office of Water OW-130, Storm Water Staff, 1200 6th Avenue, Seattle, WA 98101

Part VI. Standard Permit Conditions

A. Duty to Comply

1. The Permittee Must Comply With All Conditions of This Permit

Any permit noncompliance constitutes a violation of CWA and is grounds for reinforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule **Federal Register**: December 31, 1996, Volume 61, Number 252, pages 69359-69366, as corrected, March 20, 1997, Volume 62, Number 54, pages 13514-13517) as mandated by the Debt Collection Improvement Act of 1996 for inflation on a periodic basis. This rule allows EPA's penalties to keep pace with inflation. The Agency is required to review its penalties at least once every four years thereafter and to adjust them as necessary for inflation according to a specified formula. The civil and administrative penalties listed below were adjusted for inflation starting in 1996.

a. *Criminal.* (1) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

(2) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

(3) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

(4) *False Statement.* The CWA provides that nay person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or by both. (*See* section 309(c)(4) of the Clean Water Act).

b. *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $27,500 per day for each violation.

c. *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

(1) *Class I Penalty.* Not to exceed $11,000 violation nor shall the maximum amount exceed $27,500.

(2) *Class II Penalty.* Not to exceed $11,000 per day for each day during which the violation continues nor shall the maximum amount exceed $137,500.

B. Continuation of the Expired General Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

1. Reissuance or replacement of this permit, at which time the permittee must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or

2. The permittee's submittal of a Notice of Termination; or

3. Issuance of an individual permit for the permittee's discharges; or

4. A formal permit decision by the Director not to reissue this general permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.

C. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of

adversely affecting human health or the environment.

E. Duty to Provide Information

The permittee shall furnish to the Director or an authorized representative of the Director any information which is requested to determine compliance with this permit or other information.

F. Other Information

When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Director, he or she shall promptly submit such facts or information.

G. Signatory Requirements

All Notices of Intent, Notices of Termination, storm water pollution prevention plans, reports, certifications or information either submitted to the Director or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed as follows:

1. All Notices of Intent and Notices of Termination shall be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned to delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (*e.g.*, Regional Administrator of EPA).

2. All reports required by this permit and other information requested by the Director or authorized representative of the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the Director.

b. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

c. *Changes to Authorization.* If an authorization under Part II.B is no longer accurate because a different operator has responsibility for the overall operation of the construction site, a new Notice of Intent satisfying the requirements of Part II.B must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative. The change in authorization must be submitted within the time frame specified in Part II.A.3, and sent to the address specified in Part II.C.

d. *Certification.* Any person signing documents under Part VI.G shall make the following certification:

"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."

H. Penalties for Falsification of Reports

Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or by both.

I. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

J. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

K. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

L. Requiring an Individual Permit or an Alternative General Permit

1. The Director may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Director to take action under this paragraph. Where the Director requires a permittee authorized to discharge under this permit to apply for an individual NPDES permit, the Director shall notify the permittee in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the permittee to file the application, and a statement that on the effective date of issuance or denial of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications shall be submitted to the appropriate Regional Office indicated in Part V.C of this permit. The Director may grant additional time to submit the application upon request of the applicant. If a permittee fails to submit in a timely manner an individual NPDES permit application as required by the Director under this paragraph, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified by the Director for application submittal.

2. Any permittee authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. In such cases, the permittee shall submit an individual application in accordance with the requirements of 40 CFR 122.26(c)(1)(ii), with reasons supporting the request, to the Director at the address for the appropriate Regional Office indicated in Part V.C of this permit. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by the permittee are adequate to support the request.

3. When an individual NPDES permit is issued to a permittee otherwise subject to this permit, or the permittee is authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by the Director.

M. State/Tribal Environmental Laws

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State/Tribal law or regulation under authority preserved by section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

N. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of this permit.

O. Inspection and Entry

The permittee shall allow the Director or an authorized representative of EPA, the State/Tribe, or, in the case of a construction site which discharges through a municipal separate storm sewer, an authorized representative of the municipal owner/operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

P. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Part VII. Reopener Clause

A. If there is evidence indicating that the storm water discharges authorized by this permit cause, have the reasonable potential to cause or contribute to, a violation of a water quality standard, the permittee may be required to obtain an individual permit or an alternative general permit in accordance with Part I.C of this permit, or the permit may be modified to include different limitations and/or requirements.

B. Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5.

C. EPA may propose a modification to this permit after further discussions between the Agency and the Advisory Council on Historic Preservation for the protection of historic properties.

Part VIII. Termination of Coverage

A. Notice of Termination

Permittees must submit a completed Notice of Termination (NOT) that is signed in accordance with Part VI.G of this permit when one or more of the conditions contained in Part I.D.2. (Terminating Coverage) have been met at a construction project. The NOT form found in Addendum D will be used unless it has been replaced by a revised version by the Director. The Notice of Termination shall include the following information:

1. The NPDES permit number for the storm water discharge identified by the Notice of Termination;

2. An indication of whether the storm water discharges associated with construction activity have been eliminated (*i.e.*, regulated discharges of storm water are being terminated) or the permittee is no longer an operator at the site;

3. The name, address and telephone number of the permittee submitting the Notice of Termination;

4. The name of the project and street address (or a description of location if no street address is available) of the construction site for which the notification is submitted;

5. The latitude and longitude of the construction site; and

6. The following certification,signed in accordance with Part VI.G (signatory requirements) of this permit. For construction projects with more than one permittee and/or operator, the permittee need only make this certification for those portions of the construction site where the permittee was authorized under this permit and not for areas where the permittee was not an operator:

"I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that authorized by a general permit have been eliminated or that I am no longer the operator of the facility or construction site. I understand that by submitting this notice of termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act."

For the purposes of this certification, elimination of storm water discharges associated with construction activity means that all disturbed soils at the portion of the construction site where the operator had control have been finally stabilized (as defined in Part IX.I) and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time to ensure final stabilization is maintained, or that all storm water discharges associated with construction activities from the identified site that

are authorized by a NPDES general permit have otherwise been eliminated from the portion of the construction site where the operator had control.

B. Addresses

1. All Notices of termination, signed in accordance with Part VI.G of this permit, are to be submitted using the form provided by the Director (or a photocopy thereof), to the address specified on the NOT form.

Part IX. Definitions

A. *Best Management Practices (BMPs)* means 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 also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

B. *Control Measure* as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the United States.

C. *Commencement of Construction* the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

D. *CWA* means the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 *et seq.*

E. *Director* means the Regional Administrator of the Environmental Protection Agency or an authorized representative.

F. *Discharge* when used without qualification means the "discharge of a pollutant."

G. *Discharge of Storm Water Associated with Construction Activity* as used in this permit, refers to a discharge of pollutants in storm water runoff from areas where soil disturbing activities (*e.g.*, clearing, grading, or excavation), construction materials or equipment storage or maintenance (*e.g.*, fill piles, borrow area, concrete truck washout, fueling), or other industrial storm water directly related to the construction process (*e.g.*, concrete or asphalt batch plants) are located.

H. *Facility or Activity* means any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

I. *Final Stabilization* means that either:

1. 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 goetextiles) have been employed. In such parts of the country, background native vegetation will cover less than 100% of the ground (*e.g.*, arid areas, beaches). Establishing at least 70% of the natural cover of the native vegetation meets the vegetative cover criteria for final stabilization (*e.g.*, if the native vegetation covers 50% of the ground, 70% of 50% would require 35% total cover for final stabilization; on a beach with no natural vegetation, no stabilization is required); or

2. For individual lots in residential construction by either: (a) The homebuilder completing final stabilization as specified above, or (b) the homebuilder establishing temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for, and benefits of, final stabilization. (Homeowners typically have an incentive to put in the landscaping functionally equivalent to final stabilization as quick as possible to keep mud out of their homes and off sidewalks and driveways.); or

3. For construction projects on land used for agricultural purposes (*e.g.*, pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturb that were not previously used for agricultural activities, such as buffer strips immediately adjacent to "water of the United States," and area which are not being returned to their preconstruction agricultural use must meet the final stabilization criteria (1) or (2) above.

J. *Flow-Weighted Composite Sample* means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

K. *Large and Medium Municipal Separate Storm Sewer System* means all municipal separate storm sewers that are either:

1. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR 122); or

2. Located in the countries with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or

3. Owned or operated by a municipality other than those described in paragraph (i) and (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

L. *NOI* means Notice of Intent to be covered by this permit (see Part II of this permit.)

M. *NOT* means Notice of Termination (see Part VIII of this permit).

N. *Operator* for the purpose of this permit and in the context of storm water associated with construction activity, means any party associated with a construction project that meets either of the following two criteria:

1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

2. The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions (*e.g.*, they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

This definition is provided to inform permittees of EPA's interpretation of how the regulatory definitions of "owner or operator" and "facility or activity" are applied to discharges of storm water associated with construction activity.

O. *Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

P. *Point Source* means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Q. *Pollutant* is defined at 40 CFR 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sweage, garbage, sewage sludge, chemical wastes, biological materials,

heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

R. *Runoff coefficient* means the fraction of total rainfall that will appear at the conveyance as runoff.

S. *Storm Water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

T. *Storm Water Associated with Industrial Activity* is defined at 40 CFR 122.26(b)(14) and incorporated here by reference. Most relevant to this permit is 40 CFR 122.26(b)(14)(x), which relates to construction activity including clearing, grading and excavation activities that result in the disturbance of five (5) or more acres of total land area, or are part of a larger common plan of development or sale.

U. *Waters of the United States* means:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters, including interstate "wetland";

3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflat, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;

b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

c. Which are used or could be used for industrial purposes by industries in interstate, commerce;

4. All impoundments of waters otherwise defined as waters of the United States under this definition;

5. Tributaries of waters identified in paragraphs (a) through (d) of this definition;

6. The territorial sea; and

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraph 1. through 6. of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirement of the CWA (other than cooling ponds for steam electric generation stations per 40 CFR 423) which also meet the criteria of this definition) are not waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Part X. Permit Conditions Applicable to Specific States, Indian Country Lands, or Territories

The provisions of this Part provide modifications or additions to the applicable conditions of Parts I through IX of this permit to reflect specific additional conditions required as part of the State or Tribal CWA Section 401 certification process, or Coastal Zone Management Act certification process, or as otherwise established by the permitting authority. The additional revisions and requirements listed below are set forth in connection with, and only apply to, the following States, Indian Country lands and Federal facilities.

A. Region 1

1. CTR10*##I: Indian Country Lands in the State of Connecticut

No additional requirements.

2. MAR10*###: Commonwealth of Massachusetts, Except Indian Country Lands

a. Part I.B.4 is added to the permit as follows:

Special Requirements for the State of Massachusetts

a. Discharges covered by the general permit must comply with the provisions of 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00 and 310 CMR 10.00 and any related policies promulgated under the authority of the Massachusetts Clean Waters Act, M.G.L. c.21, ss.23–56, and Wetlands Protection Act, M.G.L. c.131 s.40. Specifically, construction activities subject to this permit must comply with applicable storm water performance standards prescribed by State regulation or policy. Construction activities subject to jurisdiction under 310 CMR 10.00 must comply with an Order or Superseding Order of Conditions. An application for a permit under 314 CMR 3.00 is required only when required by 314 CMR 3.04(2)(b) or is otherwise identified in 314 CMR 3.00 or Massachusetts Department of Environmental Protection policy as a discharge requiring a permit application.

b. The Massachusetts Department of Environmental Protection may request a copy of the storm water pollution prevention plan or conduct an inspection of any facility covered by this permit to ensure compliance with State law requirements. The Department may enforce its certification conditions.

3. MAR10*##I: Indian Country Lands in the Commonwealth of Massachusetts

No additional requirements.

4. MER10*###: State of Maine, Except Indian Country Lands

a. The following is added to the introductory section of Part IV:

The applicant for a project that does not require a permit pursuant to Maine's Storm Water Management Law, 38 MRSA 420–D due to the exemption at 38 MRSA 490–D(7)(D), must demonstrate to the satisfaction of the Maine Department of Environmental Protections (MDEP) prior to starting construction that the project meets the standards adopted pursuant to Maine's Storm Water Management Law, 38 MRSA 420–D.

b. The following is added to the introduction to Part IV. D:

For a project not requiring a permit pursuant to Maine's Storm Water Management Law, 38 MRSA 420–D, due to the exemption at 38 MRSA–D(7)(D),* the following information is provided: Maine's storn water permit application, as approved by MDEP, is considered to meet the requirements of the storm water pollution prevention plan as described in Part IV D.1, 2a, 2b, and 2c(1–5). Maine's storm water permit application is not considered to meet the requirements of Part IV D.2c(6) (threatened and endangered species and/or critical habitat), Part IV.D.3 (maintenance), Part IV.D.4. (inspection), or Part IV D.5. (non-storm water discharges).

For a project requiring a permit pursuant to Maine's Storm Water Management Law, 38 MRSA 420–D, or otherwise required to meet Maine's storm water standards adopted pursuant to 38 MRSA 420–D, the following information is provided: a permit or variance application addressing Storm water, as approved by MDEP, is considered to meet the requirements of the storm water pollution prevention plan as described in Part IV.D.1, 2a, 2b, 2c(1–5), 3 and 4. Maine's permit or variance application addressing storm water, as approved by MDEP, is not considered to meet the requirements in Part IV.D.2c(6) and (7) which address threatened and endangered species and/or critical habitat and historic sites, or Part IV.D.5 (non storm water discharges).

*A project that is exempt form the Storm Water Management Law, due to the exemption at 38 MRSA 490–D(7)(D) and some other exemptions listed at 38 MRSA 490–D(7), is not required to complete a Maine storm water permit application.

5. MER10*##I: Indian Country Lands in the State of Maine.

No additional requirements.

6. NHR10*###: State of New Hampshire, Except Indian County Lands

No additional requirements.

7. RIR10*##I: Indian Country Lands in the State of Rhode Island

No additional requirements.

8. VTR10*##F: Federal Facilities in the State of Vermont, Except Those Located on Indian Country Lands

No additional requirements.

B. Region 2

1. NYR10*##I: Indian Country Lands in the State of New York

No additional requirements.

2. PRR10*###: The Commonwealth of Puerto Rico

No additional requirements.

C. Region 3

1. DCR10*###: The District of Columbia

No additional requirements.

2. DER10*##F: Federal Facilities in the State of Delaware

No additional requirements.

D. Region 7

1. IAR10*##I: Indian Country Lands in the State of Iowa

No additional requirements.

2. KSR10*##I: Indian Country Lands in the State of Kansas

No additional requirements.

3. NER10*##I: Indian Country Lands in the State of Nebraska, Except Pine Ridge Reservation Lands (see Region 8)

No additional requirements.

E. Region 8

1. COR10*##F: Federal Facilities in the State of Colorado, Except Those Located on Indian Country Lands

No additional requirements.

2. COR10*##I: Indian Country Lands in the State of Colorado, Including the Portion of the Ute Mountain Reservation Located in New Mexico

No additional requirements.

3. MTR10*##I: Indian Country Lands in the State of Montana

a. Confederated Salish & Kootenai Tribes of the Flathead Reservation. Copies of Notices of Intent (NOI), Notices of Termination (NOT), and Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Confederated Salish and Kootenai Tribes' Natural Resources Department.

(1) Part II.C.2 is added to the permit as follows:

Special NOI Requirements for the Flathead Indian Reservation. NOIs shall also be submitted to the Confederated Salish and Kootenai Tribes at the same time they are submitted to EPA at the following address: Confederated Salish and Kootenai Tribes, Natural Resources Department, Department Head, P.O. Box 278, Pablo, MT 59855.

(2) Part VIII.B.2 is added to the permit as follows:

Special NOT Requirements for the Flathead Indian Reservation. NOTs shall also be submitted to the Confederated Salish and Kootenai Tribes at the same time they are submitted to EPA. NOTs are to be sent to the address given in Part II.C.2.

(3) Part IV.A.3 is added to the permit as follows:

Special Storm Water Pollution Prevention Plan Requirements for the Flathead Indian Reservation. Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Confederated Salish and Kootenai Tribes' Natural Resources Department before a project on the Flathead Indian Reservation begins. SWPPPs are to be sent to the address given in Part II.C.2.

b. All Other Indian Country lands in Montana. No additional requirements.

4. NDR10*##I: Indian Country Lands in the State of North Dakota, Including That Portion of the Standing Rock Reservation Located in South Dakota (Except for the Lake Traverse Reservation Which is Covered Under South Dakota Permit SDR10*##I Listed Below)

No additional requirements.

5. SDR10*##I: Indian Country Lands in the State of South Dakota, Including the Portion of the Pine Ridge Reservation Located in Nebraska and the Portion of the Lake Traverse Reservation Located in North Dakota (Except for the Standing Rock Reservation Which is Covered Under North Dakota Permit NDR10*##I Listed Above)

No additional requirements.

6. UTR10*##I: Indian Country Lands in the State of Utah, Except Goshute and Navajo Reservation Lands (see Region 9)

No additional requirements.

7. WYR10*##I: Indian Country Lands in the State of Wyoming

No additional requirements.

F. Region 9

1. ASR10*###: The Island of American Samoa

No additional requirements.

2. AZR10*###: The State of Arizona, Except Indian Country Lands

a. Part II.C.2 is added to the permit as follows:

Special NOI Requirements for the State of Arizona. NOIs shall also be submitted to the State of Arizona Department of Environmental Quality at the following address: Storm Water Coordinator, Arizona Department of Environmental Quality, 3033 North Central Avenue, Phoenix, Arizona 85012.

NOIs submitted to the State of Arizona shall include the well registration number if storm water associated with industrial activity is discharged to a dry well or an injection well.

b. Part VIII.B.2 is added to the permit as follows:

Special Not Requirement for the State of Arizona. NOTs shall also be submitted to the State of Arizona Department of Environmental Quality at the following address: Storm Water Coordinator, Arizona Department of Environmental Quality, 3033 North Central Avenue, Phoenix, Arizona 85012.

3. AZR10*##I: Indian Country Lands in the State of Arizona, Including Navajo Reservation Lands in New Mexico and Utah

No additional requirements.

4. CAR10*##I: Indian Country Lands in the State of California

No additional requirements.

5. GUR10*###I: The Island of Guam

a. Part II.C.2 of the permit is added as follows:

Special NOI Requirement for Guam. NOIs shall also be submitted to the following address: Guam Environmental Protection Agency, P.O. Box 22439 GMF, Barrigada, Guam 96921.

b. Part VI.L.4 is added to the permit as follows: Special Requirement for Guam. Individual permit applications required under this section shall also be submitted to the following address: Guam Environmental Protection Agency, P.O. Box 22439 GMF, Barrigada, Guam 96921.

6. JAR10*###: Johnston Atoll

No additional requirements.

7. MWR10*###: Midway Island and Wake Island

No additional requirements.

8. NIR10*###: Commonwealth of the Northern Mariana Islands

a. Part II.A.8 of the permit is added as follows:

NOI Deadline for CNMI. The NOI submitted to the CNMI Department of Environmental Quality (DEQ) shall be postponed seven (7) calendar days prior to any storm water discharges.

b. Part II.B.4 of the permit is added as follows:

Additional Requirements for CNMI. The NOI submitted to CNMI and EPA Region 9 shall be accompanied by a letter from the CNMI DEQ approving the storm water pollution prevention plan required by Part IV of this permit.

c. Part II.C.2 of the permit is added as follows:

Special NOI Requirements for CNMI. NOIs shall also be submitted to the following addresses:

Commonwealth of the Northern Mariana Islands, Division of Environmental Quality, P.O. Box 1304, Saipan, MP 96950

EPA, Region 9, Section WTR-5, 75 Hawthorne Street, San Francisco, CA 94105

d. Part IV.A.3 of the permit is added as follows:

Special Requirements for CNMI. Storm water pollution prevention plans (SWPPPs) required by this permit shall be submitted to the CNMI DEQ for review and approval along with applicable fees associated with a 401 Water Quality Certification prior to submittal of an NOI to EPA and the CNMI DEQ. SWPPPs are to be sent to the address given in Part II.C.2.

9. NVR10*##: Indian Country Lands in the State of Nevada, including the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Goshute Reservation in Utah

No additional requirements.

G. Region 10

1. AKR10*###: The State of Alaska, Except Indian Country Lands

a. Part II.C.2 is added to the permit as follows:

Special NOI Requirements for the State of Alaska. A copy of the Notice of Intent must be sent to the Department of Environmental Conservation offices as listed below:

For projects nearest to Anchorage or Fairbanks: Alaska Department of Environmental Conservation, Water Quality Permitting Section/Storm Water, 555 Cordova Street, Anchorage, AK 99501, (907) 563-6529, FAX (907) 562-4026.

For projects in southeast Alaska, nearest to Juneau: Alaska Department of Environmental Conservation, Water Quality Permitting Section/Storm Water, 410 Willoughby Avenue, Juneau, AK 99801.

b. Part IV.A.3 is added to the permit as follows:

Special Storm Water Pollution Prevention Plan Requirements for the State of Alaska. Permittees shall obtain DEC approval of the Storm Water Pollution Prevention Plan for the construction site pursuant to 18 AAC 72.600(a). Plans are to be approved and sealed by a Professional Engineer registered in the State of Alaska, shall be submitted to the same DEC office that the Notice of Intent is sent to, and shall be accompanied by any State-required fee. A failure to secure approval as provided in this paragraph shall be deemed a violation of this general permit, but shall not prevent storm water discharges from being authorized by this general permit. (18 AAC 72.600(a), 18 AAC 72.610(a)(8), and 18 AAC 72.990(32)).

c. Part IV. D.2.b.(3) is added to the permit as follows:

Special Storm Water Management Requirements for the State of Alaska. The permittee is responsible for any post-stabilization requirements, such as the removal of pollution control devices and the control of pollutant discharges at that time, if these devices are not a permanent part of the pollution prevention controls after final stabilization.

d. Part VIII.B.2 is added to the permit as follows:

Special NOT Requirements for the State of Alaska. NOTs shall also be submitted to the State of Alaska at the same time they are submitted to EPA. NOTs are to be sent to the address given in Part II.C.2.

s. AKR10*##I: Indian Country Lands in Alaska

No additional requirements.

3. IDR10*###: The State of Idaho, Except Indian Country lands

a. Part III.F is added to the permit as follows:

Special Water Quality Standard Requirements for the State of Idaho. In addition to the requirements for coverage identified in the subject permit, the Storm Water Pollution Prevention Plan (SWPPP) design and associated storm water discharge quality shall demonstrate compliance with applicable Idaho Water Quality Standards.

4. IDR10*##I: Indian Country Lands in the State of Idaho, Except Duck Valley Reservation Lands (see Region 9)

No additional requirements.

5. ORR10*##I: Indian Country Lands in the State of Oregon Except Fort McDermitt Reservation Lands (see Region 9)

No additional requirements.

6. WAR*##F: Federal Facilities in the State of Washington, Except Those Located on Indian Country Lands

The Washington Department of Ecology includes these conditions to ensure compliance with R.W. 90.48.080 and rules referenced in the conditions above established in accordance with R.W. 90.48.035.

a. Part III.F.1 is added to the permit as follows:

Special Requirements for Federal Facilities in the State of Washington. The permittee is responsible for achieving compliance with State of Washington surface water quality standards (Chapter 173-201A WAC), sediment management standards (Chapter 173-204 WAC), ground water quality standards (Chapter 173-200 WAC), and human health based criteria in the National Toxics Rule (**Federal Register,** Vol. 57, No. 246, Dec. 22, 1992, pages 60848-609233).

b. Part III.F.2 is added to the permit as follows:

Special Ground Water Protection Requirements for Federal Facilities in the State of Washington. Diversion of storm water discharges to ground water from existing discharges to surface water shall not be authorized by this permit if this causes a violation or the potential for violation of ground water standards (Chapter 173-200 WAC). Such discharges below the surface of the ground are also regulated by the Underground Injection Control Program (Chapter 173-218 WAC).

c. Part III.F.3 is added to the permit as follows:

Special Numeric Limitations for Federal Facilities in the State of Washington.

Discharges of storm water to surface water from concrete batch or hot mix asphalt plants covered by this permit shall have an average monthly or daily maximum pH between 6.0-9.0 and a turbidity of less than 50 NTUs.

Discharges of storm water to the ground from concrete batch or hot mix asphalt plants covered by this permit shall have an average monthly or daily maximum pH between 6.5-8.5.

It needs to be reiterated that this permit does not authorize the discharge

of process water from concrete batch or hot mix asphalt plants.

d. Part III.F.4 is added to the permit as follows:

Special Requirement for Federal Facilities in the State of Washington. "Comeback Asphalt" must be contained within a lined area so that no leaching to ground or surface water can occur.

7. WAR10*##I: Indian Country Lands in the State of Washington

a. Confederated Tribes of the Chehalis Reservation. Copies of Notices of Intent (NOI) and Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Chehalis Tribal Department of Natural Resources.

(1) Part II.C.2 is added to the permit as follows:

Special NOI Requirements for the Confederated Tribes of the Chehalis Reservation.

NOI shall also be submitted to the Confederated Tribes of the Chehalis Reservation at the same time they are submitted to EPA at the following address: Confederated Tribes of Chehalis Reservation, Department of Natural Resources, 420 Howanut Road, Oakville, WA 98568.

(2) Part IV.A.3 is added to the permit as follows:

Special Storm Water Pollution Prevention Plan Requirements for the Confederated Tribes of the Chehalis Reservation. Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Chehalis Tribal Department of Natural Resources for review and approval prior to the beginning of any discharge activities taking place. SWPPPs are to be sent to the address given in Part II.C.2.

(3) Part III.I is added to the permit as follows:

Special Water Quality Standard Requirements for the Confederated Tribes of the Chehalis Reservation. The permittee shall be responsible for achieving compliance with Confederated Tribes of Chehalis Reservation's Water Quality Standards.

b. Puyallup Tribe of Indians. Copies of Notices of Intent (NOI) and Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Puyallup Tribe Environmental Department.

(1) Part II.C.2 of the permit is added as follows:

Special NOI Requirements for the Puyallup Tribe of Indians. NOIs shall also be submitted to the Puyallup Tribe Environmental Department at the same time they are submitted to EPA at the following address: Puyallup Tribe Environmental Department, 2002 E. 28th St., Tacoma, WA 98404.

(2) Part IV.A.3 is added to the permit as follows:

Special Storm Water Pollution Prevention Plan Requirements for the Puyallup Tribe of Indians. Storm Water Pollution Prevention Plans (SWPPPs) must be submitted to the Puyallup Tribe Environmental Department for review and approval prior to the beginning of any discharge activities taking place. SWPPPs are to be sent to the address given in Part II.C.2.

(3) Part III.F. is added to the permit as follows:

Special Water Quality Standard Requirements for the Puyallup Tribe of Indians. Each permittee shall be responsible for achieving compliance with the Puyallup Tribe's Water Quality Standards.

c. All Other Indian Country lands in Washington. No additional requirements.

Addendum A—Endangered Species

I. Instructions for Applicants

A. Background

To meet its obligations under the Clean Water Act and the Endangered Species Act (ESA) and to promote these Acts' goals, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by the Construction General Permit (CGP) are protective of endangered and threatened species and critical habitat. To ensure that those goals are met, applicants for CGP coverage are required under Part I.B.3.e. to assess the impacts of their storm water discharges and storm water discharge-related activities on Federally listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat") by following Steps One through Six listed below. EPA strongly recommends that applicants follow these steps at the earliest possible stage to ensure that measures to protect listed species and critical habitat are incorporate early in the planning process. At minimum, the procedures should be followed when developing the storm water pollution prevention plan.

Permittees and applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited "takes" of listed species.[1] Many of the measures required in the CGP and in these instructions to protect species may also assist permittees in ensuring that their construction activities do not result in a prohibited take of species in violation of section 9 of the ESA. Applicants who plan construction activities in areas that harbor endangered and threatened species are advised to ensure that they are protected from potential takings liability under ESA section 9 by obtaining either an ESA section 10 permit or by requesting formal consultation under ESA section 7 (as described in more detail in Step Seven below). Applicants who seek protection from takings liability should be aware that it is possible that some specific construction activities may be too unrelated to storm water discharges to be afforded incidental take coverage through an ESA section 7 consultation that is performed to meet the eligibility requirements for CGP coverage. In such instances, applicants should apply for an ESA section 10 permit. Where applicants are not sure whether to pursue a section 10 permit or a section 7 consultation for takings protection, they should confer with the appropriate Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS) office.

This permit provides for the Possibility of multiple permittees at a construction site. Applicants should be aware that in many cases they can meet the permit eligibility requirements by relying on another operator's certification of eligibility under Part 1.B.3.e.(2)(a), (b), or (c). this is allowed under Part I.B.3.e.(2)(d) of the permit. However, the other operator's certification must apply to the applicant's project area and must address the effects from the applicant's storm water discharges and storm water discharge-related activities on listed species and critical habitat. By certifying eligibility under Part I.B.3.e.(2)(d), the applicant agrees to comply with any measures or controls upon which the other operator's certification under Part I.B.3.e.(2)(a), (b) or (c) was based. This situation will typically occur where a developer or primary contractor, such as one for construction of a subdivision or industrial part, conducts a comprehensive assessment of effects on listed species and critical habitat for the entire construction project, certifies eligibility under Part I.B.3.e.(2)(a), (b) or (c), and that certification is relied upon by other operators (*i.e.*, contractors) at

[1] Section 9 of the ESA prohibits any person from "taking" a listed species (*e.g.*, harassing or harming it) unless: (1) The taking is authorized through a "incidental take statement" as part of undergoing ESA § 7 formal consultation; (2) where an incidental take permit is obtained under ESA § 10 (which requires the development of a habitat conservation plan); or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

Storm Water Pollution Prevention Plan

DOT&PF Project No. 69844 & 72236
Juneau-Glacier Highway
Indian Point to Point Louisa
Southeast Region

Prepared By:

Contractor A
P.O. Box 100
Juneau, AK 99801

Contents

Introduction

We prepared this Storm Water Pollution Prevention Plan (SWPPP) to identify potential sources of pollution due to storm water run off that may occur during construction and to designate controls (Best Management Practices or BMPs) we will use to minimize the impact of pollutants upon the surrounding environment. The primary pollutant we expect from the construction activity is sediment resulting from surface erosion of the active work area. The terms "we," "our," or "ours" refer to the project's prime contractor.

1. Plan Requirements

a. Site Description

Construction Activity

The project consists of reconstruction of 2,765 linear feet of existing paved road as well as the construction of 10,059 linear feet of new roadway through virgin forest lands. Major items of work include:

- clearing and grubbing, 35 acres
- unclassified excavation, 339,486 cubic yards
- embankment construction, 157,993 cubic yards
- subbase grading, 26,000 tons
- asphalt treated base, 8,700 tons
- asphalt concrete paving, 8,300 tons
- culvert pipe installation, 3,722 linear feet
- installation and maintenance of various types of erosion and sediment control measures
- guardrail installation
- highway lighting
- traffic count system installation

Sequence of Activities

We will perform the construction activities in sequence to minimize the area of exposed soils and to construct the permanent erosion control measures into the project as soon as possible. Our planned order of activities is:

1. Installation of temporary structural erosion control measures as necessary
2. Clearing and grubbing
3. Roadway construction and grading
4. Construction of permanent drainage structures as necessary
5. Temporary stabilization and seeding in stages as necessary
6. Completion of final paving
7. Final stabilization and final seeding
8. Removal of temporary erosion control measures

Estimate of Project Areas

The total estimated area of the construction site is70.8 acres. The total estimated area of the construction site (including material and waste disposal sites) to be disturbed by excavation, grading, or other activities is 50 acres. The following is a summary of locations that will contribute to the total areas:

	Project Area (Acres)	Disturbed Area (Acres)
Project	53.3	40.0
Material Site "A" (State Supplied)	5.0	2.5
Material Site "B" (Contractor Supplied)	7.5	2.5
Waste Disposal Site "C" (State Supplied)	5.0	5.0
Waste Disposal Site "D" (Contractor Supplied)	N/A	N/A

Design Rainfall and Runoff Coefficients
The design rainfall is 1.5 inches (2 year, 24 hour storm event). The existing runoff coefficients range from 0.2 for the slopes to 0.7 for the paved areas. The estimated runoff coefficients for the completed project range from 0.1 to 0.5 for seeded slopes and from 0.7 to 0.9 for paved areas.

Maps
Attachment 1 shows a general area location map and a site map indicating:

- drainage patterns and approximate slopes anticipated after major grading activities
- locations of all structural and nonstructural controls identified in the plan
- locations where stabilization activities are expected to occur
- locations of off-site material, waste, borrow or equipment storage areas, and surface waters, including wetlands, and locations where storm water discharges to a surface water.

Other Discharges
We anticipate no other discharge associated with industrial activity other than construction.

Receiving Waters and Wetlands
The primary receiving waters are Auke-Nu Cove, Indian Cove, and Stephens Passage. Sensitive and non-sensitive wetlands border the entire length of the project area. Fill material will affect approximately 12.5 acres of wetlands. In addition, an existing Wetlands Reclamation Plan will create approximately 1.0 acre of new wetlands in two locations.

Impaired Waters
There are no impaired waters within the project area.

Threatened & Endangered Species
There are no threatened or endangered species or critical habitat within the project area.

Historic Places
There are no historic places within the project area.

Permit Requirements
Attachment 3 shows the Storm Water General Permit Requirements.

b. Erosion and Sediment Controls (BMPs)

We will use a number of controls to minimize the amount of sediment present in storm water discharges. Attachment 2 describes selected stabilization, structural, and storm water management controls in detail. The following is a general description of these types of controls:

Stabilization Controls
We will:

- use temporary seeding and permanent seeding to establish vegetative cover and stabilize slopes disturbed by construction activities.
- use hydroseeding as the primary method.
- place erosion control matting in selected locations during seeding to minimize erosion of soils until the permanent vegetative cover is established.
- lay plastic sheeting to temporarily cover and stabilize areas where the ground is disturbed before the placement of matting.
- use riprap to provide stabilization in areas where the soil is extremely saturated and matting may not be effective.
- preserve existing vegetation in selected areas to minimize the extent of disturbed ground and promote infiltration.
- use buffer strips in selected locations to reduce the flow and velocity of surface runoff and provide a natural filter for sediment present in storm water runoff.

Structural Controls
We will:

- erect silt fence to retain sediment from disturbed areas and reduce the velocity of sheet flow during construction, and remove it when sediment protection is no longer needed.
- place brush barriers and straw bale barriers for supplemental sediment control in areas where we anticipate heavy sediment loads, and remove them when sediment protection is no longer needed.
- construct temporary check dams (ditch blocks) to reduce the velocity of storm water flows and minimize erosion during construction, and remove them before completion of construction.
- construct permanent check dams (ditch blocks) to control and direct storm water flows into culverts, and leave them in place once construction is complete.
- dig sediment traps to detain storm water runoff from small drainage areas so that sediment can settle out, and fill them in and grade them once construction is complete.
- construct a vehicle tracking entrance/exit to prevent tracking of sediment onto the existing highway, and remove it before completion of construction.
- apply inlet protection and outlet protection on culvert installations where sediment loads and scour are anticipated.
- remove all inlet protection before the completion of construction, and leave outlet protection in place in selected locations.

Storm Water Management Controls
We will:

- construct channels to carry storm water flows from slopes and the roadway surface to a receiving system.
- use three types of channels: ditch lining type "A," ditch lining type "B," and a special ditch, depending on anticipated flows and grades.
- line all channels with riprap to prevent erosion, and leave them in place following construction.
- construct diversion ditches along the crest of slopes in specified areas to channel water and prevent erosion, and remove them when protection is no longer needed.
- use rock flumes where streams will run down a newly cut backslope and line them with riprap. Water will flow down the flume, through a culvert, and down a riprap lined outlet structure.

Other Controls
We will:

- discharge no solid materials into Waters of the United States, except as authorized by a Section 404 permit.
- dispose of construction wastes in the authorized area on-site.
- provide on-site portable sanitary facilities.
- store equipment fuels, lubricants, and asphalt paving components off-site. The project requires no hazardous materials other than these.
- respond to any inadvertent spills from fueling or maintenance in accordance with applicable regulations.
- not service or wash equipment within floodplains or within 100 feet of any surface waters.

c. Maintenance

We will:

- maintain all erosion and sediment controls to ensure that they are installed and functioning correctly.
- make all repairs or replacements as soon as practicable, including:
  - ✓ monitor sediment control structures (check dams, sediment traps) to ensure continuous structural integrity.
  - ✓ remove excess sediment and place in disposal areas.
  - ✓ repair or replace silt fences, straw bale barriers, and brush barriers if damaged, clogged, or disintegrated.
  - ✓ repair, replace, or re-anchor damaged erosion control matting, as necessary.
  - ✓ clean and regrade any storm water ditches that are filled with sediment.

d. Inspections

Our inspector will:

- perform inspections of all erosion and sediment controls as per specification at least once every 7 calendar days and within 24 hours of a storm that produces 0.5 inches or more rainfall over a 24 hour period.
- check disturbed areas exposed to precipitation, all controls, and discharge points for visible signs of erosion and impact to receiving waters.
- record any damages or deficiencies in the control measures on the DOT&PF SWPPP Construction Inspection Report Form 25D-100.

We will:

- correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than 7 days after the inspection.
- modify the SWPPP to reflect any changes in condition or location of the controls.

e. Non Storm Water Discharges

Non storm water discharges will include watering for dust control and aggregate surface compaction effort.

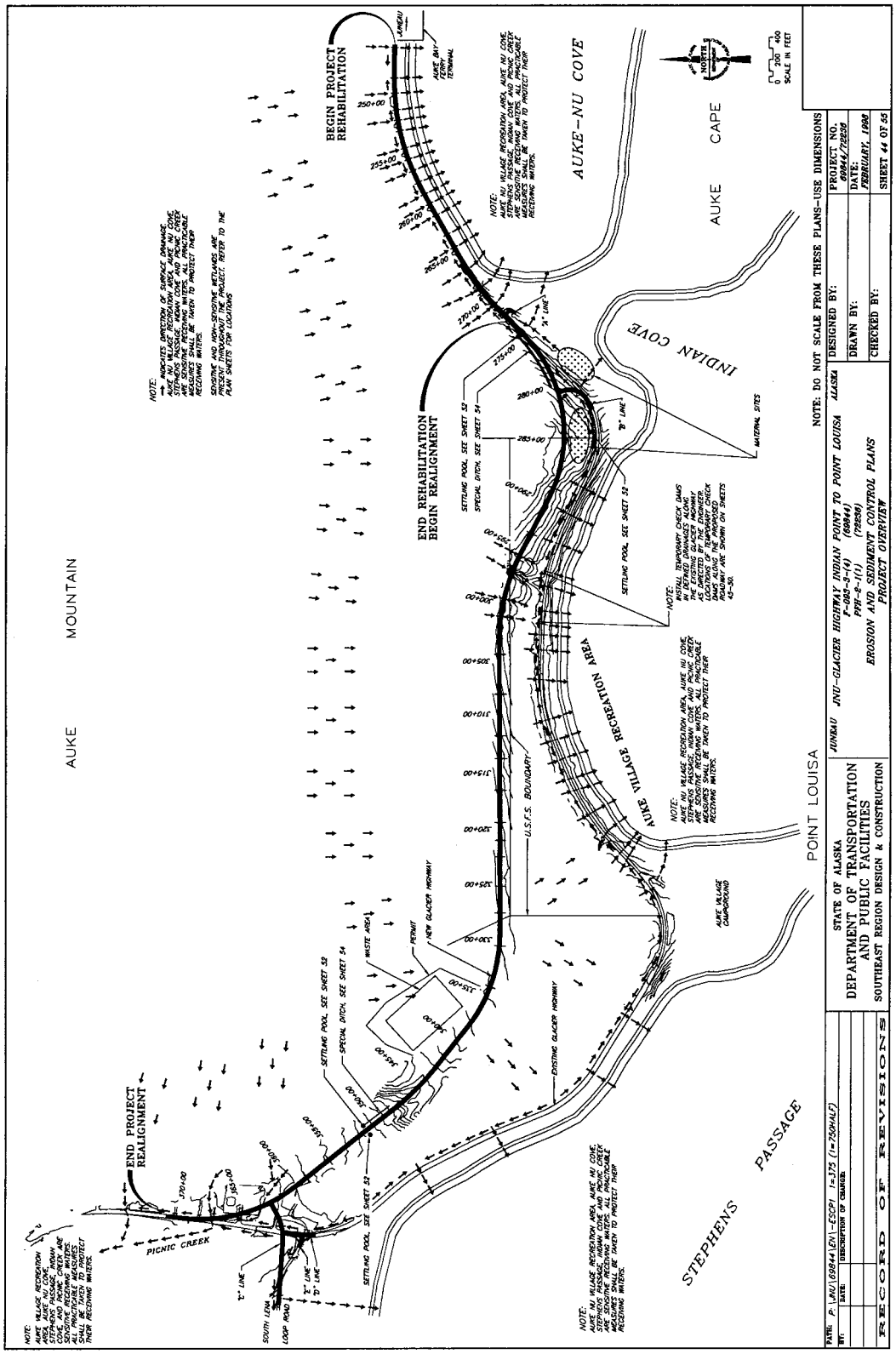
f. Contractors and Subcontractors (Responsible Parties)

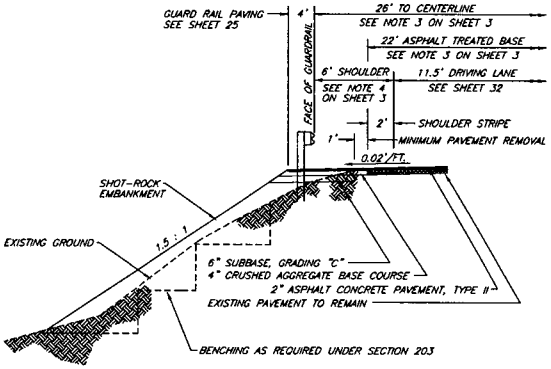
- The Contractor, who will perform all structural control, other control, storm water management control, and certain stabilization control (erosion control matting, riprap) work, is
  Contractor A
  P.O. Box 100
  Juneau, AK 99801
- The Subcontractor who will perform all excavation, embankment, and other earthwork activity is
  Contractor B
  P.O. Box 200
  Juneau, AK 99801
- The Subcontractor who will perform all clearing and grubbing work is
  Contractor C
  P.O. Box 300
  Juneau, AK 99801
- The Subcontractor who will perform all culvert work is
  Contractor D
  P.O. Box 400
  Juneau, AK 99801
- The Subcontractor who will perform all hydroseeding (stabilization control) work is
  Contractor E
  P.O. Box 500
  Juneau, AK 99801

2. Administrative Requirements

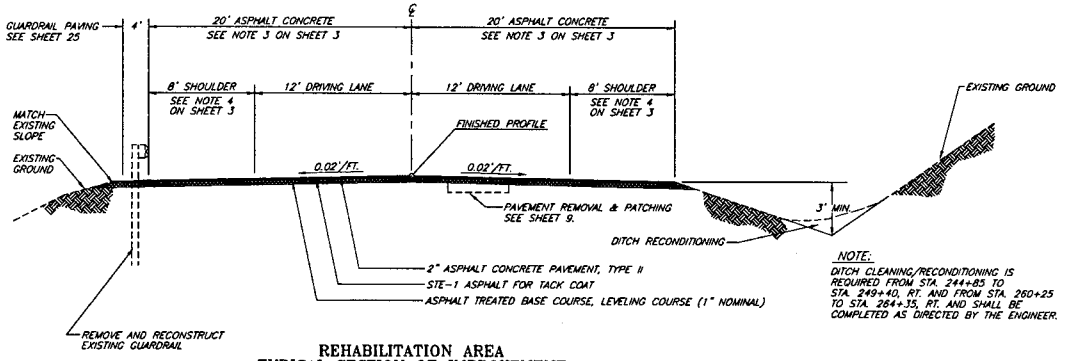
We will comply with all administrative requirements as given in Chapter 3 of the Alaska Storm Water Prevention Pollution (SWPPP) Guide (Effective date _____) and mandated by the General Storm Water Permit for Construction Activities.

Appendix H—Attachment 1. Site Map, Typical Sections, Modified Plan Sheets

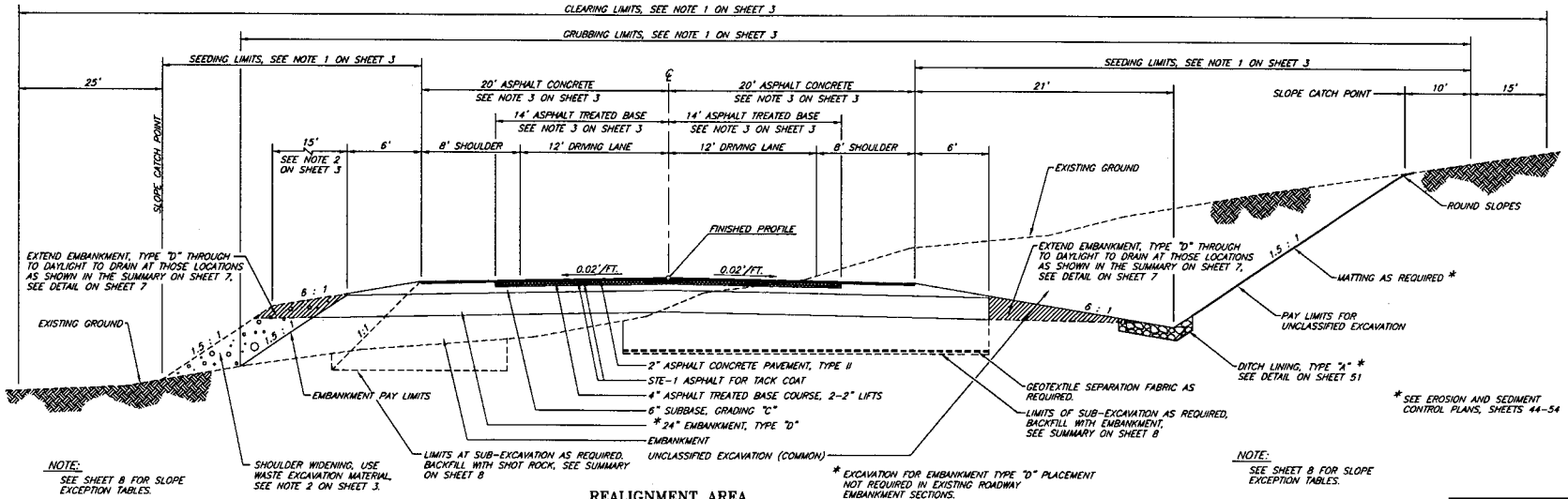




OTTER WAY LEFT TURN LANE SECTION
STA. 264+50.00 TO STA. 271+60.00



REHABILITATION AREA
TYPICAL SECTION OF IMPROVEMENT
STA. 244+84.02 TO STA. 272+25.00



REALIGNMENT AREA
TYPICAL SECTION OF IMPROVEMENT
STA. 272+25.00 TO STA. 372+00.00

NOTE: DO NOT SCALE FROM THESE PLANS-USE DIMENSIONS

ENGINEER'S SEAL

PATH: P:\JNU\69844\EN\-TYP1 1=1		
BY:	DATE:	DESCRIPTION OF CHANGE:

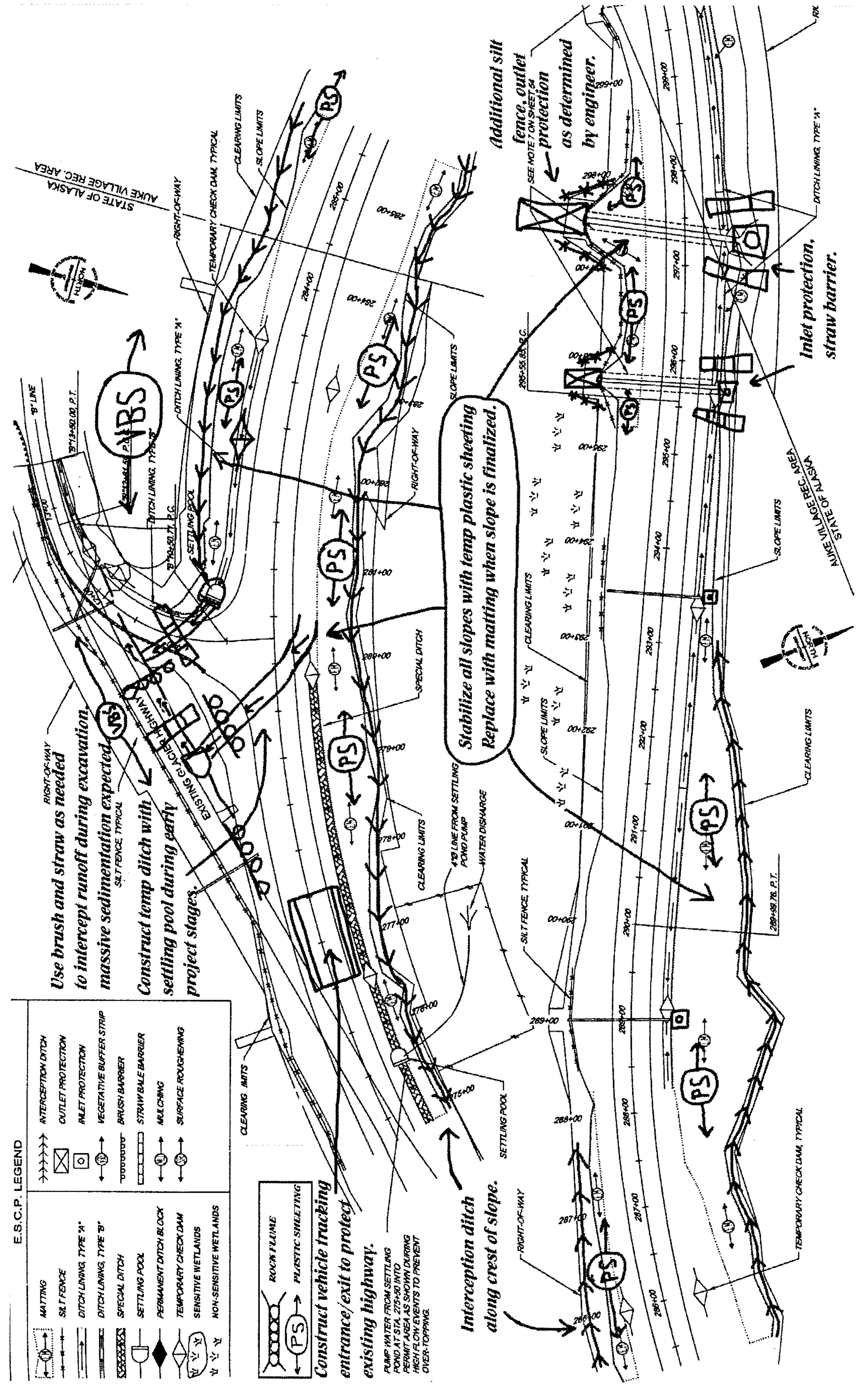
RECORD OF REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU ALASKA
GLACIER HIGHWAY - INDIAN POINT TO POINT LOUISA
F-093-3(4) (69844)
PFH-2-1(1) (72236)

TYPICAL SECTIONS OF IMPROVEMENT

DESIGNED BY:	PROJECT NO. 69844/72236
DRAWN BY:	DATE: FEBRUARY, 1998
CHECKED BY:	SHEET 2 OF 55


E.S.C.P. LEGEND
MATTING
SILT FENCE
DITCH LINING, TYPE "A"
DITCH LINING, TYPE "B"
SPECIAL DITCH
SETTLING POOL
PERMANENT DITCH BLOCK
TEMPORARY CHECK DAM
SENSITIVE WETLANDS
NON-SENSITIVE WETLANDS
INTERCEPTION DITCH
OUTLET PROTECTION
INLET PROTECTION
VEGETATIVE BUFFER STRIP
BRUSH BARRIER
STRAW BALE BARRIER
MULCHING
SURFACE ROUGHENING
ROCK FLUME
PLASTIC SHEETING
Use brush and straw as needed to intercept runoff during excavation massive sedimentation expected.
Construct temp ditch with settling pool during early project stages.
Construct vehicle tracking entrance/exit to protect existing highway.
PUMP WATER FROM SETTLING POND AT STA. 275+50 INTO PERMIT AREA AS SHOWN DURING HIGH FLOW EVENTS TO PREVENT OVER-TOPPING.
Interception ditch along crest of slope.
Stabilize all slopes with temp plastic sheeting
Replace with matting when slope is finalized.
Additional silt fence, outlet protection as determined by engineer.
SEE NOTE 7 ON SHEET 54
Inlet protection, straw barrier.
AUKE VILLAGE REC. AREA
STATE OF ALASKA
RIGHT-OF-WAY
CLEARING LIMITS
SLOPE LIMITS
SILT FENCE, TYPICAL
TEMPORARY CHECK DAM, TYPICAL
DITCH LINING, TYPE "A"
SPECIAL DITCH
SETTLING POOL
EXISTING GLACIER HIGHWAY
WATER DISCHARGE

E.S.C.P. LEGEND
MATTING
SILT FENCE
DITCH LINING, TYPE "A"
DITCH LINING, TYPE "B"
SPECIAL DITCH
SETTLING POOL
PERMANENT DITCH BLOCK
TEMPORARY CHECK DAM
SENSITIVE WETLANDS
NON-SENSITIVE WETLANDS
INTERCEPTION DITCH
OUTLET PROTECTION
INLET PROTECTION
VEGETATIVE BUFFER STRIP
BRUSH BARRIER
STRAW BALE BARRIER
MULCHING
SURFACE ROUGHENING
ROCK FLUME
PLASTIC SHEETING
AUKE VILLAGE REC. AREA
STATE OF ALASKA
SLOPE LIMITS
CLEARING LIMITS
RIGHT-OF-WAY
SILT FENCE, TYPICAL
PERMANENT DITCH BLOCK, TYPICAL
TEMPORARY CHECK DAM, TYPICAL
SEE NOTE 1 ON SHEET 54
Check dam placement ok, add more if necessary.
Minimize silt fence use, as specified.
Use existing forest buffer to catch runoff.
Frequent rock flumes, placement determined by engineer.
Soil extremely saturated.
Matting may not be effective.
Stabilize slope with rip rap as needed.

Appendix H—Attachment 2. Project Best Management Practices (BMPs)

Erosion Control Measure
Interception/ Diversion Ditch
Rock Flume
Outlet Protection
Stormwater Conveyance Channel
Rock Check Dam
Rolled Erosion Control Products
Temporary Sediment Trap
Vegetative Buffer Strip
Silt Fence
Inlet Protection
Straw Bale Barrier
Brush Barrier
Vehicle Tracking Entrance/Exit

Note: For sample purposes, only the first BMP is shown here.
You should include <u>all</u> BMPs mentioned in your SWPPP.
Appendix F gives the complete text and drawings for all BMPs.

1. Interception/Diversion Ditch

Objectives and Applications

An interception/diversion ditch, berm or excavated channel or combination berm and channel constructed across a slope that functions to intercept runoff and divert it to a stabilized area where it can be safely discharged.

This measure should be used in construction areas where runoff can be diverted and disposed of properly to control erosion, sedimentation, or flood damage. Specific locations and conditions include above disturbed existing slopes, and above cut or fill slopes to prevent runoff over the slope; across unprotected slopes, as slope breaks, to reduce slope length; below slopes to divert excess runoff to stabilized outlets; where needed to divert sediment laden water to sediment traps; at or near the perimeter of the construction area to prevent sediment from leaving the site; above disturbed areas before stabilization to prevent erosion and maintain acceptable working conditions; around buildings or areas that are subject to damage from runoff, and during culvert installations where water must be temporarily diverted around the construction area. Diversions may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

- Berm not properly compacted during construction, resulting in uneven settling.
- Sediment accumulation against berm/channel not removed periodically, resulting in berm not functioning properly.

Other Considerations

- Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 ac.
- Interception/diversion ditches should be carefully designed where longitudinal ditch slopes are steeper than 10 per cent.

Diversions are preferable to other types of man-made storm water conveyance systems because they more closely simulate natural flow patterns and characteristics, and flow velocities are generally kept to a minimum.

Relationship to Other ESC Measures

Diverted runoff should outlet to a stabilized area such as a sediment basin, detention or retention basin, or stabilized outlet, which should be established prior to introducing runoff from the diversion.

Alternate Sediment Control Measures

Slope Drain (can be used in association with this measure.

Other Names

Interceptor Ditch, Crown Ditch

Design

Location: *Should be determined by considering outlet conditions, topography, land use, soil type, and length of slope.*
Capacity: *permanent: 10 year peak runoff storm temporary: 2 year peak runoff storm.*

Berm

Berm Top Width: *minimum 2 ft.*
Berm Base Width: *minimum 4.5 ft.*
Berm Height: *minimum 18 in.*
Berm Side Slopes: *2:1 or flatter*

Ditch

Channel Freeboard: *minimum 6 in.*
Channel Side Slopes: *2:1 or flatter*

Materials

Compacted soil or coarse aggregate, riprap, filter fabric, plastic lining, seed and mulch, sandbags

Installation

Interception Ditch

Remove and properly dispose of all trees, brush, stumps, or other objectionable material. Fill and compact all ditches, swales, or gullies that that will be crossed to natural ground level. Excavate, shape, and stabilize the diversion to line, grade, and cross section as required in the plans. Compact the berm to prevent unequal settlement and to provide stability against seepage. Stabilize the diversion with vegetation after installation.

Diversions for Culvert Installations

Excavate the diversion channel to the specified dimensions, leaving temporary plugs at both ends. Place channel lining and stabilize with riprap or sandbags. Remove plugs at both ends (down-stream first) and divert water into the diversion with sandbags. After installation of the culvert is complete, replug the diversion, salvage the diversion lining, and backfill in the channel.

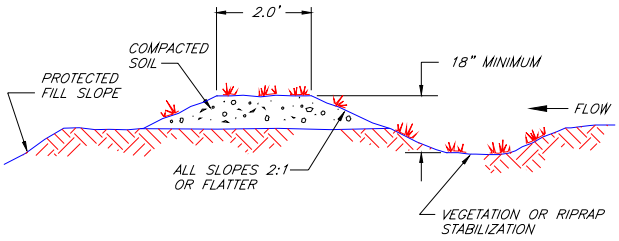
Inspection

Inspect the diversion every week and after each rainfall during construction operations.

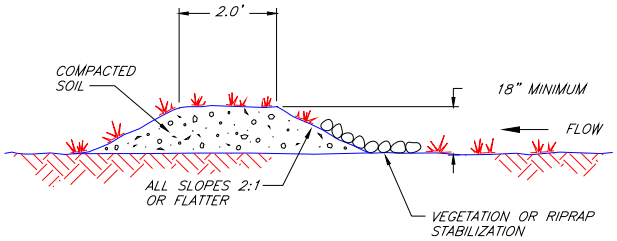
Maintenance

Remove any sediment or other obstructions from the diversion channel. Check outlets and make repairs as necessary. Reseed areas that fail to establish a vegetative cover.

Removal



TYPICAL FILL DIVERSION



TYPICAL TEMPORARY DIVERSION DIKE

NOTES:
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE DIKE SHALL BE STABLILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.

FILE: TEMPDIKE

Temporary installations – Restore to existing or constructed grade. Seed and mulch.

INTERCEPTION/DIVERSION DITCH

Appendix H—Attachment 3. Storm Water General Permit Requirements

Note: For sample purposes, only the first page is shown here. You should include this entire section of the Federal Register, as shown in Appendix G.

U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 22nd day of January, 1998.

Thomas Maslany,

Water Management Director.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 3.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 16th day of January, 1998.

U. Gale Hutton,

Director, Water, Wetlands, and Pesticides Division, U.S. Environmental Protection Agency, Region 7.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 7.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 15th day of January, 1998.

Kerrigan G. Clough,

Assistant Regional Administrator, Office of Pollution Prevention, State and Tribal Assistance.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 8.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See Part I.A.]

Authorizatin To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 29th day of January, 1998.

Alexis Strauss,

Acting Director, Water Division, Region 9.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 9.

Storm Water General Permit for Construction Activities

Cover Page

Permit No. [See part I.A.]

Authorization to Discharge Under the National Pollutant Discharge Elimination System

In accordance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et seq.), except as provided in Part I.B.3 of this permit, operators of construction activities located in an area specified in Part I.A. and who submit a Notice of Intent in accordance with Part II, are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

This permit shall become effective on February 17, 1998.

This permit and the authorization to discharge shall expire at midnight, February 17, 2003.

Signed and issued this 20th day of January, 1998.

Philip G. Millam,

Director, Office of Water, Region 10.

This signature is for the permit conditions in Parts I through IX and for any additional conditions in Part X which apply to facilities located in the corresponding State, Indian Country land, or other area in Region 10.

NPDES General Permits for Storm Water Discharges From Construction Activities

Table of Contents