



ANCHORAGE STORMWATER MANUAL

Volume 2

Construction Practices

(Stormwater Treatment Plan Review Guidance Manual)

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DEFINITIONS

For definitions, please refer to the most current version of the Alaska Construction General Permit (CGP). (See Section 1.4.1 for more information on the CGP.)

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADOT&PF	Alaska Department of Transportation and Public Facilities
AMC	Anchorage Municipal Code
APDES	Alaska Pollutant Discharge Elimination System
ASM	Anchorage Stormwater Manual
AWWU	Anchorage Water and Wastewater Utility
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
MOA	Municipality of Anchorage
MSGP	Multi-Sector General Permit
MS4	Municipal Separate Storm Sewer System
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
OSC	On Scene Coordinator
SOA	State of Alaska
SPCC	Spill Prevention, Control, and Countermeasure Plans
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
WMS	Watershed Management Services

1.0 INTRODUCTION

1.1 Objective of This Manual

This document and its associated submittals satisfy the Title 21 (21.07.040) requirements regarding Stormwater Treatment Plans.

The objective of this Anchorage Stormwater Manual Volume 2 is to provide requirements and compliance guidance for managing stormwater runoff associated with construction activities. The construction phase of a project is usually a temporary condition that will give way to permanent improvements and facilities. However in some cases, construction work may take place over an extended period of time. Properly planned, sized, and implemented Best Management Practices (BMPs) can drastically reduce stormwater impacts from construction, including heavy stormwater flows, soil erosion, water-borne sediment from exposed soils, and degradation of water quality from on-site pollutant sources.

The guidance in this manual includes:

- ~ Construction Stormwater Submittal and Inspection Requirements
- ~ Preparation guidelines for Stormwater Pollution Prevention Plans
- ~ Criteria related to construction dewatering, and
- ~ Best Management Practices (BMPs) guidance and applicability.

1.2 Related Guidance

The Anchorage Stormwater Manual (ASM) consists of two Volumes. Volume one provides technical guidance and design criteria for permanent control of stormwater runoff. Volume 2 (this volume) is specifically related to stormwater runoff associated with construction. Volume 2 is also referred to as the Stormwater Treatment Plan Review Guidance Manual.

Together, the ASM Volumes 1 and 2 supersede or replace the following previously adopted MOA manuals:

- ~ Previous versions of the Design Criteria Manual Chapter 2 (superseded)
- ~ Previous versions of the Stormwater Treatment Plan Review Guidance Manual (superseded)
- ~ MOA Drainage Design Guidelines, 2008 (replaced)
- ~ Low Impact Development Guidance Manual (replaced)

All referenced documents, which are included or incorporated by reference in this manual, shall be the latest edition, unless otherwise noted.

1.3 How To Use This Manual

Below is a brief description of each of the sections in this manual.

Section 1 – Introduction: Introduces the manual and provides guidance regarding how to use the manual effectively. This section also discusses the regulatory requirements that drive the content of this manual.

Section 2 – Presents a brief list of the construction submittals that should be considered. Details are provided in subsequent sections.

Section 3 – Introduces Stormwater Pollution Prevention Plans (SWPPPs), describes various types of SWPPPs, explains when a SWPPP is required, and presents a step by step process for developing and submitting a SWPPP.

Section 4 – Dewatering Requirements: Presents the requirements associated with construction dewatering including permitting for disposal of water.

Section 5 – Presents requirements for Oil Spill Reporting.

1.4 Regulatory Requirements for Pollution Prevention

The MOA is required to manage stormwater within municipal boundaries by federal statutory regulations contained in the Clean Water Act (CWA), and regulatory requirements contained in the Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) permit program. The MOA is also required to manage stormwater and associated pollutants in accordance with specific requirements set forth in the Alaska Administrative Code (AAC) and the Anchorage Municipal Code (AMC).

1.4.1 Alaska Pollutant Discharge Elimination System (APDES) Permit Program

As authorized by the CWA, the EPA manages a National Pollutant Discharge Elimination System (NPDES) program that regulates point sources that discharge pollutants into waters of the United States. Point sources are specific discharges such as pipes or constructed ditches. Since its introduction in 1972, the NPDES permit program has been responsible for significant improvements to our nation's water quality.

Per the CWA, states are intended to run the NPDES program. The Alaska Department of Environmental Conservation (ADEC) implemented an EPA-approved program, called the Alaska Pollutant Discharge Elimination System (APDES) program. Stormwater regulation authority was transferred to ADEC on October 31, 2009, and ADEC provides monitoring and enforces compliance. The EPA oversees implementation of the APDES program and can intervene on any permit issued, renewed, or modified by the state. The EPA also exercises certain responsibilities involving tribes and other federal agencies.

Within the APDES permit program, there are three permits that apply to the regulation of stormwater discharges and associated pollutants. These three permits include the following:

- Municipal Separate Storm Sewer System (MS4) Permit – applies to municipal separate storm drain systems. The MOA and the Alaska Department of Transportation and Public Facilities (DOT&PF) are co-permittees under an MS4 permit issued by the EPA, which is now administered by ADEC. The MS4 permit allows the MOA and DOT&PF, as operators of a MS4, to discharge stormwater into waters of the United States under specific requirements of the permit.
- Multi-Sector General Permit (MSGP) – applies to post-construction stormwater discharges and potential pollutants at industrial facilities.
- Construction General Permit (CGP) – applies to the control of stormwater discharges and associated pollutants on construction projects with one acre or more of land disturbance.

The guidance and requirements presented in this manual are primarily centered around the requirements of the CGP.

1.4.2 Construction General Permit (CGP)

The CGP governs all stormwater discharges associated with construction projects with one or more acres of land disturbance. This includes off-site borrow and haul areas. The permit is updated every 5 years. The most current version of the permit is available online at the link below.

http://dec.alaska.gov/water/wnpssc/stormwater/sw_construction.htm

The CGP discussed in this manual is specific to Alaska. The goal of the CGP is to reduce or eliminate stormwater pollution related to construction activities by requiring that permittees plan and implement appropriate pollution control practices to protect water quality. “Permittees” to the CGP are all parties (owners and operators) who are signatories of a Notice of Intent for the permit. The CGP also authorizes certain non-stormwater construction site discharges.

The CGP places limitations on certain discharges including:

- Those containing pollutants of concern into waters with an approved Total Maximum Daily Load (TMDL) water body assessment; and
- Those that are likely to affect endangered or threatened species.

Discharges that are not covered by the CGP include the following:

- Discharges mixed with non-stormwater flows, with the exception of the sources listed above; and
- Discharges that are regulated under an individual permit.

The CGP requires that operators responsible for projects with land disturbances of one acre or more prepare a Storm Water Pollution Prevention Plan (SWPPP); submit a Notice of Intent (NOI) to discharge stormwater associated with construction activities to ADEC; and implement the SWPPP. Implementation of the SWPPP requires that controls be instituted and maintained to reduce erosion and prevent sediments from discharging from the construction site. These controls, called BMPs, are installed by the contractor or other operator to meet the objectives of the CGP.

The site operator must perform inspections of the area covered by the SWPPP at prescribed inspection frequencies and locations.

Regardless of project size and ownership, State Water Quality Standards must still be met for all stormwater discharges associated with construction.

1.4.3 State Spill Reporting Regulations

State spill reporting regulations set forth in 18 AAC 75, Oil and Hazardous Substances Pollution Control, require that spills must be reported. Spill reporting procedures are outline in Section 5.0 of this manual.

1.4.4 Local and State Codes Related to Stormwater

- AMC Title 21 Land Use Planning. This title has several chapters that address the requirement for storm drainage construction for private development.
- AMC Title 23 Building Codes. This title has several chapters that address various building regulations.

- AMC Title 24 Streets and ROW. This title has several chapters that address construction within street Right-of-Way (ROW) and public places.
- State of Alaska 18 AAC 70 Water Quality Standards. This chapter provides standards for water quality.
- State of Alaska 18 AAC 72 Wastewater Disposal. This chapter requires plan reviews for all non-domestic waste treatment and discharge systems.

2.0 CONSTRUCTION SUBMITTAL REQUIREMENTS

Required construction-related submittals vary depending on the size and scope of each project. Below is a list and brief description of the types of submittals that may be required.

2.1 Types of Submittals

1. *Stormwater Threat Assessment Form*. This form (provided in Appendix A) is required for all projects. This flowchart considers various factors that may deem a site environmentally sensitive and require increased MOA inspections.
2. *Owner's Statement* (See Appendix C) - This is required for Type 2 and 3 SWPPPs.
3. *Stormwater Pollution Prevention Plan (SWPPP)* - Some form of SWPPP is required for most projects within the MOA. Refer to Section 3 and Table 2.1-1 to determine what type of SWPPP is required for your project.
4. *Notice of Intent (NOI) for the CGP* - This is required only for projects that are required to submit a Type 3 SWPPP. A Type III SWPPP is required for projects that collectively disturb one or more acres of ground. Project categories assume that projects are not part of a common plan of development. For projects that are part of a larger plan of development, the area must consider the entire collective project. Refer to Section 3.6 for additional information.
5. *Dewatering Plan* - This is required for projects that will be pumping to dewater an area for construction activities.
6. *Other Information* -- Some select sites are required to submit additional information as required by state, local, and federal law or as requested by the MOA such as a MultiSector General Permit SWPPP, Spill Prevention and Countermeasure Control (SPCC) plans, or other relevant permits such as wetland fill permits. Information regarding SPCC plans is provided in Section 4. If you have questions regarding the applicability of other submittals to your project, please contact the MOA.

Table 2.1-1 summarizes these requirements, and specific details are provided in subsequent sections.

2.2 Submittal Address

The MOA address for submittals is provided below.

Municipality of Anchorage
Department of Public Works, Project Management and Engineering
Watershed Management Services
4700 South Elmore Road (*physical location*)
P.O. Box 196650 (*mailing address*)
Anchorage, Alaska 99519-6650

Table 2.1-1: Construction Submittal Requirements

Project Category/Description ¹ (Areas referenced are areas of Land Disturbance. See Footnote 1 for Common Plan of Development)		New or Redevelopment Project		
		Less than 10,000 square feet	Greater than 10,000 square feet but less than 1 acre	1 acre or greater
Submittal Item		Submittal Required?		
1	Threat Assessment Form	Yes	Yes	Yes
2	Owner's Statement	No	Yes	Yes
3	Storm Water Pollution Prevention Plan (SWPPP)	Type I SWPPP	Type 2 SWPPP	Type 3 SWPPP
4	Notice of Intent for CGP	No	No	Yes
5	Dewatering Plan	Required if pumped discharges will be involved		
6	Other information ³			
	Single family or duplex	No	Yes	Yes
	All other ²	Yes	Yes	Yes

¹ Project categories assume that projects are not part of a common plan of development. For projects that are part of a larger plan of development, project category must consider the entire collective project.

² "All other" includes, but is not limited to, triplexes and larger multi-housing projects; commercial developments; road, street, and drainage construction projects; filling and grading, and utility construction.

³ Other information includes additional pollution prevention plans that could be applicable to permanent site activities, such as MultiSector General Permit SWPPPs or Spill Prevention, Control and Countermeasure (SPCC) plans; and copies of other permits, such as wetland fill permits.

3.0 STORMWATER POLLUTION PREVENTION PLANS

SWPPPs are written plans outlining measures to identify, prevent, and control the contamination of point source stormwater discharge during construction. The SWPPP identifies and illustrates the measures that will be taken on a construction site to control potential pollution problems. SWPPPs are the tools by which developers and operators communicate with field staff in accomplishing stormwater runoff control and erosion and sediment control (ESC) goals. This manual is intended to provide details regarding SWPPP preparations, and additional information is available in the CGP. The available online from the ADEC website and should be referenced when preparing a SWPPP. Appendix H of this manual provides information on the selection, implementation, and maintenance of BMPs that are useful in Anchorage.

This manual uses the term operator to identify the person(s) who owns or operates a facility or activity who must comply with the MOA standards and, if applicable, CGP requirements.

For public projects, the SWPPP preparer should note that the Municipality of Anchorage Standard Specifications (MASS) includes descriptions of each type of SWPPP and establishes what is required for contractor completion and payment of this item.

3.1 Applicability and Types of SWPPPs

Projects within the MOA that meet the requirements described in this section are required to submit some type of SWPPP. This includes the following types of projects:

- ~ Municipal road projects and other Municipal transportation projects such as airports;
- ~ Utility projects for which the utility is initiating the work;
- ~ Work that requires a Municipal building permit; and
- ~ Non-publicly funded transportation projects.

Government (federal, state, or Port of Anchorage) road projects and other government transportation projects such as ports, railroads, or airports within the MOA are not addressed in this manual. Operators for these types of projects should refer to the CGP for required submittals.

There are currently 3 types of SWPPPs. The type of SWPPP applicable to each project varies depending on the project's area of land disturbance. (See the CGP for definition of a land disturbance.)

3.1.1 Projects Requiring Type I SWPPP

This classification includes projects that:

- ~ Disturb less than 10,000 square feet AND
- ~ Are not part of a common plan of development that collectively disturbs more than 10,000 square feet.

Other submittals are required. See Table 2.2-1 for a description of required submittals.

3.1.2 Projects Requiring Type 2 SWPPPs

This classification includes projects that:

- ~ Disturb greater than or equal to 10,000 square feet but less than 1 acre of land that are NOT part of a common plan of development that collectively disturbs one or more acres, OR
- ~ Disturb land, no matter what size, that are part of a common plan of development which collectively disturbs 10,000 square feet to less than 1 acre of land.

3.1.3 Projects Requiring Type 3 SWPPPs

This classification includes projects that:

- ~ Disturb 1 or more acre(s) or more of land, OR
- ~ Disturb lands that, no matter the size, are part of a common plan of development which collectively disturbs 1 or more acres

3.2 Project Initiation

Submission to the appropriate agency of the items described above is required before initiation of land disturbances. Commencement of construction activities includes the initial disturbance of soils associated with clearing, grading, or excavating activities, or other construction-related activities such as stockpiling of fill material.

3.2.1 MOA Approval (All types)

For projects that fall into the Type 2 or 3 SWPPPs categories, an operator must obtain MOA approval to gain authorization to discharge stormwater from construction activities under the terms and conditions of this manual and the CGP (applicable sections only).

3.2.2 Notice of Intent (Type 3 SWPPP Only)

Type 3 SWPPPs - Operators of construction projects that fall in this category shall submit a Notice of Intent (NOI) to ADEC. Submission of the NOI using ADEC's electronic NOI system (eNOI) is strongly encouraged. However, the NOI paper form provided is also permissible. Links to the eNOI system and NOI paper form are shown below. In addition, operators of construction projects that fall in this category shall submit to the MOA a Type 3 SWPPP and a copy of the NOI to the address shown in Section 2.2. Submittal of the SWPPP to the MOA should be made before or at the same time the NOI is submitted to ADEC and shall include any MOA-required fee per AMC 21.

<http://dec.alaska.gov/water/wnp spc/stormwater/APDESeNOI.html>

<http://dec.alaska.gov/water/wnp spc/pdfs/CGPNOI.pdf>

An operator, under Type 3 SWPPP, is authorized to discharge stormwater from construction activities under the terms and conditions of the CGP upon approval from the MOA after ADEC's acknowledgment of receipt of the NOI. The NOI should be posted on ADEC's APDES website (link shown below), unless ADEC notifies the operator that the authorization is delayed. Once the authorization is granted by the ADEC and MOA the applicant is then considered a permittee covered by the CGP.

<http://dec.alaska.gov/Water/wnpspc/stormwater/index.htm>

3.3 Preparation of SWPPPs

SWPPP Preparation must be **site specific**. The SWPPP preparer should visit the site to gain an understanding of the drainage patterns and ESC issues, which in turn can reduce costs of implementing the ESC practices in the field.

The SWPPP is intended to document the selection, design, installation, and implementation of control measures that are being used to comply with MOA standards and, if applicable, CGP requirements. All management practices and control measures should be properly selected in accordance with manufacturer's specifications and good engineering practices.

In many cases, SWPPPs will be prepared for projects that have also completed a Stormwater Management Plan as required per the ASM Volume 1, Section 3. This document will discuss the permanent stormwater management facilities that will be installed on each site. The SWPPP preparer should review this plan and include construction measures to protect permanent stormwater controls during construction. For example, retention and infiltration facilities require special care during construction to avoid compaction and sedimentation of the facility sub-grade.

See Section 3.8 for recommended experience and required training for SWPPP preparers.

3.4 Developing Type 1 SWPPPs

A Type 1 SWPPP is a form that is provided in Appendix B. Completion of this form satisfies the Type 1 SWPPP requirement. The form requires verification that appropriate BMPs will be used for the site conditions, and information on how to meet these requirements is provided on the form. A simple site map is also required. For more details, refer to Appendix B.

3.5 Developing Type 2 SWPPPs

The Type 2 SWPPP must be prepared in accordance with good development practices and must accomplish the following:

- Type 2 SWPPPs must follow the 2016 ADEC SWPPP template. Single family residential projects may use the associated ADEC SWPPP template.
- Address all potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site; and
- Describe the practices to be used to reduce pollutants in stormwater discharges from the construction site.

- Type 2 SWPPPs are intended to be brief and succinct. In general, the Type 2 SWPPP follows the requirements of the CGP, with exceptions as noted in the checklist included in Appendix D. At a minimum, the Type 2 SWPPP must contain the elements described below.

3.5.1 Identifying Information

- Include the project name, site location/address, city, state, zip code, and phone number (if appropriate).
- Include contact information of site operator(s). The CGP provides a description of roles for different types of operators.
- Identify a contact person for SWPPP questions or concerns. Include contact information for this person.
- Identify the estimated start and completion dates of construction.

3.5.2 General Information

- Identify the permittee for the site and any subcontractors that may work on the site.
- Identify qualified person(s) responsible for the required positions identified in the CGP. Note that a qualified person for conducting monitoring is not required for a Type 2 SWPPP. See Section 3.8 for further detail regarding qualified person(s).
- Briefly describe the existing site-specific conditions.
- Briefly describe the nature of the construction activity.
- Provide a legible site map (or set of maps for large projects) showing the entire site and identifying the site-specific information.
- Describe and identify the other industrial stormwater discharge locations and allowable non-stormwater discharges.

3.5.3 Compliance with Standards, Limits, and other Applicable Requirements

- List and describe any water bodies that could potentially receive stormwater from the construction site, including storm drain and/or drainage systems.
- Indicate whether there are historic or tribal preservation sites on or near the project area, and how that determination was made.

3.5.4 Control Measures

- Include a description of all control measures that will be implemented. For each major activity identified in the project description, clearly document appropriate control measures, the general sequence during the construction process in which the measures will be implemented, and which operator is responsible for the control measures' implementation. The selection, design, installation, maintenance, and removal of control measures must address site-specific conditions such as:
 - Precipitation - including the amount, frequency, and duration and the nature of resulting stormwater runoff (e.g. does the runoff last for a few hours or several days);
 - Site Topography - such as flat, sloped, hilly, or mountainous;

- Soil Characteristics - including the soil types, range of soil particle sizes, thermal conditions; and
- Growing Season - such as start, end, and length of growing season.

Appendix H of this manual provides information on the selection, implementation, and maintenance of BMPs that are useful in Anchorage. Additionally, ADOT&PF developed the Alaska Storm Water Guide to assist SWPPP developers with selecting, installing, and maintaining control measures that may be used for projects in Alaska. Other BMPs details and resources are acceptable as long as they do not conflict with the requirements of this manual.

More information regarding specific requirements for control measures is provided in the CGP.

- Describe all measures you will use to minimize pollutant discharge; including responsible staff, and the design, installation, implementation, and maintenance plans for appropriate good housekeeping measures.
- Describe, in general terms, the type of construction and waste materials expected to be stored at the site with updates as appropriate. Describe the measures for handling and disposal of all wastes generated at the site, including clearing and demolition debris or other waste soils removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

3.5.5 Inspection, Monitoring, and Recordkeeping

- The SWPPP must document the procedures for performing site inspections and, where necessary, corrective actions taken as required by the CGP. Corrective actions include (1) addressing the performance of control measures, including modifications to the selection, design, installation, and/or implementation of those control measures, or (2) addressing permit violations. These actions ensure that control measures are properly implemented and maintained. The CGP provides specific requirements for inspection and specific requirements for corrective actions. A sample construction site inspection form is provided in Appendix E.

3.6 Developing Type 3 SWPPPs

All projects requiring Type 3 SWPPPs must include all the requirements in the APDES CGP for the development and implementation of a SWPPP. Examples of SWPPPs prepared in compliance with the CGP and other guidance information, including a SWPPP template, can be viewed at ADEC's website shown below. The Type 3 SWPPP must be prepared before an NOI is submitted. A checklist to assist the Type 3 SWPPP preparer is included in Appendix D. This checklist should be compared to the most current version of the CGP.

https://dec.alaska.gov/Water/wnpssc/stormwater/sw_construction.htm

Type 3 SWPPPs must follow the 2016 ADEC SWPPP template. Single family residential projects may use the associated ADEC SWPPP template.

The Municipality will accept SWPPPs prepared in compliance with the CGP, but **Municipal approval of a Type 3 SWPPP does not mean that the plan will be considered acceptable by the ADEC.** ADEC determines and interprets compliance with the CGP according to their own regulations and procedures, which may differ from those of the Municipal reviewers and inspectors.

In addition to the requirements for a Type 2 SWPPP, a Type 3 SWPPP must also contain the elements described below, as outlined in the CGP.

3.6.1 Identifying Information

- Include a completed Operator Plan Authorization/Certification/Delegation that is dated and signed by a Responsible Corporate Officer.

3.6.2 General Information

- Identify a qualified person for conducting monitoring.
- Include a general location map.

3.6.3 Compliance with Standards, Limits, and other Applicable Requirements

- Include documentation regarding waters with EPA-established or approved TMDLs, including:
 - Identification of whether the discharge is into a receiving water body with a TMDL, either specifically or generally, and any associated waste load allocations, requirements, and assumptions for the discharge;
 - Summaries of consultation with State or Federal TMDL authorities on consistency of SWPPP conditions with the approved TMDL; and
 - Measures taken to ensure that the discharge of pollutants from the site is consistent with the assumptions and requirements of the TMDL, including any specific waste load allocation that has been established that would apply to the discharge.

A list of completed and scheduled TMDLs is included in Appendix F. This list was current at the time of publication of this manual. More current TMDL information can be found through the EPA and/or ADEC. Links to the TMDL information are shown below. The CGP provides specific requirements for compliance with standards and limits.

<http://cfpub.epa.gov/npdes/stormwater/tmdl.cfm>

<http://dec.alaska.gov/water/tmdl/approvedtmdls.htm>

- The SWPPP must include supporting documentation regarding the Endangered Species Act, including:
 - Identification of federally-listed endangered or threatened species or federally designated critical habitat in the project area, if applicable;
 - An account of whether such species or critical habitat may be adversely affected by stormwater discharges or stormwater discharge-related activities from the project;
 - Results of the listed species and critical habitat screening determinations;
 - Correspondence for any stage of project planning between the permittee and the United States Fish and Wildlife Service (USFWS, EPA, National Marine Fisheries Service (NMFS), or other agencies regarding listed species and critical habitat, including any notification that delays authorization to discharge under the CGP; and
 - A description of measures to protect federally-listed endangered or threatened species or federally-designated critical habitat.

The permittee must describe and implement such measures to maintain eligibility for permit coverage. **At a minimum, the project SWPPP must include a letter of non-objection from the USFWS and NMFS.** The CGP provides specific requirements for compliance.

- Address other applicable federal, state, tribal, or local requirements for soil and erosion control and stormwater management.

3.6.4 Control Measures

- Describe a plan for notifying the appropriate authorities of any leak, spill, or release of hazardous substance per the requirements of the CGP.

3.6.5 Inspection, Monitoring, and Recordkeeping

- Include executed permits, forms, information summaries, and/or copies of reports as identified in the CGP.
- Include a monitoring plan (if needed), with schedules, checklists, and corrective action procedures. Monitoring requirements may include collecting/analyzing stormwater discharge samples, documenting monitoring activities, and other visual monitoring requirements. The monitoring plan must contain site-specific details for analytical monitoring that meets all the requirements of CGP and follows the applicable ADEC Quality Assurance Guidance for a Water Quality Monitoring Plan. A Quality Assurance Project Plan is a written document that describes the quality assurance procedures, quality control specifications, and other technical activities that must be implemented to ensure that the results of the project or task will meet the guidelines established by the CGP. The CGP provides specific requirements for monitoring and for corrective actions.
- The SWPPP must contain a copy of the CGP. The CGP is available from ADEC's website. Link shown in Section 1.4.2.

3.6.6 Other Requirements of the CGP

- The CGP is updated by ADEC every 5 years. Additional requirements that are not outlined in this manual may apply. Refer to the CGP for final SWPPP requirements.

3.7 Implementing Type 2 and 3 SWPPPs

The SWPPP must describe construction activities to prevent stormwater contamination, control sedimentation and erosion, and comply with requirements of the CGP. Therefore, specific direction regarding implementation must be addressed in the SWPPP. Note that SWPPPs are living documents and **updates are required when changes occur in the field.**

3.7.1 Additional Documentation Requirements

Summaries of the following information, or copies of the reports, must be maintained with the SWPPP by the permittee following authorization under this permit:

- Date(s) when grading activities occur;
- Date(s) when construction activities temporarily or permanently cease on a portion of the site;
- Date(s) when stabilization measures are initiated;

- Date of beginning and ending period for winter shutdown;
- Copies of inspection reports;
- Copies of monitoring reports or annual reports (if applicable);
- Log of SWPPP modifications;
- Treatment chemicals documentation (i.e. Material Safety Data Sheet, manufacturer and/or supplier test results, or employee training information);
- Records of employee training, including the date(s) training was received;
- Documentation of maintenance and repairs of control measures, including date(s) of regular maintenance, date(s) of discovery of areas in need of repair/maintenance, and date(s) that the control measure(s) returned to full function; and
- Description of any corrective action taken at the site, including the event that caused the need for corrective action and dates when problems were discovered and modifications occurred, in accordance with the CGP.

3.7.2 SWPPP Modifications

A permittee must modify the SWPPP, including site map(s) in response to any of the following:

- Changes made to construction plans, control measures, good housekeeping measures, monitoring plans (if applicable), or other activities at the site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered under Part 8.0 of the CGP and notifications by the permittee(s);
- If inspections or investigations by site staff or by local, state, tribal, or federal officials determine that SWPPP modifications are necessary for compliance with this permit; or
- To reflect any revisions to applicable federal, state, tribal, or local law that affect the control measure implemented at the construction site.

3.7.3 Log of SWPPP Modifications

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause for the replacement of control measures).

3.7.4 Deadlines for SWPPP Modifications

Revisions to the SWPPP must be completed within seven (7) days of the inspection that identified the need for a SWPPP modification or within seven (7) days of substantial modifications to the construction plans or changes in site conditions.

3.8 Qualified Person(s)

Specific roles and required training for each of these roles are discussed for Type 2 and 3 SWPPPs below.

3.8.1 Roles

Given the range in size and types of projects in Alaska, the following is a description of the experience and skills of a “qualified person” for the different roles typically required at a site. As noted in Section 3.5.2, each role should be identified in the SWPPP. The recommended experience or educational requirements for each of these roles is described below. For projects that disturb less than 5 acres, all the roles described below will or may be carried out by one person. For the larger projects, there will or may be the need to have one person for each role. This is a project-specific choice by the permittee.

Stormwater Lead

- A stormwater lead must be knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess (1) conditions at the construction site that could impact stormwater quality and (2) the effectiveness of any erosion and sediment control measures.
- The stormwater lead shall have the authority to prepare the SWPPP, stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the CGP, and modify the SWPPP.
- The stormwater lead shall be responsible for inspections and recordkeeping.
- The stormwater lead shall have the authority to supervise or initiate corrective actions identified by inspections, monitoring, or observation to fix control measures and minimize the discharge of pollutants.

SWPPP Preparer

A SWPPP preparer must be knowledgeable in the principles and practice of erosion and sediment controls and possess the skills to assess conditions at the construction site that could impact stormwater quality and the effectiveness of any erosion and sediment control. The SWPPP preparer must be familiar with SWPPP requirements as a means to implement the CGP.

Stormwater Inspector

A stormwater inspector must be knowledgeable in the principles and practice of erosion and sediment controls and possess the skills to assess conditions at the construction site that could impact stormwater quality and the effectiveness of any erosion and sediment control measures. The stormwater inspector must be familiar with inspection requirements as a means to ensure compliance with the CGP. The stormwater inspector must be familiar with the project specific inspection forms and how to fill them out. He or she is responsible for conducting and signing inspection reports and for reporting the need for follow-up corrective action to the stormwater lead or site supervisor.

Monitoring Person

A monitoring person must be knowledgeable in the principles and practices of water quality monitoring and be familiar with CGP monitoring requirements, the monitoring plan for the site, and how to conduct water quality sampling, testing, and reporting.

Active Treatment System Operator

An active treatment system operator must be knowledgeable in the principles and practices of treatment systems that employ chemical coagulation, chemical flocculation, or electro coagulation to aid in the treatment of stormwater runoff. An active treatment system operator must be familiar with applicable sections of the CGP.

3.8.2 Required Training

The recommended experience and required training for specific roles for projects that meet the requirements of Type 2 and 3 SWPPPs are shown in Table 3.8-1. Contact Watershed Management Services (WMS) for information about obtaining this certification.

Table 3.8-1: Recommended Experience or Required Training

Stormwater Role	Type 2 SWPPP	Type 3 SWPPP		
		1 to <5 acres	5 acres to <20 acres	>20 acres
Stormwater Lead	Recommend AK-CESCL training but not required	Recommend AK-CESCL training but not required	Be AK-CESCL trained.	Be AK-CESCL trained.
SWPPP Preparer	Be familiar with permit.	Be familiar with permit.	Recommend taking a course in SWPPP preparation.	Visited the site prior to writing the SWPPP or soon after project start and revised the SWPPP based on site conditions. Taken a course in SWPPP preparation.
Stormwater Inspector	Be familiar with permit and SWPPP	Be AK-CESCL trained.	Be AK-CESCL trained.	Be AK-CESCL trained.
Monitoring	Not Required.	Not Required.	Not Required.	Be AK-CESCL trained.
Active Treatment System Operator	Be AKCECSL trained and have general experience and knowledge of stormwater control measures. Operational experience with the specific equipment used on-site.			

AK-CESCL (Alaska Certified Erosion and Sediment Control Lead) training is a two-day course that includes information regarding the erosion and sedimentation processes, the regulatory requirements, SWPPPs, Best Management Practices, inspection, record-keeping, and cold climate challenges. To become certified, an individual must attend the entire course and pass a written exam. The certification is valid for three years.

3.9 Termination of Coverage

3.9.1 Partial Termination of Coverage (All Types)

Once a definable area has been stabilized during the course of construction, the operator may elect to mark the area on the SWPPP so that no further SWPPP or inspection requirements apply to that portion of the site.

3.9.2 Municipality of Anchorage Closeout (All Types)

Operators of private construction projects requiring a Type 1, 2 or 3 SWPPP shall schedule a final stormwater inspection with the WMS prior to issuance of a final Certificate of Occupancy. Copies of record drawings will be available for the MOA inspector during the final inspection. The inspection will include an assessment of the final stabilization as defined above. Upon successful completion of any punch list items, the MOA Building Safety Permit, Grade and Fill Permit, or other applicable permit will be closed.

3.9.3 Notice of Termination Requirements (Type 3 SWPPP Only)

A permittee must submit an NOT to ADEC within thirty (30) calendar days after one or more of the following conditions have been met:

- Final stabilization has been achieved on all portions of the site for which a permittee is responsible and all ground disturbing construction activity or use of support activities has been completed;
- A new permittee has assumed control, over all areas of the site that have not been finally stabilized;
- Coverage under an individual permit or alternative APDES general permit has been obtained;
- For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner; or
- The planned construction activity identified on the original NOI was never initiated (e.g., no grading or earthwork was ever started) and plans for the construction have been permanently abandoned or indefinitely postponed.

Operators are responsible to submit a complete and accurate NOT to terminate coverage under the CGP. Submission of the NOT using ADEC's electronic system is strongly encouraged. However, using the paper form provided at is also permissible. Links to the electronic system and NOT paper form are shown below. Authorization to discharge terminates at midnight of the day the NOT is signed. Submit a copy of the NOT to the MOA at the address in Section 2.2 at the same time that the NOT is submitted to the ADEC.
<http://dec.alaska.gov/water/wnpspc/stormwater/stormwater.htm>

<http://dec.alaska.gov/water/wnpspc/pdfs/CGPNOT.pdf>

“Final Stabilization” means:

- All soil disturbing activities at the site have been completed and either of the two following criteria shall be met:

- a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or
 - equivalent non vegetative permanent stabilization measures have been employed (such as the use of riprap, gabions, railroad ballast or subballast, drain rock or filter rock (such as material specified in Section 20.18 of Municipality of Anchorage Standard Specifications), geotextiles, or fill material with low erodibility as determined by an engineer familiar with the site and as documented in the SWPPP.
- When background native vegetation will cover less than 100 percent of the ground (e.g., arid areas, beaches), the 70 percent coverage criteria is adjusted as follows: if the native vegetation covers 50 percent of the ground, then 70 percent of 50 percent ($0.70 \times 0.50 = 0.35$) would require 35 percent total cover for final stabilization. On a beach with no natural vegetation, no stabilization is required.
 - In arid and semi-arid areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:
 - Temporary erosion control measures (e.g., degradable rolled erosion control product) are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years without active maintenance by the permittee;
 - The temporary erosion control measures are selected, designed, and installed to achieve 70 percent vegetative coverage within three years.
 - For individual lots in residential construction, final stabilization means that either:
 - The homebuilder has completed final stabilization as specified above, or
 - The homebuilder has established 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.
 - For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land, staging areas for highway construction, etc.), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to “water of the United States,” and areas which are not being returned to their preconstruction agricultural use must meet the final stabilization criteria described above.

4.0 DEWATERING REQUIREMENTS

During construction, groundwater or precipitation may collect in excavated and low areas and hinder construction activities. Contractors typically use pumps to collect and dispose of water either on-site through infiltration or by routing the discharge to the storm sewer for ultimate discharge.

It is prohibited to discharge water to the municipal storm drain system except as allowed by the AMC Title 21 or as permitted through an approved dewatering plan covering the specific activity. Dewatering activities cannot be conducted within the stream setback zone or in a manner that will affect other properties without approval. In addition, other approvals may be required, as described below.

4.1 Dewatering Plan

Projects must address a potential need to remove water from the work site. At a minimum, information on the depth of the construction and depth to groundwater is required.

A dewatering plan is required if groundwater or pumped discharges will be involved; i.e., where the excavation will expose or appears likely to expose groundwater. Re-submittal to the MOA shall occur on all projects that encounter unexpected dewatering requirements not addressed in the original submittal.

If dewatering is anticipated, a de-watering plan must be submitted to the MOA. The plan must:

- Indicate the point of water intake, such as sump, pond, well points, pumps, etc. (Well points yield cleaner water and provide better control of groundwater in the excavation.)
- Indicate the point of discharge, such as manhole, cleanout, catch basin, open ditch, etc.
- If discharge is to a manhole, indicate the downstream pipe sizes and conditions of the storm drainage system to which the contractor wishes to discharge and calculations that show the pipe has capacity to receive the planned discharge, or the rate of discharge to be regulated to the receiving storm system capacity
- If discharge is to an open ditch, provide an analysis that the discharge will not adversely affect the rights of way or abutting private property
- Indicate pump rate (gallons per minute)
- Indicated anticipated hours per day of operation
- Indicate duration of discharge; days, weeks, months, etc.
- Estimate total gallons proposed to be discharged, if known or able to assess
- Proposed silt containment methods, such as bags, reservoirs, tanks, etc.
- Proposed containment or treatment methods

4.1.1 Dewatering Effluent Control

The dewatering plan must describe how the discharge will:

- not cause thermal or physical erosion
- not cause flooding that results in property damage
- not cause a destruction of vegetation

In addition, dewatering effluent that is discharged to the storm sewer system or to a surface water body must meet state water quality standards. Plans that involve discharges to the municipal storm sewer system or to surface water bodies must include a description of how the discharge will:

- not cause a change in established flow patterns of receiving waters
- not result in the exclusion of fish from aquatic habitat
- not cause re-suspension of sediments in receiving waters

The plan must describe how discharges to surface water or the storm sewer system will be monitored to meet the criteria presented in Table 4.4-1. Monitoring results must be maintained on site. Turbidity values of effluent and receiving water shall be determined. One sample shall be taken at a point representative of discharge prior to leaving the site. A second sample shall be taken of the receiving water upstream of the discharge point or in the case of receiving waters with low or no flow, prior to discharge at a location representative of the receiving water. Both samples shall be taken during the same day within a reasonable timeframe (i.e., thirty minutes).

Table 4.1-1: Maximum Concentrations in Dewatering Effluent

Indicator	Maximum Concentration or value
Turbidity	5 nephelometric turbidity units above natural conditions
Total aqueous hydrocarbons	15 microgram/liter
Total aromatic hydrocarbons	10 micrograms/liter
Settleable solids	0.2 milliliters per liter
pH	Between 6.5 and 8.5 pH units
Additives, such as antifreeze or solvents	None in detectable amounts
Toxic substances	None in detectable amounts
Sheen due to grease and oils	None in detectable amounts
Foam in other than trace amounts	None
Garbage, debris, or other contaminants	None in detectable amounts

The dewatering plan must also describe how the presence of sheens will be handled and what measures will be taken if exceedances of the maximum values in Table 4.1-1 occur. More information on BMPs for dewatering controls is included in Appendix H.

4.2 Required Permits and Approvals

4.2.1 AWWU and MOA Construction Dewatering Approvals

- A one-time permission to discharge to the sanitary sewer is handled through Anchorage Water and Wastewater Utility (AWWU) and is done on a case-by-case basis. A copy of the AWWU Application for Discharge Permit can be obtained from AWWU or online at:

https://www.awwu.biz/website/Field_Service/Discharge/ConstructionDischargePermitApp.pdf

- For dewatering discharges and subdrains that do not discharge to a sanitary sewer, a Municipal Dewatering Notification Form, included in Appendix G, is required, since WMS needs their own record of the information for MS4 permit compliance. For MOA approval, complete the form, provide the required documentation, and submit to the MOA for review with the dewatering plan.
- Discharges to the storm drain system within the Anchorage Roads and Drainage Service Area require a Right of Way permit. The application for this permit is available from the MOA Development Services Department, Right of Way Division at the following address or by contacting Right of Way Division at (907) 343-8240. Right of Way offices are located at 4700 Elmore Road. The permit is also available online at the link below.

www.muni.org/Departments/OCPD/development/ROW/Pages/PermitsApplications.aspx#Permit

Applications for right-of-way permits must be accompanied by three (3) sets of plans and sent to the Right-of-Way Permit Section for approval before any work can be started. The plans must clearly show the scope of work, and that all work will be performed according to municipal standards and specifications.

Copies of these authorizations must be posted at the site and included with the Dewatering Plan.

4.2.2 ADEC General Permit

The ADEC requirements for construction dewatering are contained in the Wastewater Disposal General Permit for Excavation Dewatering Permit and the CGP. Information on the dewatering permit including applicable forms can be found on the ADEC website, listed below.

<http://dec.alaska.gov/water/wnpspc/stormwater/edhsgp.html>

4.2.3 Alaska Department of Natural Resources Temporary Water Use Permit

A temporary water use permit may be required by the Alaska Department of Natural Resources (DNR) for dewatering activities. DNR should be contacted at (907) 269-8600 to determine if the permit is required for the project. More information is available online at:

<http://dnr.alaska.gov/mlw/water/wrfact.cfm>

4.3 Allowable Non-Stormwater Discharges under the Construction General Permit

For projects that qualify for the CGP (disturb one or more acres), the CGP allows certain non-stormwater discharges to be co-mingled with stormwater at construction sites. While these discharges are not precipitation-based, they still must meet water quality standards if they are to be discharged into the storm drain system. Uncontaminated groundwater or spring water, uncontaminated foundation or footing drainage, and uncontaminated excavation dewatering that are combined with stormwater discharges associated with construction activity at the site are included in the list. The EPA encourages that non-stormwater discharges be eliminated or reduced to the extent feasible. The permittees must identify and ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge.

5.0 OIL SPILL REPORTING

All entities within MOA jurisdiction must comply with all applicable oil pollution prevention regulations, including the production and implementation of SPCC plans and spill reporting. In the event of a spill, some or all of the following entities may require notification: the MOA, the National Response Center, and ADEC. Details for each type of reporting requirement are provided below.

5.1 MOA Oil Spill Reporting Requirements

Within the MOA, a spill that enters the MS4 system (generally any storm drain or a drainageway that connects to a storm drain or creek) must be reported to the MOA. During normal business hours, contact street maintenance dispatch at (907) 343-8277 or the MOA fire department dispatch at (907) 267-4950.

5.2 Federal Oil Spill Reporting Requirements

EPA spill reporting requirements for navigable waters or adjoining shorelines require persons in charge of vessels or facilities that spill oil in quantities that may be harmful to public health or welfare, or to the environment, to report the spill to the Federal government as outlined below. More information is also available from EPA's website at the link below. If the link does not work, locate the EPA spill reporting requirements webpage via an online search.

<http://www2.epa.gov/emergency-response/reporting-requirements-oil-spills-and-hazardous-substance-releases>

EPA has determined that discharges of oil in quantities that may be harmful include those that:

- Violate applicable water quality standards;
- Cause a film or sheen upon, or discoloration of, the surface of the water or adjoining shorelines; or
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The requirement for reporting oil spills stems from EPA's Discharge of Oil regulation, which is also known as the "sheen rule." Under this regulation, reporting oil spills to the Federal government does not depend on the specific amount of oil spilled, but instead relies on the presence of a visible sheen created by the spilled oil.

Reporting a hazardous substance release or oil spill takes only a few minutes. To report a release or spill, contact the Federal government's centralized reporting center, the National Response Center (NRC), at 1-800-424-8802. The NRC is staffed 24 hours a day by United States Coast Guard (USCG) personnel who will ask you to provide as much information about the incident as possible. If possible, be ready to report the following:

- Your name, location, organization, and telephone number;
- The name and address of the party responsible for the incident;
- Date and time of the incident;

- Location of the incident;
- Source and cause of the release or spill;
- Types of material(s) released or spilled;
- Quantity of materials released or spilled;
- Danger or threat posed by the release or spill;
- Number and types of injuries (if any);
- Weather conditions at the incident location; and
- Any other information that may help emergency personnel respond to the incident.

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office or the USCG Marine Safety Office in the area where the incident occurred. In general, EPA should be contacted if the incident involves a release to inland areas or inland waters, and the USCG should be contacted for releases to coastal waters, ports, and harbors. The EPA or USCG will relay release and spill reports to the NRC promptly.

5.3 State Oil Spill Reporting Requirements

State spill reporting regulations require that when a spill occurs during normal business hours, the observer must call the Central (Anchorage) ADEC Area Response Team Office at (907) 269-3063, or fax a completed spill report form to the office at (907) 269-7648. Outside normal business hours, call: 1-800-478-9300. Detailed requirements including applicable forms are available at ADEC's website, and requirements are summarized below. If the link below does not work, locate the ADEC spill reporting requirements webpage via an online search.

<https://dec.alaska.gov/spar/spillreport.htm>

5.3.1 Hazardous Substance Discharges

Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

5.3.2 Oil Discharges

- To water: Any release of oil to water must be reported as soon as the person has knowledge of the discharge.
- To land: Any release of oil in excess of 55 gallons must be reported as soon as the person has knowledge of the discharge. Any release of oil in excess of 10 gallons but less than 55 gallons must be reported within 48 hours after the person has knowledge of the discharge. A person in charge of a facility or operation shall maintain, and provide to the ADEC on a monthly basis, a written record of any discharges of oil from 1 to 10 gallons.
- To impermeable secondary containment areas: Any release of oil in excess of 55 gallons must be reported within 48 hours after the person has knowledge of the discharge.

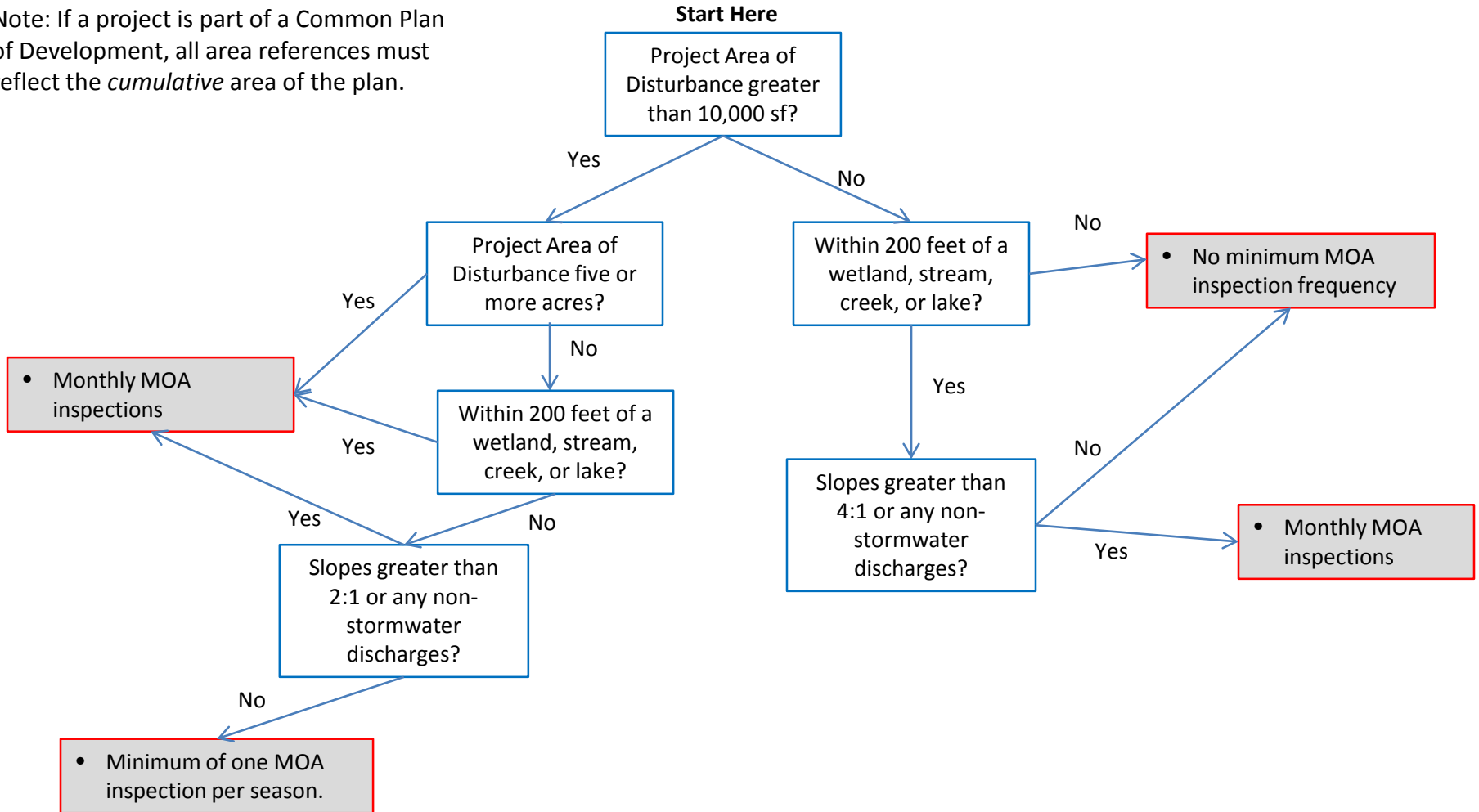
Appendix A: Stormwater Threat Assessment Form

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Stormwater Threat Assessment Form

Please circle your responses.

Note: If a project is part of a Common Plan of Development, all area references must reflect the *cumulative* area of the plan.



I certify that the above information is true and correct to the best of my knowledge.

Signature

Printed Name and Title

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Appendix B: Type 1 SWPPP

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MUNICIPALITY OF ANCHORAGE
Type 1 Storm Water Pollution Prevention Plan

Project Name: _____ MOA Permit Number _____

Single Family/Duplex or Commercial? _____ Area of Disturbance (sq. ft) _____ Excavation Depth (ft): _____

Subdivision: _____ Lot: _____ Block: _____ Tract: _____ Parcel: _____

Street Address: _____

Contact Name: _____ Phone Number: _____

The Minimum Requirements that may apply to any proposed new development or redevelopment are identified here and, if applicable, satisfied through the submission of this completed form.

Applicability: A Type 1 SWPPP must be submitted if your project is within the MOA and if it:

- Disturbs less than 10,000 square feet of land AND
- Is not part of a larger common plan of development. "Common Plan of Development" is a contiguous construction project where multiple separate and distinct construction activities may be taking place at different times on different schedules but under one plan. Included in this definition are most subdivisions and industrial parks

In particular, the operators of these projects must:

- Complete and submit this form to the MOA.
 - ✓ Fill in appropriate boxes on pages 2-4
 - ✓ Complete the site plan sketch on page 5.
 - ✓ Complete the Owner's statement on page 6.
- Complete and submit a Stormwater Runoff Threat Assessment Form (Appendix A).
- Conduct work in a "good housekeeping" manner.
- Implement appropriate BMPs for control of stormwater runoff during construction, including:
 - ✓ Isolate construction materials from rainfall and snowfall events
 - ✓ Prevent the transport of sediment beyond site boundaries
 - ✓ Stabilize soil on non-building site areas
- Perform inspections and properly maintain erosion and sediment controls
- Achieve final site stabilization

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Type 1 Storm Water Pollution Prevention Plan

Check appropriate blanks below and complete the site diagram with necessary information.

Site Characteristics

Complete	Not Applicable	
_____	_____	North arrow and site boundary. Indicate and name adjacent streets or roadways.
_____	_____	Location of existing drainage ways, streams, rivers, lakes, wetlands, or wells near the site.
_____	_____	Location of existing and planned storm sewer inlets and culvert crossings within 100 feet of the site.
_____	_____	Location of existing and proposed buildings and paved areas.
_____	_____	Areas of land disturbance, which includes areas of soil disturbance for any purpose, including footings, foundations, parking, driveways, staging, temporary access, on-site wastewater systems, and on- and off-site utilities
_____	_____	Limits and approximate dimensions of the proposed disturbed area on the site.
_____	_____	Approximate gradient and direction of slopes before grading operations
_____	_____	Approximate gradient and direction of planned slopes after grading operations.
_____	_____	Overland runoff (sheet flow) coming onto the site from adjacent areas.

Erosion Control Practices

Complete	Not Applicable	
_____	_____	Location of temporary soil storage piles. Note: Soil storage piles should be placed behind a silt fence, 25-foot (minimum) wide vegetative strip, or be covered with a tarp and located more than 25 feet from any down slope road or drainage way.
_____	_____	Location of temporary gravel access drive(s). Note: Gravel drives shall have 2 to 3 inch aggregate stone laid at least 10 feet wide and 6 inches thick. Drives shall extend from the roadway 50 feet or to the building (whichever is less).
_____	_____	Location of sediment controls (filter fabric fence, rock sediment trap, 25-foot wide vegetative buffer strip or other planned practices) that prevent eroded soil from leaving the site. Note: Sediment controls should be installed along the downslope sides of the disturbed areas. Sediment Controls will be installed around soil storage piles,

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Type 1 Storm Water Pollution Prevention Plan

around inlets, at outlets of drainageways, and along adjacent drainageways which receive runoff from the site.

_____ Location of sediment barriers around storm sewer inlets.

_____ Location of diversions.

Note: Concentrated flow (drainageways, ditches, channels) shall be diverted (redirected) around disturbed areas. Overland runoff (sheet flow) from adjacent areas greater than 10,000 sq. ft. shall also be diverted around disturbed areas in a manner that will not adversely impact adjacent landowners. 2) Diversions will be stabilized with seeding and mulching within 24 hours of diversion completion.

_____ Location of practices that will control erosion in areas of concentrated flow.

_____ Location of practices that will be applied to control erosion on steep slopes (greater than 12% grade)

Note: Drainage ways will be stabilized with seeding, mulching, erosion control mats, in-channel fabric, or rock riprap. When used, a given in-channel barrier should not receive drainage from more than two acres of unpaved area, or one acre of paved area. In-channel practices should not be installed in perennial stream. Stabilization and other appropriate measures should be completed within 24 hours of drainageway completion. Sediment controls will be installed at the outlet ends of drainageways.

Management Strategies

Completed	Not Applicable
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_____ Temporary stabilization of disturbed areas.

Note: Disturbed areas and soil piles left inactive for more than 14 days must be stabilized by seeding (between May 1 and September 1) or by other cover, such as a tarp or heavy mulching.

_____ Permanent stabilization of site by re-vegetation, lawn establishment, or other means as soon as possible.

Indicate re-vegetation method: Seed ___ Sod ___ Other _____

Expected date of permanent re-vegetation _____

Revegetation the responsibility of: Builder ___ Owner/Buyer _____

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Type 1 Storm Water Pollution Prevention Plan

Planned temporary stabilization if site is not seeded by September 1 or sodded by September 15?

_____ Use of downspout to direct runoff away from structures and onto sod or pavement until vegetation is stable. After grass is well established, downspouts shall be permanently directed to grass areas.

_____ Trapping sediment during site dewatering operations.
Location: _____

Note: Sediment laden discharge should be temporarily ponded behind a sediment barrier until most of the sediment settles out. If dewatering is anticipated, a dewatering plan must be submitted with this checklist.

_____ Proper disposal of building material waste so that pollutants and debris do not are not carried off-site by wind or water.

Inspection Requirements

Site operator must inspect disturbed areas, areas used for storage of materials that are exposed to precipitation, physical controls, and vehicle exits at a minimum every 14 days from March until freeze-up. Inspections must also be conducted throughout the year within 24 hours after events that produce runoff or during runoff events that last more than 24 hours.

Maintenance Requirements

If inspections reveal erosion and sediment control practices that are not effective, or appear likely to be ineffective for anticipated conditions (due to anticipated site activities and weather), the practices must be adjusted (including repair, modification, replacement, sediment removal, or additional practices) as soon as practicable, but no later than 7 calendar days following the inspection.

Final Stabilization Requirements

At the completion of land disturbing activities, all disturbed and exposed soil shall be stabilized. Areas that are uphill of installed ESC practices shall be stabilized prior to removal of those controls.

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MUNICIPALITY OF ANCHORAGE

Type 1 Storm Water Pollution Prevention Plan

Instructions: Complete this diagram. Give consideration to potential erosion that may occur before, during, and after grading. Water runoff patterns can change significantly as a site is reshaped. Use additional sheets of paper if needed. Site plan should show stabilized construction exits, silt fencing, sediment trap (if necessary), areas to be stabilized, and method of stabilization.

	Erosion Control Plan Legend	
		Property Line
		Area of Land Disturbance*
		Temporary Diversion
		Existing Drainage
		Finished Drainage
		Limits of Grading
		Silt Fence
		Gravel Exit
		Vegetation Specification
		Tree Preservation
		Stockpiled Soil
	Include North Arrow	

* Land disturbance includes areas of soil disturbance for any purpose, including foundations, footings, parking, driveways, staging, temporary access, on-site wastewater systems, and on- and off-site utilities.

Project Location:

(Address) (Street) (Lot) _____

Builder: _____ Owner: _____

Worksheet completed by: _____

Installation and maintenance of erosion control practices responsibility of:

Name: _____ Phone: _____

Permanent seeding/sodding responsibility of:

Name: _____ Phone: _____

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MUNICIPALITY OF ANCHORAGE

Type 1 Storm Water Pollution Prevention Plan

OWNER'S STATEMENT

I have read the above checklist, completed this form, completed and attached the *Stormwater Runoff Threat Assessment Form*, and have enclosed the necessary design information concerning the above referenced proposed project demonstrating it is a Type 1 SWPPP Project. By my signature I certify the enclosed information, that I will install or perform necessary BMPs and maintain them throughout the project, and that the project is (check one):

privately owned and that I am the owner. privately owned and that I am the developer.

I further certify that the project is or is not part of a larger common plan of development. If the project is part of a common plan of development that collectively disturbs 1 or more acres, submit a copy of the NOI.

Signature (please sign in ink): _____ Date: _____

Name and Official Title (print or type):

Company or Agency (if applicable):

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Appendix C:

Owner's Statement for Type 2 and 3 SWPPPs

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MUNICIPALITY OF ANCHORAGE
Owner's Statement for Type 2 and 3 SWPPPs

This statement is required for Type 2 and 3 SWPPP submittals. See Submittal Requirement Table for additional information.

Project Name: _____ Permit Number: _____

Area of Disturbance (acres/sf): _____

Project Type: ___ Single Family ___ Duplex ___ Commercial ___ Other

Subdivision: _____ Lot: _____ Block: _____ Tract: _____ Parcel: _____ Street

Address: _____ Contact Name

Phone Number: _____

I have completed the submittal requirements outlined in the Submittal Requirements Table (Table 2.2-1) and have enclosed the necessary design information for the above-referenced project for MOA review. I understand that a review does not necessarily guarantee that an approval to construct will be issued by this Department. By my signature I certify that I will install or perform necessary BMPs, maintain them throughout the project, keep a copy of my approved SWPPP on the construction site. I certify that this project is (check one):

___ privately owned and that I am the owner or duly authorized representative responsible for the overall management of the project.

___ owned by a sole proprietorship and that I am the proprietor or duly authorized representative responsible for the overall management of the project.

___ owned by a partnership of which I am a general partner or duly authorized representative responsible for the overall management of the project.

___ owned by a corporation of which I am a principal executive officer of at least the level of vice-president, or a duly authorized representative responsible for the overall management of the project.

___ owned by a municipal, state, or federal or other public agency, of which I am a principal executive officer, ranking elected official, or other duly authorized employee

If a Type 2 SWPPP is included in the submittal, I further certify that the project

___ is not part of a larger common plan of development OR

___ is part of a larger common plan of development which collectively disturbs _____ acres.

(If the project is part of a common plan of development that collectively disturbs 1 or more acres, submit a Type 3 SWPPP and a copy of the NOI.)

MUNICIPALITY OF ANCHORAGE
Owner's Statement for Type 2 and 3 SWPPPs

Municipal inspections and inspection fees will start with permit issuance. **It is your responsibility to notify Watershed Management Services if the project start will be later than the permit issuance date.**

Signature (please sign in ink) _____ Date _____

Name and Official Title (print or type) _____

Company or Agency (if applicable) _____

Appendix D: SWPPP Completeness Checklist

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**Type 2 and 3 SWPPP Completedness Checkss
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
Project (2.2.3)			
	Have you included project name, site location/address, city, state, zip code, and phone number (if appropriate)?		
Operator(s) (2.2.3)			
	Are there multiple operators on this permit?		
	If YES, have you included company/organization name, contact person, address, (including city, state, and zip code), and telephone/fax/email contact information?		
	If NO, have you included the above information for the single operator?		
SWPPP Contact(s) (2.2.3)			
	Have you identified the contact person for SWPPP questions or concerns, including: company/organization name, contact person, address, (including city, state, and zip code), telephone/fax/email contact information?		
	Have you identified the date the SWPPP was prepared (MM/DD/YYYY)?		
	Have you identified the (estimated) start and completion of construction (MM/DD/YYYY)?		
	APDES Permit Authorization Number?	Not Req	
	Have revisions to the SWPPP been documented on the Record of SWPPP Amendments?		
	Has the Operator Plan Authorization/Certification/Delegation form been completely filled out, dated, and signed by a Responsible Corporate Officer?	Not Req	
Section 1 - General information			
Permittee (5.3.1)			
	Have you identified all Operator(s)/Contractor(s) for the project, including address, contact information, and area of control?	Not Req	
	Have you identified all Subcontractor(s) for the project, including address, contact information, and area of control/specialty/responsibility?	Not Req	

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
Storm Water Contacts (5.3.2)			
	Have you identified the qualified person(s) for the following required positions?		
	Storm Water Lead		
	Person(s) preparing SWPPP	Not Req	
	Person(s) updating SWPPP	Not Req	
	Person(s) conducting inspections	Not Req	
	Person(s) conducting monitoring (if applicable)	Not Req	
	Person(s) operating an active treatment system (if applicable)		
	(If all positions are carried out by a single individual, check here)		
	Are the individuals named in this section Qualified Persons as described in ACGP Appendix C?		
	Are their qualifications documented in Appendix E of this SWPPP?		
Project Information (5.3.3)			
	Have you included the following information?		
	Project Site/Name	Not Req	
	Street/Location, City, Borough, State, Zip	Not Req	
	Latitude and longitude (in one of the specified formats) and method for determining	Not Req	
	Site-Specific Conditions:	Not Req	
	Precipitation		
	Soil types		
	Slopes		
	Topography		
	Drainage patterns		
	Growing season		
	Existing vegetation		
	Historic site contamination		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
Nature of Construction Activity (5.3.4)			
	Have you described/identified:		
	The general scope of work for the project, including major phases and approximate start/complete dates?		
	Function of the project		
	Sequence and timing of soil-disturbing activities		
	Size of project area AND total area expected to be disturbed		
	Runoff coefficient and impervious area estimates	Not Req	
	Potential sources of sediment from construction project		
	Other potential pollutants and their sources		
Site Maps (5.3.5)			
	Have you included a general location map?		
	Have you included site maps containing the following information?		
	Property boundaries		
	Locations where earth-disturbing activities will occur, noting phasing		
	Locations of areas that will not be disturbed and natural features to be preserved		
	Location of all storm water conveyances including ditches, pipes, and swales		
	Locations of storm water inlets and outfalls, with a unique identification code for each outfall		
	Locations where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or a Municipal Separate Storm Sewer System (MS4).		
	Direction of storm water flow and approximate slopes anticipated after grading activities		
	Locations where control measures will be or have been installed		
	Locations where exposed soils will be or have been stabilized		
	Locations where post-construction storm water controls will be or have been installed		
	Locations of support activities		
	Locations where authorized non-storm water will be used		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
	Locations and sources of run-on to the site from adjacent property that may contain quantities of pollutants which could be exposed to precipitation.		
	Locations of all waters of the U.S. on-site (including significant wetland areas $\geq 10,000$ ft ²) and those within 2,500 feet of the site boundary	Not Req	
	Location of existing public water system (PWS) drinking water protection areas (DWPA) for PWS sources (e.g., springs, wells, or surface water intakes) that intersect the boundary of the project area. (The DWPA's can be found using the interactive web map application, "Alaska DEC Drinking Water Protection Areas" located at http://dec.alaska.gov/das/GIS/apps.htm .)		
	Sampling point(s), if applicable		
	Areas where final stabilization has been accomplished		
	Staging and material storage areas (construction materials, hazardous materials, fuels, etc.)		
	Dumpsters		
	Portable sanitary facilities		
	Concrete, paint, or stucco washout areas		
	Stabilized construction exits		
Discharges (1.4.2, 1.4.3)			
	Have you identified other industrial storm water discharge locations and allowable non-storm water discharges?		
Section 2: Compliance With Standards, Limits, And Other Applicable Requirements			
Receiving Waters (1.4.1.2)			
	Have you listed and described ANY water bodies that could potentially receive stormwater from the construction site, including storm sewer and/or drainage systems?		
	Are they indicated on the site map?		
Total Maximum Daily Load (TMDL) (3.2, 5.6)			
	Have you included documentation supporting a determination of permit eligibility for waters with a TMDL?	Not Req	

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
	Have you determined if there is a TMDL for turbidity or sediment?	Not Req	
	If YES, have you listed measures taken to comply with requirements?	Not Req	
	Are contacts with state or federal TMDL authorities summarized in this section and documented in Appendix D?	Not Req	
Endangered Species (3.3, 5.7)			
	Have you determined whether there are endangered/threatened species or critical habitat on or near the project area and described how that determination was made?	Not Req	
	Have you determined whether species or critical habitats will be affected by storm water discharge, and listed them?	Not Req	
	If YES, have you listed measures taken for compliance with protection?	Not Req	
Applicable Federal, State, Tribal, or Local Requirements (4.15)			
	Have you determined whether there are there other applicable federal, state, tribal, or local requirements to be implemented at the site?	Not Req	
Section 3: Control Measures			
Best Management Practices (BMPs) (4.2, 4.3)			
	Have you described appropriate control measures (BMPs) for each major activity that will take place at the construction site, including sequence; maintenance and inspection procedures; cleaning, repair, or replacement protocols, thresholds and schedules; and operator responsible?		
	Does the site map indicate location of BMPs?		
	Have you included design specifications and details for structural BMPs in Appendix B?		
	Have you described areas that will be disturbed for each phase of construction and methods intended to protect areas not to be disturbed?		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
	Have you identified natural features of the site and how those features will be protected?		
	Have you described how topsoil will be preserved?		
	Have you described how you will maintain natural buffer areas to protect stream crossings or waters of the U.S. within or immediately adjacent to construction site, if applicable?		
	Have you identified and described the BMPs you will use to control storm water discharges and flow rates, including BMP, installation schedule, maintenance and inspection, and responsible staff?		
	Have you identified steep slopes present at the site and what measures you will use to control them, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable?		
	Have you identified storm drain inlets present at the site and what measures you will use to control them, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable?		
	Have you identified water bodies present at the site and what measures you will use to control them, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable?		
	Have you identified down-slope sediment controls needed at the site, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable?		
	Have you determined where vehicles will enter and exit the site, procedures to remove accumulated sediment from vehicles before exiting the site (vehicle tracking), and stabilization, dust-generation minimization, and off-site vehicle tracking control practices?		
	Have you identified soil-stockpile locations and measures to control sediment loss from them, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable? Have you indicated stockpile locations on the site map?		
	Have you identified whether a sediment basin is required, and described the measures you will use to control them, including BMP installation schedule, maintenance and inspection, and responsible staff, if applicable?		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
	Have you appended the detailed design information in Appendix B, including calculated volume and approximate size?		
	Are sediment basins located on your site map?		
	Have you determined whether dewatering will be necessary?		
	If YES, have you described dewatering practices and ensure they comply with the construction general permit guidelines, including BMP installation schedule, maintenance and inspection, and responsible staff?		
	Is any dewatering planned within 1,500 feet of a DEC mapped contaminated site which would require authorization under the AKG002000 Excavation Dewatering general permit?		
	If YES, have you submitted an NOI for excavation dewatering authorization under the terms and conditions of the AKG002000 Excavation Dewatering general permit?		
	Have you determined what control measures you will use to minimize on-site erosion and sedimentation, and discharge of pollutants, including BMP installation schedule, maintenance and inspection, and responsible staff?		
	Have you described your final stabilization plan, including sequence of installation?		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
	Have you indicated whether treatment chemicals will be used to reduce erosion?		
	If YES, have you ensured you meet ACGP Section 4.6 and provided the required information, including chemicals to be used, procedures for use, training of staff, and application and physical control measures?		
	Have you included documentation of training, application procedures, and control measures in the appropriate appendix?		
	Have you determined whether an Active Treatment System (ATS) will be used, received approval from the ADEC, and described the ATS process?		
Good Housekeeping Measures (4.8)			
	Have you described all measures you will use to minimize pollutant discharge, including responsible staff, and design, installation, implementation, and maintenance plans, for the following activities:		
	Vehicle and equipment washing		
	Fueling and maintenance areas		
	Applicator/Container washout		
	Staging and material storage		
	Fertilizer or pesticide use and storage		
	Storage, handling, and disposal of construction waste		
Spill Notification (4.9)			
	Have you described your plan for notifying the appropriate authorities of any leak, spill, or release of hazardous substance per ACGP Section 4.8?		
Waste Materials (5.3.7)			
	Have you described what waste (hazardous, non-hazardous, and construction debris) and construction materials will be stored on-site, control measures, handling and disposal procedures?		

**Type 2 and 3 SWPPP Completedness Checkess
Taken from the 2016 ADEC SWPPP Checklist**

Identifying Information		Type 2 SWPPP	Type 3 SWPPP
Section 4: Inspection, Monitoring, and recordkeeping			
Inspections (5.4, 6.0)			
	Have you described:		
	Person responsible for inspections		
	Frequency of inspections		
	Justification for reduced frequency, if applicable		
	Documentation of repairs and maintenance		
	Winter shutdown, if applicable		
	Do you have a clear inspection form/checklist for inspections attached to the SWPPP?		
	Have you described corrective action plan and log, which should include action(s) taken, date, and person completing the work?		
Monitoring Plan (if applicable) (5.5, 7.0)			
	Do you need a monitoring plan?	Not Req	
	If YES, have you developed a monitoring plan, including schedules, checklist, and corrective action procedures?	Not Req	
Post-Authorization Records (5.8)			
	Have you included all the required documents in Appendix F?	Not Req	
	Have you included all employee training records in the appropriate appendix?		

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Appendix E:

Sample Construction Site Inspection Form

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Instructions

This sample inspection report has been developed as a helpful tool to aid you in completing your site inspections. This sample inspection report was created consistent with EPA's Developing Your Stormwater Pollution Prevention Plan. You can find both the guide and the sample inspection report (formatted in Microsoft Word) at www.epa.gov/npdes/swpppguide

This inspection report is provided in Microsoft Word format to allow you to easily customize it for your use and the conditions at your site. You should also customize this form to help you meet the requirements in your construction general permit related to inspections. **If your permitting authority provides you with an inspection report, please use that form.**

For more information on inspections, please see Developing Your Stormwater Pollution Plan Chapters 6 and 8.

Using the Inspection Report

This inspection report is designed to be customized according to the BMPs and conditions at your site. For ease of use, you should take a copy of your site plan and number all of the stormwater BMPs and areas of your site that will be inspected. A brief description of the BMP or area should then be listed in the site-specific section of the inspection report. For example, specific structural BMPs such as construction site entrances, sediment ponds, or specific areas with silt fence (e.g., silt fence along Main Street; silt fence along slope in NW corner, etc.) should be numbered and listed. You should also number specific non-structural BMPs or areas that will be inspected (such as trash areas, material storage areas, temporary sanitary waste areas, etc).

You can complete the items in the "General Information" section that will remain constant, such as the project name, NPDES tracking number, and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.

When conducting the inspection, walk the site by following your site map and numbered BMPs/areas for inspection. Also note whether the overall site issues have been addressed (customize this list according to the conditions at your site). Note any required corrective actions and the date and responsible person for the correction in the Corrective Action Log.

Stormwater Construction Site Inspection Report

General Information			
Project Name			
NPDES Tracking No.		Location	
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications	Insert qualifications or add reference to the SWPPP. (See Section 5 of the SWPPP Template)		
Describe present phase of construction			
Type of Inspection: <input type="checkbox"/> Regular <input type="checkbox"/> Pre-storm event <input type="checkbox"/> During storm event <input type="checkbox"/> Post-storm event			
Weather Information			
Has there been a storm event since the last inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			
Weather at time of this inspection? <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds <input type="checkbox"/> Other: Temperature:			
Have any discharges occurred since the last inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe:			
Are there any discharges at the time of inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe:			

Site-specific BMPs

- Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.
- Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
12		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
13		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
14		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
15		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
16		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
17		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
18		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
19		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
20		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Are discharge points and receiving waters free of any sediment deposits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are storm drain inlets properly protected?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Is the construction exit preventing sediment from being tracked into the street?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
12	(Other)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

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

Print name and title: _____

Signature: _____ **Date:** _____

Appendix F:

List of Approved and Scheduled TMDLs

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MUNICIPALITY OF ANCHORAGE
List of Approved and Scheduled TMDLs

Impaired Water Bodies

Waterbody	Impairment
Chester Creek, University Lake, Westchester Lagoon	Fecal Coliform Bacteria
Campbell Creek/Lake	Fecal Coliform Bacteria
Eagle River	Ammonia, Copper, Lead, Silver, Chlorine
Fish Creek, Anchorage	Fecal Coliform Bacteria
Furrow Creek	Fecal Coliform Bacteria
Hood/Spenard Lake	Dissolved Gas (Scheduled)
Jewel Lake	Fecal Coliform Bacteria
Little Campbell Creek	Fecal Coliform Bacteria
Little Rabbit Creek	Fecal Coliform Bacteria
Little Survival Creek	Fecal Coliform Bacteria
Ship Creek	Fecal Coliform Bacteria Petroleum Products (Scheduled)

The most current list is maintained by the Alaska Department of Environmental Conservation at

http://dec.alaska.gov/water/tmdl/tmdl_index.htm

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Appendix G: MOA Dewatering Discharge Form

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Construction Dewatering Request Form

Submit to the Municipality of Anchorage
 Project Management & Engineering Department
 Watershed Management Services
 4700 Elmore Road P.O. Box 196650
 Anchorage, Alaska 99519-6650
 907-343-8105

<i>Permit Number</i>			
<i>Project Name</i>			
<i>Location</i>			
<i>Project Description</i>			
<i>Contractor</i>			
<i>On-Site Contact Name</i>			
<i>Address</i>			
<i>City, State, Zip</i>			
<i>Phone</i>		<i>Site Phone</i>	
<i>E-mail</i>		<i>Office Fax</i>	
<i>Size of Area</i>			

<i>Volume in gallons per day (GPD)</i>			
<i>Pump rate in gallons per minute (GPM)</i>			
<i>Estimate of total volume to be discharged</i>			
<i>Start date of dewatering</i>	<i>End date of dewatering</i>		
<i>Water Intake (pond, sump, well point, etc.)</i>			
<i>Discharge point (manhole, ditch, etc.)</i>			
<i>If discharging to ditch, provide analysis that the discharge will not adversely affect the rights of way or abutting private property</i>			
<i>If discharging to piped storm sewer, provide calculations that show pipe capacity to handle rate of discharge</i>			
<i>Site Dewatering Plan available?</i>			
<i>Description of method used to control solids:</i>			
<i>Remarks and unusual conditions:</i>			
<i>Signature of Applicant:</i>			<i>Date:</i>
<i>Signature of Approval:</i>			<i>Date:</i>

Note: If discharging to a storm sewer system (pipe or ditch), a Municipal Right of Way permit is required. If discharging to the sanitary sewer, a permit from AWWU is required. **Post these permits at the site and include copies of them in the Site Dewatering Plan.**

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Appendix H:

Best Management Practices Toolbox

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BEST MANAGEMENT PRACTICES

Stormwater controls are often referred to as Best Management Practices (BMPs). BMPs are schedules of activities, regulatory prohibitions, physical structures, maintenance procedures, and management decisions that prevent or reduce the release of pollutants and other negative impacts to waters.

The goal for BMP selection and implementation is that stormwater discharges shall meet local, state, and Federal requirements, specifically: AMC 21 Drainage and Water Pollution Control, 18 AAC 70 Water Quality Standards, and the Clean Water Act 33 United States Code 1251 et. seq., as amended by the Water Quality Act of 1987, Public Law 100-4.

In most instances, one BMP will not provide enough treatment to meet water quality standards. Therefore, designs often incorporate multiple BMPs in series, called treatment trains.

Best Management Practice Toolbox Overview

A BMP is a tool, and it is critical that the most appropriate tool be selected to address a specific erosion and sediment control problem. Use of the wrong BMP for a particular application might suffice but, the task will not be done as effectively as it would be with the right BMP. A brief discussion about the selection, implementation, and maintenance of BMPs that are useful in Anchorage is presented in this Appendix. This Appendix is not intended to be comprehensive, and alternate individual solutions will be reviewed and considered by the MOA.

Best Management Practice Equivalency and Design Parameters

BMP design and implementation is a dynamic and creative process. To allow for creativity and innovations in BMP use, general design principles are given in this Appendix. Equivalency to these principles is generally also acceptable. The objective is clear; all discharges must meet water quality standards. How each construction site meets this objective is up to the design and construction team.

Site Considerations

The implementation of BMPs should be in accordance with approved SWPPPs. However, characteristics of the project site will change as the earth-moving and land-disturbance operations progress. As the site characteristics change, BMPs may need revision and replacement to accommodate different grades and slopes. In some instances, the SWPPP may need revisions to operate effectively. The contractor should be aware of this fact and provide immediate action to remedy the deficiencies.

Best Management Practices Types

The selection of a BMP must be based on the soil properties, topography, rainfall characteristics, construction schedule, and stormwater flow characteristics at a construction site. BMPs fall into two main categories - procedural and physical. Procedural BMPs are the planning, design, maintenance, and education measures that are applied on a project in order to protect the environment from erosion and sedimentation effects. Procedural controls rely on processes rather than devices to provide environmental protection. Both types of controls can be either temporary or permanent. Generally, this appendix includes temporary controls. Construction related permanent controls included in the appendix are erosion controls, flow controls, and energy dissipation controls. Other permanent controls are discussed in Anchorage Stormwater Manual Volume 1.

Construction Related Controls

The operator must select, install, and maintain BMPs for each major construction activity during the project. All control measures must be properly selected, installed, and maintained in accordance with any

relevant manufacturer specifications and good engineering practices. The operator must implement the control measures from commencement of construction activity until final stabilization is complete.

BMPs discussed in this appendix fall into four major classes: erosion prevention/control, temporary sediment control, flow control/energy dissipation, and construction activities. These four classes are discussed in more detail below. A summary of the BMPs in each class is provided in the table at the end of this section. Individual BMPs are discussed in detail in subsequent sections.

Erosion Prevention/Control

Erosion prevention is any means used to keep soil particles in place. Erosion prevention is the least expensive option of all BMPs and should be the first line of defense employed. Many erosion prevention efforts can occur without any physical modification of a site, and include planning, training, scheduling, sequencing, and land management practices. The easiest and most cost-effective erosion prevention measure is to minimize the area of disturbance and retain existing vegetation. However, if used as the exclusive BMP, erosion prevention would result in a no-build alternative, which is normally not feasible.

Erosion control is a practical alternative to the exclusive use of erosion prevention, and should be the primary BMP employed on construction sites. In its simplest form, erosion control consists of preventing soils in construction areas from being mobilized. Erosion control minimizes the forces from raindrops, concentrated runoff flows, and wind, each of which detach and transport soil particles. Erosion controls treat the soil as a valued resource that must be conserved in place. Most of the current literature on erosion control promotes the following key concepts:

- Minimize areas of disturbance – Undisturbed natural vegetation is the best inhibitor of erosion. As a rule, it takes five years for erosion rates of areas disturbed by construction and subsequently revegetated to return to pre-construction rates.
- Cover and stabilize disturbed areas as soon as possible. Any efforts to quickly cover areas of disturbance are rewarded with reduced soil erosion.
- Sequence and schedule construction to take advantage of weather patterns – Proper sequencing and scheduling of construction offers many benefits, such as reduced BMP costs, quicker re-establishment of vegetation, and protection of the environment.
- Divert runoff around erodible areas – Measures that keep flow from traversing disturbed areas reduce the need for additional sediment control efforts. Diversion ditches and benching are effective means of routing runoff away from erodible surfaces.
- Reduce runoff quantities and velocities – Keeping runoff velocities low offers significant savings in erosion and sediment control. The doubling of runoff velocity theoretically results a 64-fold increase in the size of a particle that can be transported. Lining drainage channels with materials such as rock, erosion control blankets, or vegetation reduces velocities and enables the channels to perform more similarly to natural stream channels than channels with smooth armoring.
- Prepare the drainage system to handle flows occurring during both construction and post-construction conditions – Construction of drainage systems and impervious surfaces alters the natural runoff regime, and results in higher peak flows and increased runoff volumes. These changes in the flow regime must be addressed at the discharge points downstream of the site to ensure that adverse effects do not occur. Measures to control peak flow may be necessary at points where erosion is possible.
- Inspect and maintain erosion control measures – Erosion control measures can become sources of pollutants and sediment if not properly maintained. In some cases, unmaintained BMPs can create bigger problems than if no controls were present.

Temporary Sediment Control

Sediment controls are used to keep sediment from leaving a construction site. Sediment control is any mechanism that removes sediment from water by filtration, gravity, chemical, or other means. Unlike erosion controls, sediment controls treat the soil as a waste product that must be continually removed and

disposed of properly. Sediment control is the least cost-effective means to meet BMP objectives, since removal of sediment from runoff is more costly than keeping soil in place. Sediment controls for the construction phase shall be designed to handle two-year, 24-hour duration storm without damage to the BMP itself and without any degradation to the water quality of the receiving water body. The two-year 24-hour storm event is defined in the ASM Volume 1.

Flow Control and Energy Dissipation

Flow control BMPs typically control the rate, frequency, and flow duration of stormwater surface runoff and include practices that divert flows away from disturbed areas. Flow control measures help mitigate the erosive forces and transport functions of runoff.

Construction Activities Controls

Materials management, maintenance, and operations practices are largely procedural practices for preventing pollution and maintaining existing stormwater control facilities. Some examples include:

- Street and parking lot sweeping to reduce the amount of sediment, debris, and other pollutants that can be transported to surface water and storm drains by rainfall and snowmelt runoff.
- Material containment practices that address spill prevention and handling, transporting, or storing potentially polluting bulk materials to prevent releases to surface water.

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EROSION PREVENTION/CONTROL

Scheduling to Minimize Soil Exposure

The short construction season in Anchorage does not always allow flexibility for mass earthwork on each project to be performed at the ideal time of year. Because nothing is more unpredictable than the weather, contingencies must be developed to cover variations in climatic conditions. However, certain weather trends do exist in Anchorage and must be addressed in the project schedule. Care must be taken to minimize weather impacts. Although it may be advantageous to an owner or contractor to work in early spring or late fall, the downside must be understood – BMPs will require more attention and maintenance during these periods. Scheduling is a temporary BMP.

Selection

Any project can benefit from a well-conceived schedule that takes into account seasonal ESC issues.

Implementation

Discussions with the owner or contractor can aid in understanding the construction process in Anchorage and how to take advantage of dry periods to reduce erosion and sediment concerns.

Phased Clearing and Grading

Phased clearing and grading can significantly reduce the amount of disturbed area on a construction site. By phasing the construction, the time that soils are left exposed and the total area that is exposed during the rainy season can be reduced. Phasing the clearing and grading operations is a temporary BMP.

Selection

- Any project can benefit from a schedule that phases the construction to account for ESC issues.
- Discussions with the owner or contractor can aid in understanding the critical construction timelines in Anchorage and how to phase the land clearing construction activities to coincide with periods of expected dry weather.

Implementation

- Show areas to be cleared and graded in phases clearly on the site plan.
- Clear and grade as necessary for immediate construction only.

Maintenance

- Apply erosion control practices to cleared areas.
- Comply with CGP temporary stabilization requirements if the cleared area will not be worked immediately.

Flagging and Fencing of Clearing Limits

Flagging and fencing of clearing limits is the most positive method to ensure that the area of disturbance is controlled. As construction progresses and excavation and stockpiles occur at the site, it is easy to inadvertently expand the area of disturbance into areas to be protected without the presence of visual cues or physical barriers. Delineation of clearing limits is a temporary BMP. Figure I-1 illustrates the flagging and fencing clearing limits BMP.

Selection

Flagging and fencing of clearing limits is applicable for all construction sites.

Implementation

- Designate areas of retained vegetation clearly on the plans. Required buffers should also be designated on the site design plan.
- Delineate the clearing limits with a continuous length of brightly colored tape. Support highly visible tape with vegetation or stakes, 3 to 6 feet high.
- Individual trees and shrubs that are to be preserved within the cleared area should be identified.
- If the area is to be flagged only, the flagging should be spaced no greater than 200 feet apart and closer in wooded or hilly areas.

Maintenance

- Immediately repair or replace damaged fencing or flagging necessary to ensure the area of disturbance does not enlarge should be repaired or replaced.
- Check that vandals have not moved stakes or flagging.
- Make sure that the construction is staying within the clearing limits.

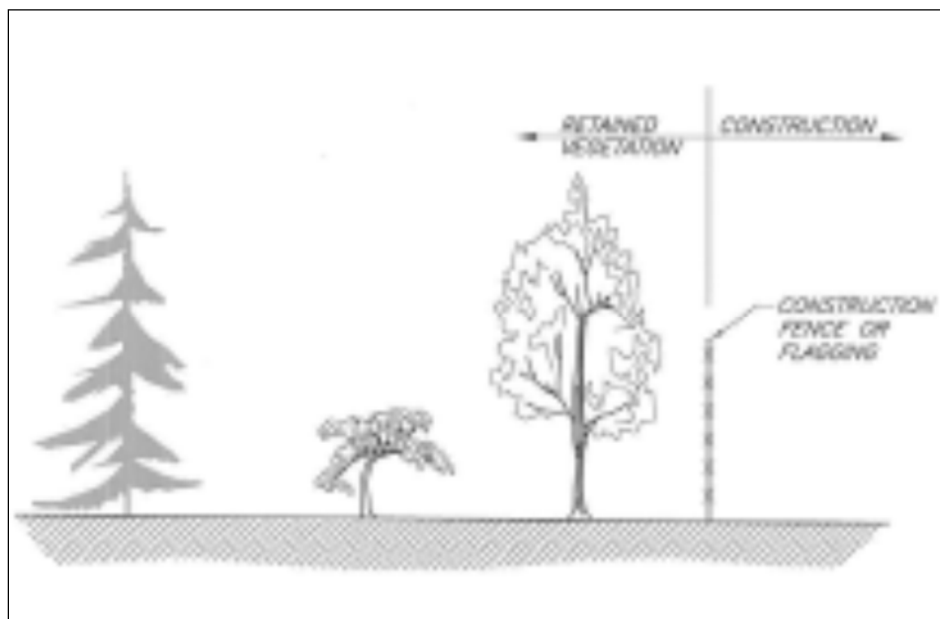


Figure I-1: Flagging and Fencing of Clearing Limits

Benching

Benching reduces erosion damage by segmenting the effective slope length, thus intercepting surface runoff and conveying the discharge along the benches at a slower velocity. Figure I-2 shows a benching diagram.

Selection

Benches should not be used in sandy areas or on soils that are too rocky for construction and maintenance. Benching should only be used where the concentrated flows from the benches can be discharged without erosion of downstream areas.

Implementation

The plans and specifications for the bench construction should be followed. Benches must be constructed along contours in order to minimize the velocity of intercepted runoff.

Maintenance

Maintenance should be performed as needed. Benches should be inspected regularly; at least once a year and after large storm events.

- Check for and correct erosion of the benches.
- Check for and remove trash collecting in the benches.
- Look for and correct erosion at the bench discharge points.

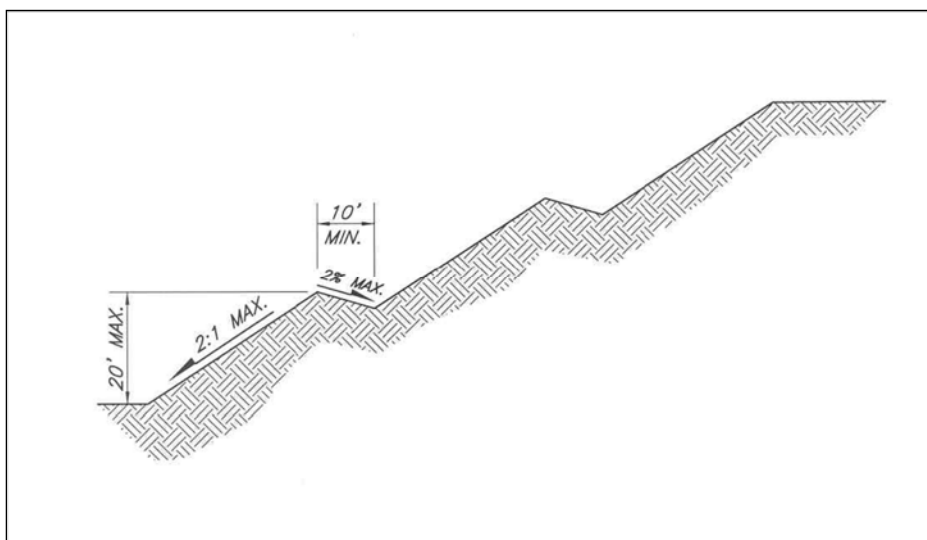


Figure I-2: Benching

Slopes Requiring Cut and Fill Design

Cut and fill slopes should be constructed in a manner that will minimize erosion by taking into consideration the length and steepness of slopes, soil types, upslope drainage areas, and groundwater conditions.

Selection

For use on all cut or fill slopes higher than 3 feet.

Implementation

Design cut and fill slopes to be at stable angles, or less than the normal angle of repose, to minimize erosion and slope failure potential.

Maintenance

Slopes should not be left at angles steeper than their final design any longer than necessary for other site activities.

Effects of Erosion Control Measures on Adjacent Properties

Plan and design all streambank, shoreline, and navigation structures so that they do not transfer erosion energy or otherwise cause visible loss of surrounding streambanks and shorelines. Many streambank or shoreline protection projects result in a transfer of energy from one area to another, which causes increased erosion in the adjacent area. Property owners should consider the possible effects of erosion control measures on other properties located along the shore.

Surface Roughening

Surface roughening, also called cat-tracking, is used on slopes to provide small pockets for trapping runoff and allowing infiltration. This temporary BMP is shown in Figure I-3. Surface roughening aids in the establishment of vegetation cover by providing a rough soil surface with horizontal depressions.

Selection

Surface roughening works on most sloped areas, except hard pan.

Implementation

- The contractor should run tracked machinery along the fall line of the slope with the blade raised.
- Roughening with tracked machinery needs to be limited to avoid compaction of the soil surface.
- Tracking should be performed in a manner that covers the slope with no more than one foot between tracks.
- Roughened areas should be seeded and mulched immediately.

Maintenance

Surface roughening is a temporary measure and should be inspected and shaped after each rainfall that causes erosion or after no more than 90 days since the last shaping, to minimize erosion.

- Make sure the area is adequately covered with tracking.
- Check for erosion after significant rainstorms. If rills appear, regrade and roughen again and reseed eroded area immediately, as appropriate.

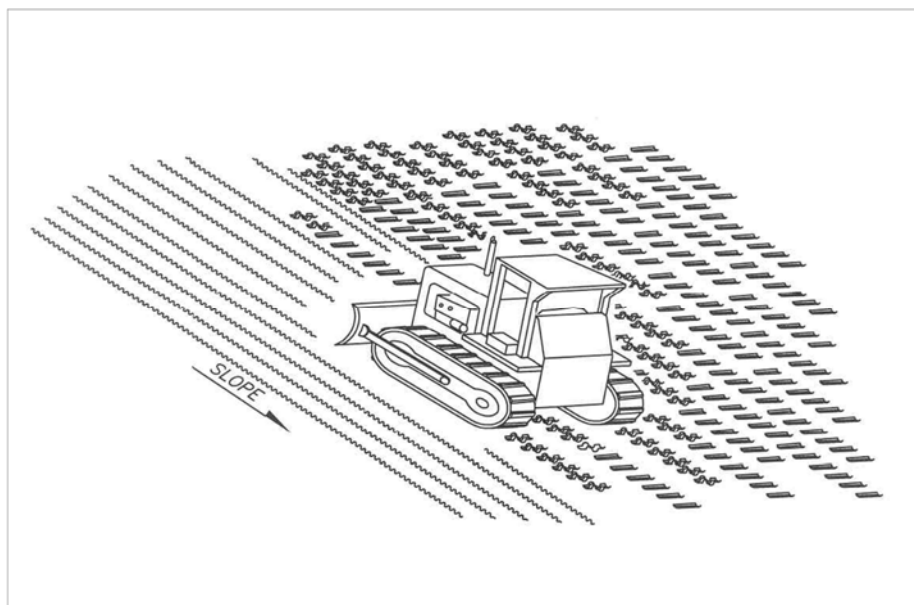


Figure I-3: Surface Roughening

Plastic Covering

Plastic covering, shown in Figure I-4, is used on steep slopes and material stockpiles to reduce erosion. This temporary BMP is a very reliable way to protect from erosion.

Selection

Plastic covering works on many surfaces that require protection from erosion. Clear plastic can be used to promote seed germination. Do not use upslope of areas that might be adversely impacted by concentrated runoff, such as steep or unstable slopes.

Implementation

- Plastic sheeting should have a minimum thickness of 0.06 mm.
- The plastic covering should be secured at the top of slope and should be anchored with tires, sandbags, or other appropriate ballast material to prevent plastic from being blown apart by wind.
- Space weights at a maximum of every 10 feet in all directions.
- Once the sheeting is anchored, secure edging at the top and toe of slope by tucking them into shallow trenches and backfilling.
- The plastic covering should overlap a minimum of one foot between sheets, the overlaps should run perpendicular to the slope, and the seams should be weighted or taped. The plastic covering should extend past the bottom of the slope.

Maintenance

- Check whether anchors are working properly.
- Verify that plastic is secured at the top of slope.
- Look for and replace torn or deteriorated plastic.
- Assure that the seams are taped or weighted and one foot overlap exists.
- Verify that the plastic extends past the top and bottom of slope.
- Remove plastic when it is no longer needed.

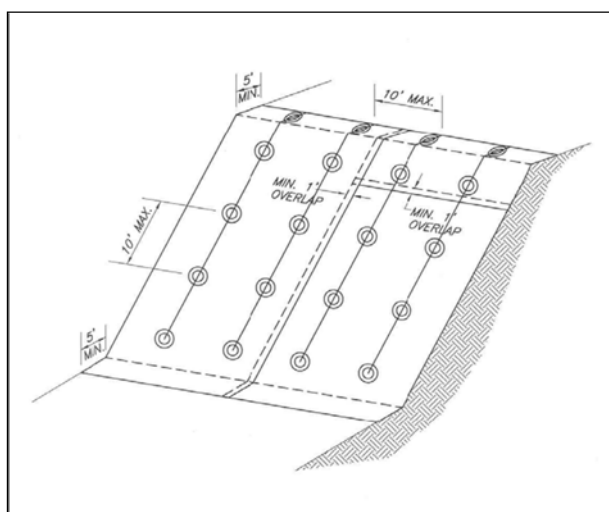


Figure I-4: Plastic Covering

Mulching

Mulching is the application of plant materials such as straw or other materials to the soil surface. Surface mulch is an effective and cost-effective means of controlling runoff and erosion on disturbed areas prior to revegetation. Mulch absorbs the raindrop impact energy and minimizes soil detachment, which is the first step of erosion. Mulching is a temporary BMP that helps seedlings germinate and grow by conserving moisture and can be used in unseeded areas to protect against erosion during winter or until final grading and stabilization can be accomplished. Mulches should be free of weeds and unwanted seeds to prevent invasive plants.

Selection

Mulch can be used successfully on the majority of construction projects in Anchorage. Mulch design life is six months or less. Appropriate for use on slopes of 3:1 or flatter.

Implementation

Mulch is most commonly used in conjunction with seeding. Mulch should be uniformly spread by hand or blower to provide 75 percent ground cover. When straw mulch may be exposed to wind, it must be anchored immediately after spreading. Mulch should be applied immediately after seeding to improve seed germination. Depth of the applied mulch should be not less than one inch and not more than 2 inches.

Maintenance

After mulch has been applied and anchored properly, little additional maintenance is required during the first few months. After high winds or significant rainstorms, mulch-covered areas should be checked for adequate cover and remulched if necessary. To be effective, mulch must last until vegetation develops to provide an erosion-resistant cover.

- Confirm mulch is adequately watered.
- Check to ensure erosion is not occurring.
- Watch for and repair washout of mulch.
- Mulching may degrade slowly in Anchorage's climate; therefore, some mulches may need to be removed once vegetation is established.

Mulching Specifications

Mulch Type	Characteristics	Application
Straw	<ul style="list-style-type: none"> • Should be air dried, come from wheat or oats, and be free of weeds and coarse material. • Most commonly used in conjunction with seeding and where the need for protection is less than 3 months. 	<ul style="list-style-type: none"> • Spread by hand or machine to a minimum 4-inches thick. • Anchor by crimping, disking, rolling, or punching into the soil, covering with netting, or keeping moist.
Wood Chips	<ul style="list-style-type: none"> • Should be small enough to use as a mulching medium. • Suitable for areas that will not be closely mowed and around ornamental plantings. 	<ul style="list-style-type: none"> • May be obtained from trees cleared on site to provide inexpensive mulch. • Apply to slopes less than 6 percent (16:1) to avoid clogging of drainage inlets by chips washed downslope.
Bark Chips	<ul style="list-style-type: none"> • Should be small enough to use as a mulching medium. • Use in landscape plantings. 	<ul style="list-style-type: none"> • Use in areas to be planted with grasses and not closely mowed. • Apply by hand or mechanically.
Wood Fiber Cellulose	<ul style="list-style-type: none"> • This may include partially digested wood fibers. • Dyed green; should not contain growth inhibiting factors. • Short cellulose fibers do not required tacking, but longer fiber lengths provide better erosion control. 	<ul style="list-style-type: none"> • Use in hydroseeding operations as part of the slurry. • Apply with hydromulcher: 25 to 30 pounds per 1,000 square feet.
Bonded Fiber Matrix	<ul style="list-style-type: none"> • Hydraulically applied fibers and adhesive that form an erosion resistant blanket • Biodegradable; promotes growth of vegetation 	<ul style="list-style-type: none"> • Apply hydraulically • Typically applied at rates from 3,000 to 4,000 pounds per acre • Do not apply immediately before, during or after rainfall
Flexible Growth Medium	<ul style="list-style-type: none"> • Generally provides good protection • No cure time (can be applied under most conditions) 	<ul style="list-style-type: none"> • Apply hydraulically • Typically applied at rates of 3,500 pounds per acre

Erosion Control Blankets

Erosion control blankets are used as an alternative to mulch but can also be used to provide structural erosion protection. They aid in controlling erosion on areas by providing a temporary or semi-permanent protective cover made of straw, jute, wood, plant fibers, or artificial products. Figure I-5 depicts the use of erosion control blankets.

Selection

Erosion control blankets function best in providing a protective cover on slopes and channels where the erosion hazard is high and plant growth is likely to be slow; generally on slopes steeper than 3H:1V and greater than 10 feet of vertical relief.

Implementation

- The manufacturer's recommendations for installation should be followed.
- Blankets must be anchored; spacing depends on type of material and slope steepness,
- Maintain a firm continuous contact between the blanket and soil to prevent erosion below the blanket.

Maintenance

When erosion blankets have been installed and anchored properly, little additional maintenance is required during the first few months. After high winds or significant rainstorms have occurred, blanketed areas should be checked for adequate cover and repaired if necessary. The blanket must last until vegetation develops to provide an erosion-resistant cover. After any damaged slope or drainage course has been repaired, the material should be reinstalled.

- Check that surfaces adhere, fasteners remain secure, and covering is in tight contact with soil surface beneath.
- After significant rainstorms, check for erosion and undermining and repair promptly.
- Look for and repair washouts.

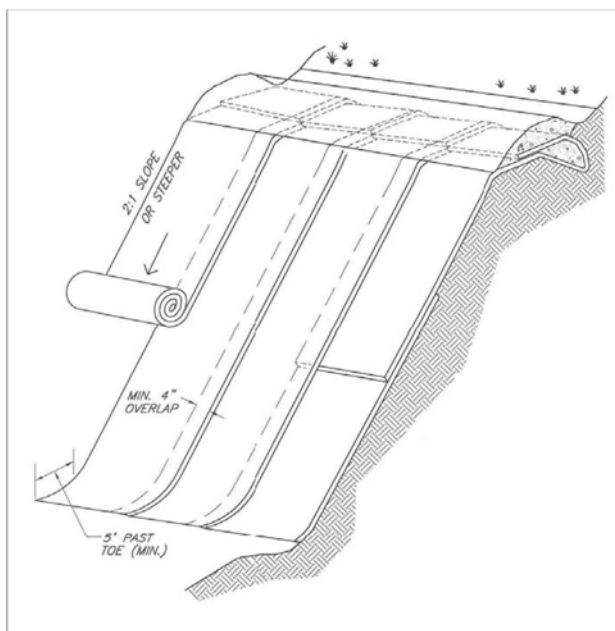


Figure I-5: Erosion Control Blankets

Seeding

Seeding is the establishment of perennial vegetation, usually lawns, on disturbed areas from seed. Seeding can be a temporary or permanent measure.

The seed mixture should be free of weeds and unwanted seeds to prevent invasive plants.

Selection

This practice is used when vegetation is desired for temporary or final stabilization. Temporary seeding is not recommended if permanent seeding will be completed in the same growing season. Other temporary stabilization should be considered.

Implementation

Proper seedbed preparation and the use of high quality seed are essential to the success of this practice.

- Seeding shall take place as soon as practicable after the last ground-disturbing activities in an area, but not during the period August 15 through May 1 unless dormant seeding is used.
- Supplement topsoil as necessary to ensure a minimum of 4 inches of topsoil in areas to be permanently seeded. Work topsoil into the layer below for a depth of at least 6 inches.
- The project plans and specifications produced by the landscape architect or engineer shall be followed.

Maintenance

All seeding should be inspected periodically following installation. Seeded areas should be checked for erosion and flooding after significant rainstorms. Any repairs must be made immediately.

- Water seeded areas daily until initial ground cover is established if rainfall does not provide moisture for seed germination.
- Check the area to ensure the grass is growing; replant at appropriate times if required.
- Look for damage to the seeded area due to runoff and repair before the next runoff event.
- Check for erosion and flooding after significant rainstorms and repair before the next runoff event.

Slope Revegetation

Slope revegetation is used to re-establish a live organic surface on disturbed slopes to inhibit erosion. It is usually a permanent installation on a completed portion of the work, but can be used as a temporary or interim measure. See Figure I-6 for an illustration.

Selection

All disturbed land areas with slopes steeper than 3H:1V should be protected or revegetated to inhibit erosion.

Implementation

The slope revegetation should be completed as early in the planting season as practicable, generally between May and August. The revegetation should occur on adequately prepared areas. This BMP shall not be used in excessively wet or frozen ground conditions.

Maintenance

The slope revegetation should receive adequate moisture through either watering or precipitation to establish a vegetative mat. Eroded areas should be stabilized and reseeded. Diseased or dead areas should be revegetated. Mowing and fertilization should occur to maintain healthy growth.

- Check whether adequate water is being supplied and correct as necessary.
- Look for and correct areas that have eroded.
- Look for dead or diseased areas; remove or treat as necessary.
- Confirm that growth is green and lush.

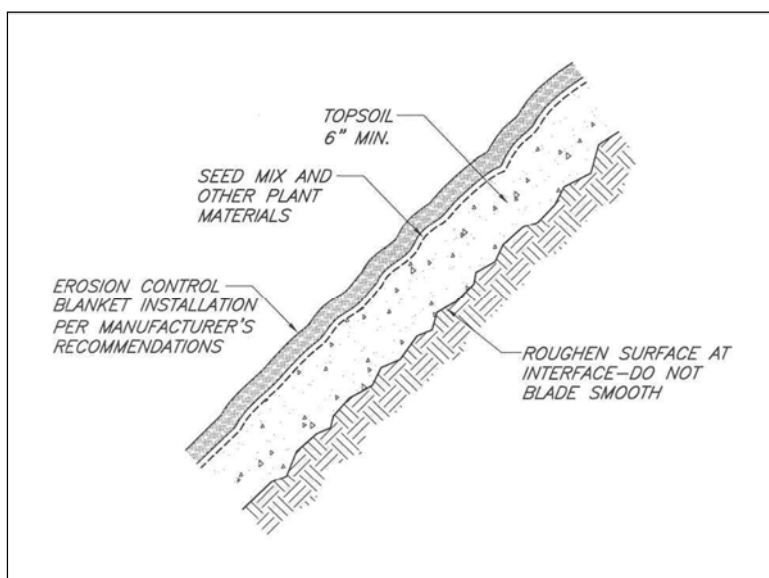


Figure I-6: Slope Revegetation

TEMPORARY SEDIMENTATION CONTROL

Silt Fence

Silt fences are used to filter sediments from sheet flow runoff on sloped areas. The fences can be very effective in removing sediment from runoff. See Figure I-7 for details on this temporary BMP.

Selection

Silt fences are appropriate for the majority of construction sites. The design life a silt fence is six months or less. The maximum contributory sheet flow drainage area shall not exceed 0.25 acres per 100 feet of silt fence. Use of a silt fence is usually more complex, expensive, and maintenance-prone than other slope stabilization measures.

Implementation

Silt fences should be installed at right angles to the slope and along contours. Posts should be securely installed. The filter fabric should be securely attached to the posts. The filter fabric should be keyed into the surrounding earth.

Maintenance

The filter fabric should be kept up to maintain its function. It should be replaced if it is torn or frayed. The posts should be reinstalled if loose. The filter fabric should be reinstalled if it is not keyed into the surrounding earth. The silt fence should be cleaned when sediment accumulates to nine inches in height, and cleaned or replaced when it is covered with sediment.

- Confirm that the fence posts are secure.
- Assure that the filter fabric is securely attached to the fence posts.
- Look for and repair filter fabric that is torn or frayed.
- Check for evidence of runoff overtopping the filter fabric; correct as necessary.
- Verify the silt fence is not leaning over.
- Check for underflow, re-key if necessary.
- Remedy fence sags as needed.

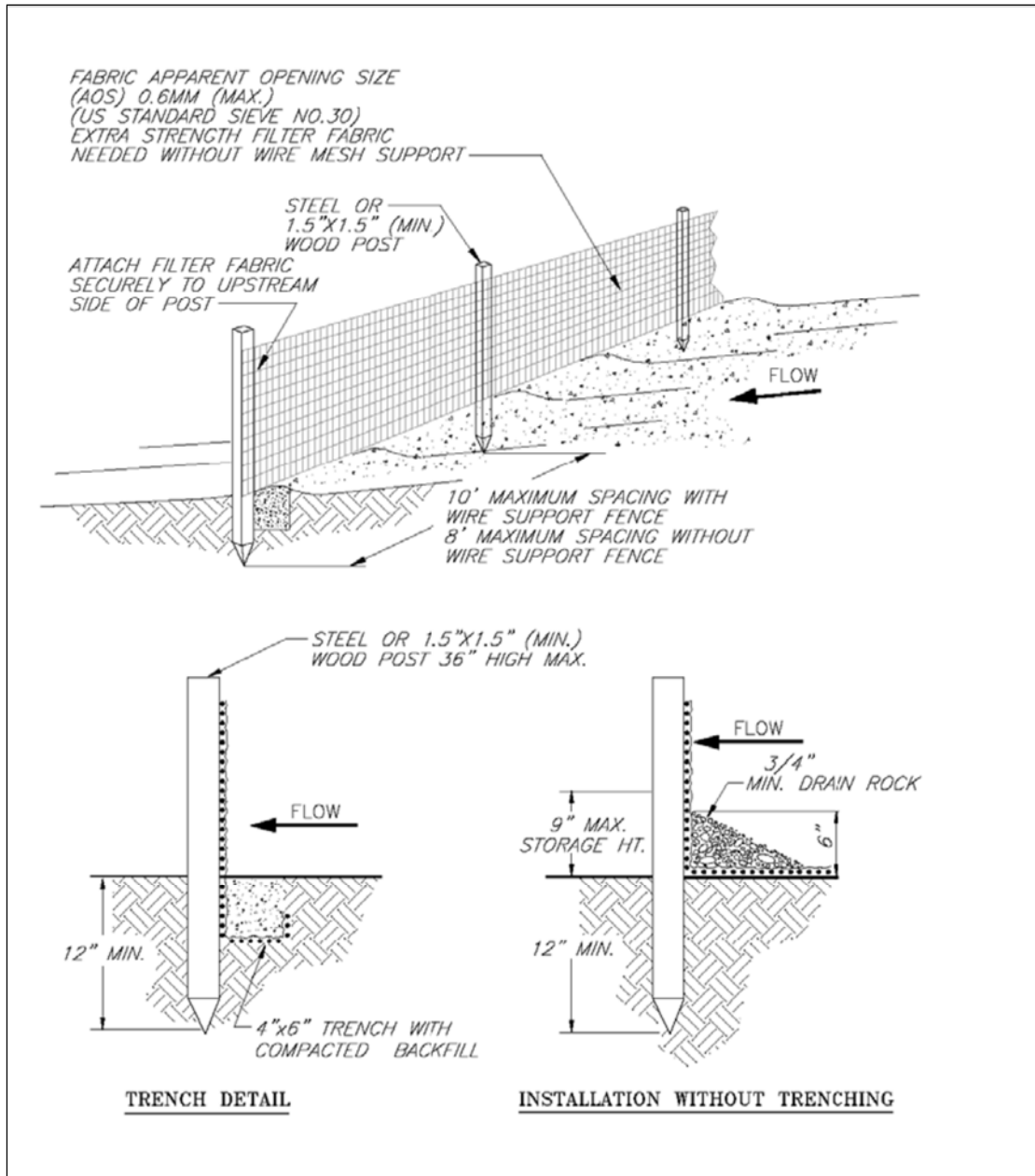


Figure I-7: Silt Fence

Sandbag Filters

A sandbag filter uses sandbags to prevent sediment from exiting small construction sites. See Figure I-8 for an illustration of this temporary control.

Selection

Use of sandbag filters is appropriate for remodeling or redevelopment projects in paved areas.

Implementation

Sandbags should be placed around the disturbed work area.

Maintenance

The sandbag filters used for protection must be regularly inspected and cleaned. Sediment should be removed from behind sandbags after each significant storm to provide adequate storage volume for the next rain. Damaged sandbags should be replaced. All sediment should be immediately removed from adjacent paved parking and roadway areas. The sediment should be disposed of in locations where it cannot enter a storm drain or stream, or be transported off site.

- Check sandbags after each storm.
- Confirm that collected sediment is disposed of properly.
- Check sandbags to ensure they are not packed with sediment.
- Replace damaged sandbags.

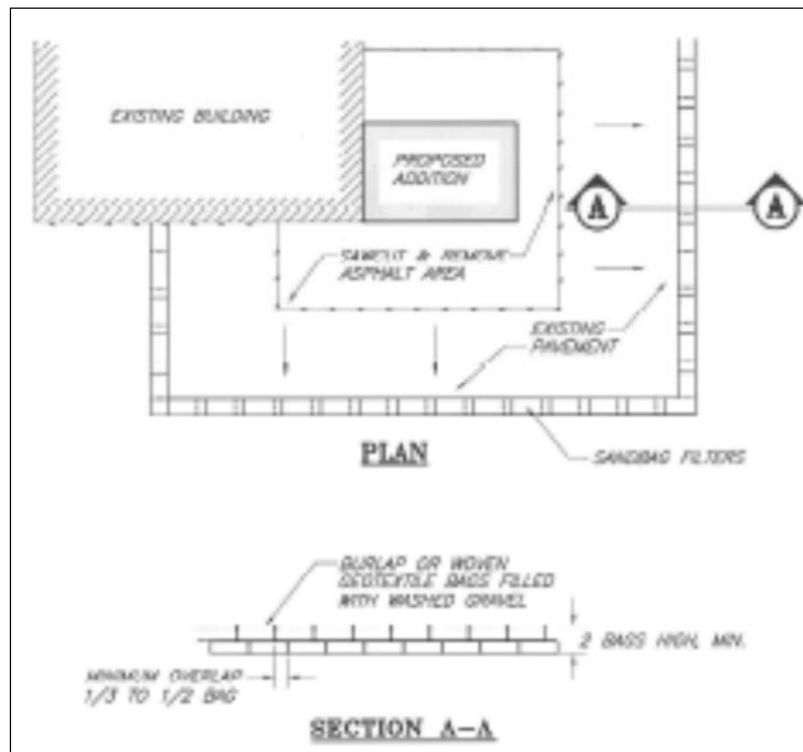


Figure I-8: Sandbag Filters

Catchbasin Insert

A catchbasin insert is a “sock” made from a porous fabric with an apparent opening size (AOS) U.S. Standard Sieve No. 30 (0.6 millimeter) that is installed in the drainage structure to filter the sediments from the runoff. This temporary BMP is a last line of defense for containing sediments on-site. See Figure I-9 for an illustration.

Selection

Catchbasin inserts are applicable for use on projects where the quantity of sediment anticipated would average 0.1 cubic yards per month or less. The insert should be properly sized for the catch basin and the drainage area and it should allow flow bypass during significant runoff events. Oversized inserts may be difficult to remove when full and, under freezing conditions may cause pipe damage. Inserts that are tapered are easier to maintain.

Implementation

The insert should be installed in a fashion that holds the device securely in place and prohibits it from falling into the catchbasin.

Maintenance

- The insert should be cleaned when half full of sediment. It should be replaced if torn or frayed.
- Confirm that the insert is securely fastened.
- Look for and replace insert material that is torn or frayed.
- Remove sediment or replace the insert if the insert is half full.
- Look for evidence that the sediment or runoff is traveling around and not entering the catchbasin and make corrections as necessary.
- Remove for winter shutdown.

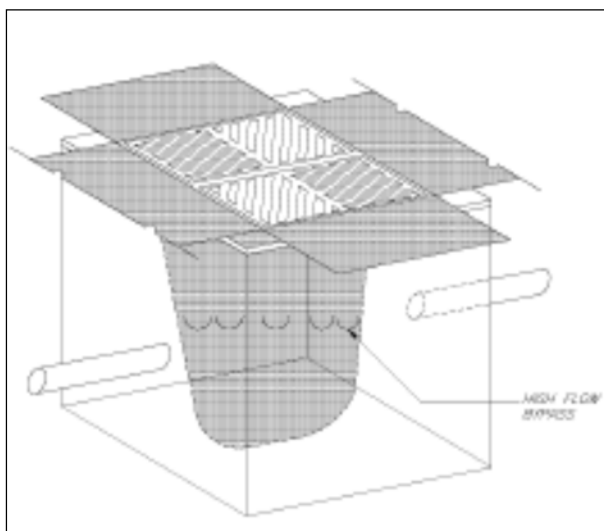


Figure I-9: Catchbasin Insert

Catchbasin Covering

Another last line of defense for containing sediments on-site, a catchbasin covering is a porous fabric with an apparent opening size (AOS) U.S. Standard Sieve No. 30 (0.6 millimeter) that removes sediment from runoff before it enters a catchbasin. See Figure I-10 for an illustration of this temporary BMP.

Selection

The catchbasin covering is an applicable protection measure for all catchbasins on sites where small quantities of sediments are mobilized. It is not effective in removing large quantities of sediment because the sediment clogs the covering and requires frequent maintenance.

Implementation

Catchbasin coverings should be installed so that a sump is constructed around the catchbasin. The sump allows water velocities to slow and deposit sediments before they enter the catchbasin. The filter fabric should be installed in a manner that completely covers the catchbasin opening. The washed gravel should encircle the catchbasin and act as a filter.

Maintenance

The washed gravel should be cleaned or replaced when the catchbasin covering becomes half filled with sediments. The sump should be reshaped at the same time the washed gravel is maintained.

- Check for washed gravel that is bermed around the catchbasin.
- Look for evidence that the washed gravel is filled with sediment.
- Confirm that the filter fabric is covering the opening.
- Look for and replace filter fabric that is torn or frayed.
- Check on whether the filter fabric needs cleaning; remove as necessary.

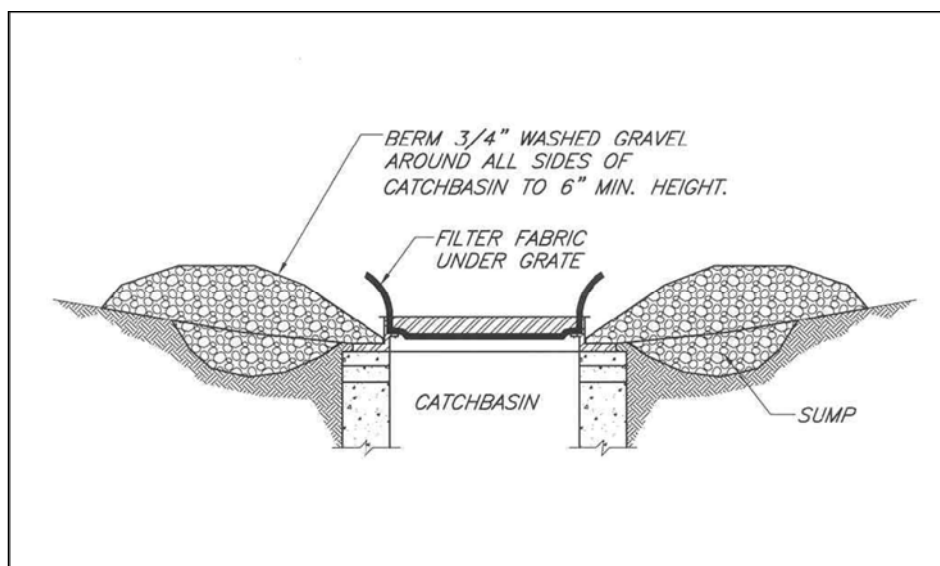


Figure I-10: Catchbasin Covering

Block and Gravel Barrier

The block and gravel barrier is another type of last line of defense for containing sediments onsite. It is a filter that uses concrete blocks, gravel, and a porous fabric with an apparent opening size (AOS) U.S. Standard Sieve No. 30 (0.6 millimeter), to remove sediment from runoff prior to entering a catchbasin. See Figure I-11 for illustrations of these temporary BMPs.

Selection

Block and gravel barriers are applicable for all catchbasins on sites where small quantities of sediments are mobilized. This BMP is not effective in removing large quantities of sediment because the sediment clogs the barrier and requires frequent maintenance. The block and gravel barrier BMP is also ineffective in situations in which high runoff flow occurs because the barriers become hydraulically overloaded and allow untreated runoff to enter the catchbasins. Block and gravel barriers must not be used in areas open to bicycle and motor vehicle traffic.

Implementation

The block and gravel barrier should be installed so that a sump is created by effectively raising the height of the top of the catchbasin. The blocks should hold the filter fabric securely in place. The washed gravel and blocks should encircle the catchbasin.

Maintenance

The washed gravel should be cleaned or replaced when it becomes half filled with sediments.

- Confirm that the washed gravel and blocks encircle the catchbasin.
- Check whether the washed gravel is filled with sediment.
- Look for filter fabric that is covered with sediment.
- Look for and repair filter fabric that is torn or frayed.
- Look for evidence of sediment having entered the catchbasin.
- Repair any structural damage immediately.

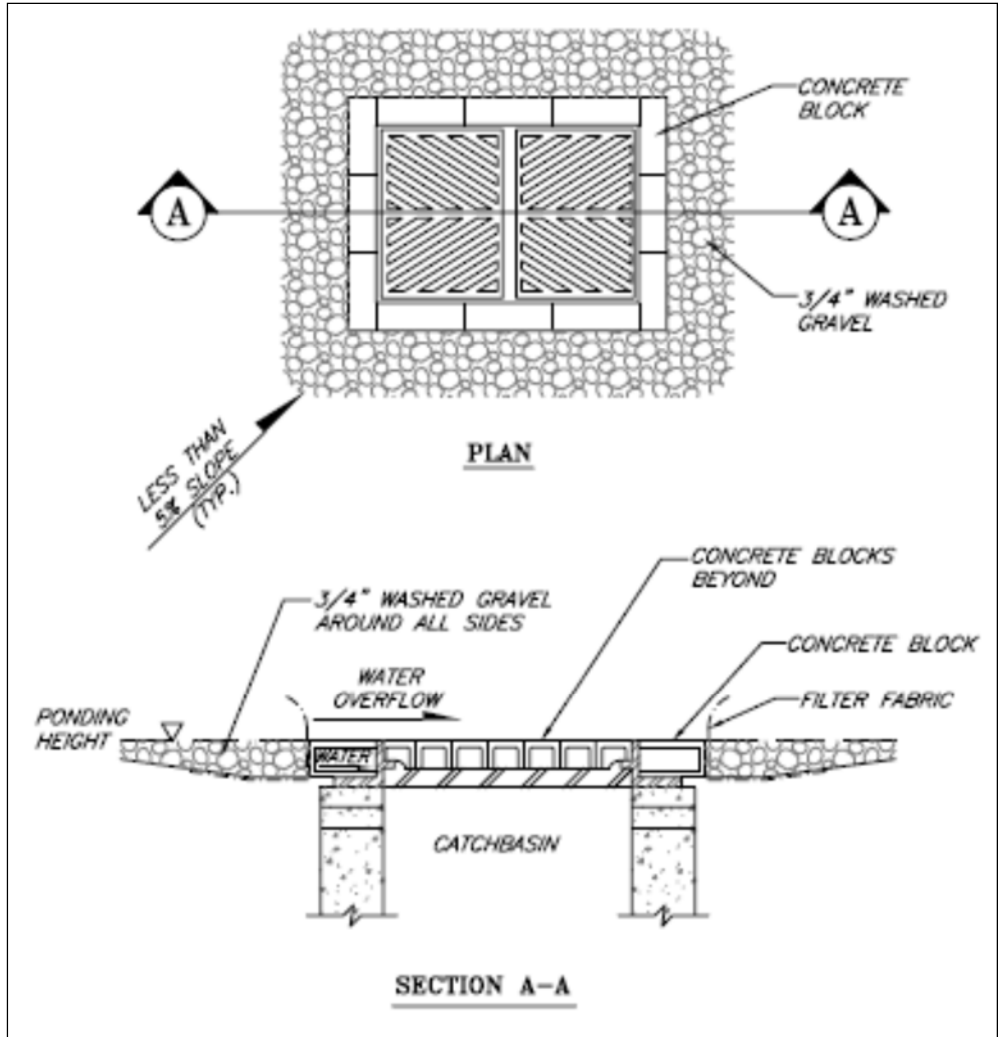


Figure I-11: Block and Gravel Barrier

Catchbasin Silt Fence

Another last line of defense for containing sediments on-site, a catchbasin silt fence, comprised of a porous fabric with an apparent opening size (AOS) U.S. Standard Sieve No. 30 (0.6 millimeter), is a filter that removes sediment from runoff before it enters a catchbasin. See Figure I-12 for an illustration of this temporary BMP.

Selection

Catchbasin silt fences are applicable protection measures for all catchbasins on sites where small quantities of sediments are mobilized. This BMP is not effective in removing large quantities of sediment because the sediment causes clogging and requires frequent maintenance. The anticipated height of the runoff should not exceed half the height of the filter fence. The design flow shall be 0.5 cubic feet per second or less.

Implementation

The catchbasin silt fence should be installed so that a sump is constructed around the catchbasin. The sump allows water velocities to slow and deposit sediments before they enter the catchbasin. The filter fabric should be installed to provide a “fence” around the catchbasin. It should be keyed into the surrounding earth and should be securely fastened to the posts. The washed gravel should encircle the catchbasin.

Maintenance

The washed gravel should be cleaned or replaced when half filled with sediments. The sump should be reshaped at the same time the washed gravel is maintained. The filter fabric should be cleaned if it becomes covered with sediment. It should be reinstalled if it is not keyed into the surrounding earth. The posts should be reinstalled if they become loose.

- Confirm that the washed gravel is bermed around the catchbasin.
- Check whether the washed gravel is filled with sediment.
- Confirm that the fence posts are secure.
- Confirm that the filter fabric is securely attached to the fence posts.
- Look for and repair filter fabric that is torn or frayed.
- Check whether the filter fabric needs cleaning.
- Look for evidence of runoff overtopping the filter fabric.
- Look for evidence of the filter fabric and fence posts leaning over.
- Look for evidence that sediment has entered the catchbasin.
- Repair any structural damage immediately.

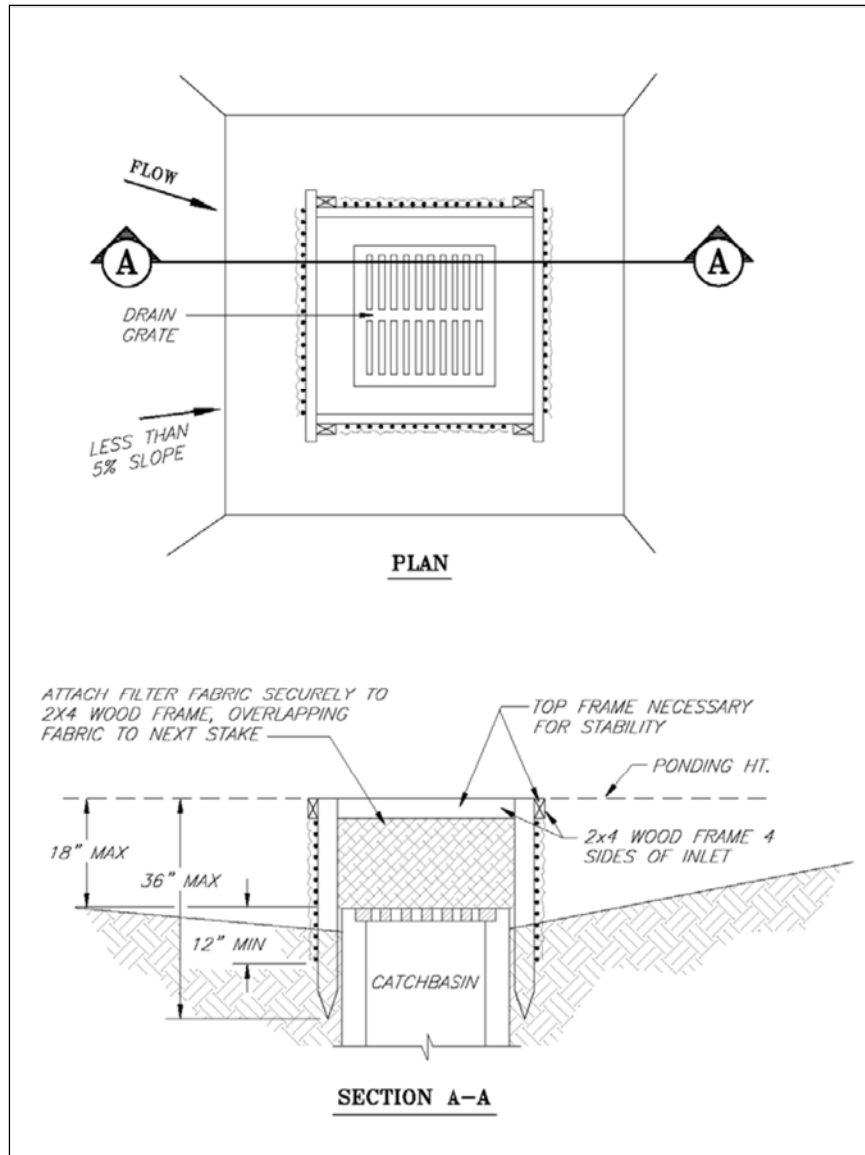


Figure I-12: Catchbasin Silt Fence

Curb Inlet Protection

Curb inlet protection uses sandbags to prevent sediment from entering curb inlet drainage structures. Figures I-13 and I-14 show sample installations of this temporary BMP.

Selection

Curb inlet protection must not be used in areas open to bicycle and motor vehicle traffic. Use of curb inlet protection is appropriate for construction projects near roadways with curb and gutter drainage systems that are closed to traffic.

Implementation

At a minimum, sandbags should be placed upstream of curb inlet.

Maintenance

Curb inlet protection should be inspected and cleaned regularly. Sediment should be removed from behind sandbags after each significant storm to provide adequate storage volume for the next event, and damaged sandbags should be replaced as necessary. All sediment should be removed immediately from the roadway. The sediment should be disposed of in a location where it cannot enter a storm drain or stream, or be transported off site.

- Check sandbags after each storm.
- Confirm that sandbags are not packed with sediment.
- Replace damaged sandbags.
- Remove sandbags in traveled ways before winter freeze up.

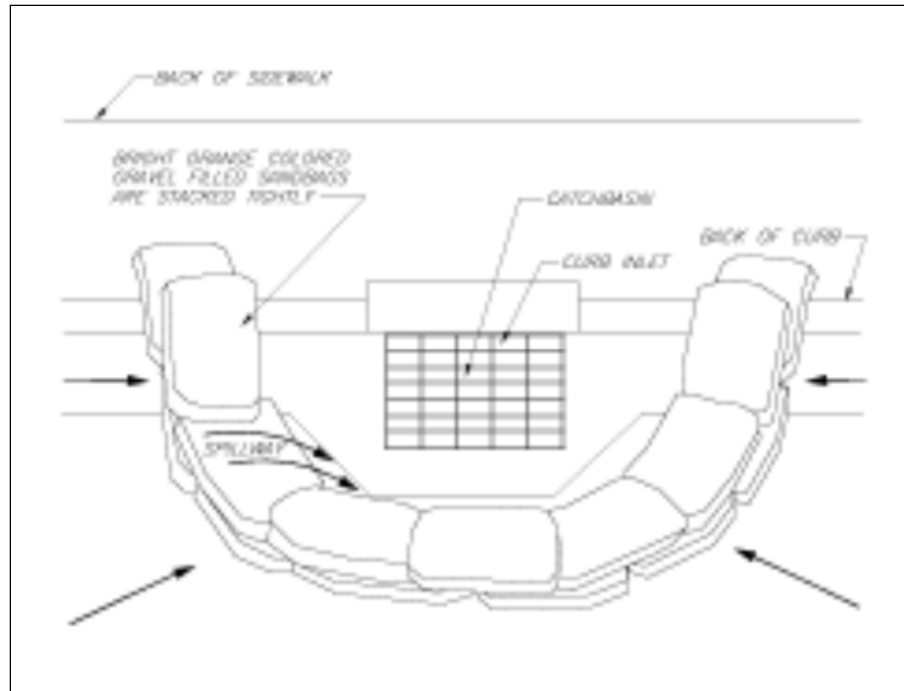


Figure I-13: Curb Inlet Protection

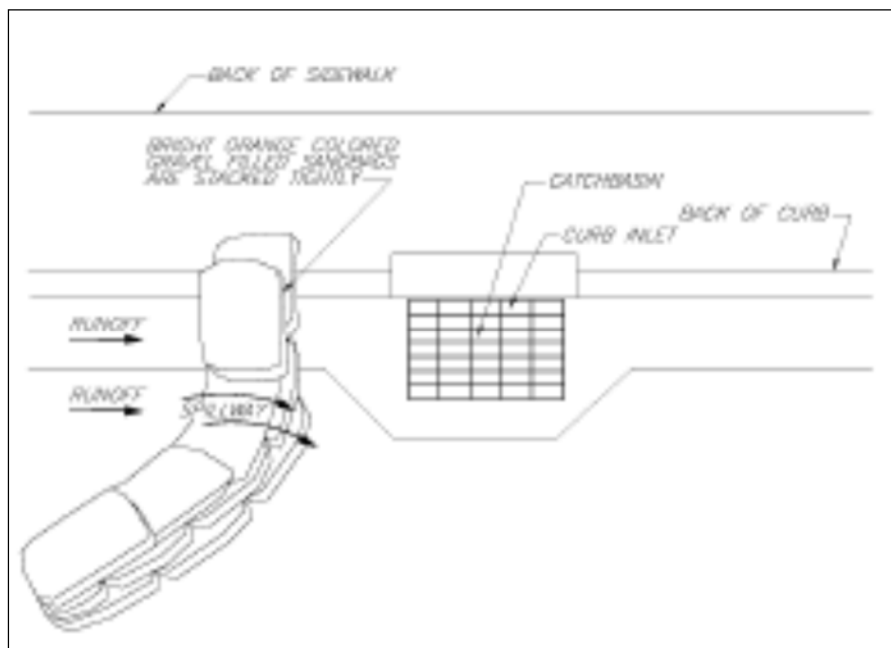


Figure I-14: Curb Inlet Protection

Wattles

Wattles are used to control soil erosion and to filter surface runoff leaving a construction site. Wattles are manufactured from fibers such as straw and coconut. They are typically bound into eight- or nine-inch diameter tubes that are seven to twenty-five feet long. The binding is biodegradable plastic netting allowing the whole structure to decompose over time. See Figure I-15 for an illustration of this temporary BMP.

Selection

Wattles are placed in shallow trenches perpendicular to newly constructed or disturbed slopes. They are useful to break up slope length and thus reduce the potential for erosion on slopes susceptible to sheet and rill erosion.

The use of wattles treated with chemical coagulants or flocculants must be stated in the SWPPP and the location shown on the site plan. Treated wattles will not be allowed near storm drain inlets and at project site stormwater discharge points.

Implementation

Trenches should be deep enough to accommodate half the diameter of the wattle. Wattles must be staked a minimum of every four feet but may require more staking in order to hold them tightly to the soil. Stakes should extend twelve inches into undisturbed soil. Wattles can be left in place to biodegrade. This is a particularly appealing option when live willow stakes have been used in place of rebar or wood stakes. The wattle will hold moisture to help the willow get established, and then will slowly decompose as the plant grows. Wattles can be used in place of silt fences on steep slopes.

Maintenance

Wattles should be inspected once per week on active construction sites, and every two weeks on inactive sites. In addition to this regular inspection routine, inspections should be made after any rainfall event greater than half an inch. Wattles that are no longer in contact with the soil should be restaked. If a wattle becomes too sediment laden to filter runoff then it should be replaced.

- Check that the wattle is properly staked and is in tight contact with the soil surface beneath.
- After significant rainstorms, check for erosion and undermining.
- Check that wattles are securely fastened together.

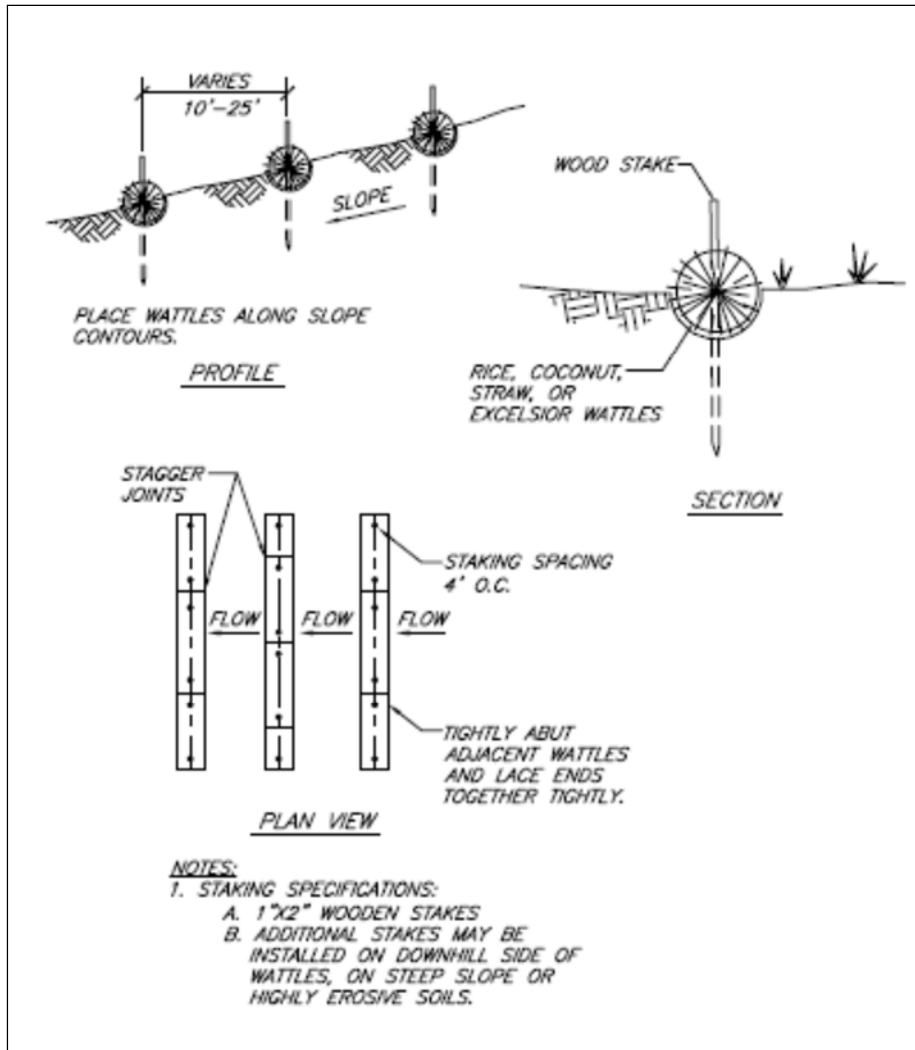


Figure I-15: Wattles

FLOW CONTROL AND ENERGY DISSIPATION

Interceptor Ditch

Interceptor ditches can either be temporary or permanent, and are used to capture runoff on the project site and route it to treatment or discharge facilities. A representative interceptor ditch is shown in Figure I-16.

Selection

Interceptor ditches are applicable for use on projects that have the available land and grades necessary for the ditch installation.

Implementation

The interceptor ditch should be constructed in a manner that results in longitudinal slopes of six percent or less, and side slopes of 2H:1V or less. The ditch should be constructed with a nonerodible covering such as grass or stones.

Maintenance

Any eroded areas should be repaired. Cleaning of the ditch is required when it becomes half full of sediment.

- Check for erosion in the ditch.
- Look for sediment filling the ditch.
- Verify that the ditch is capturing runoff and sediment on-site.

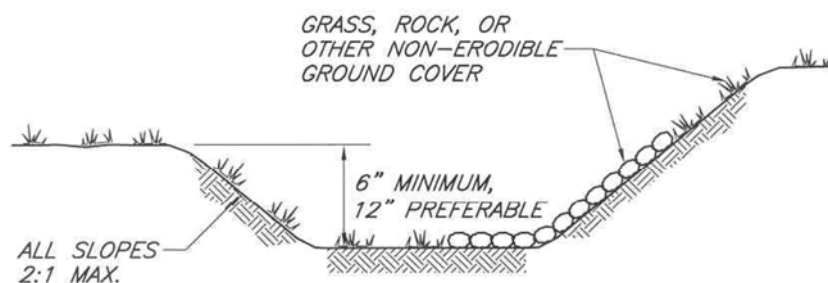


Figure I-16: Interceptor Ditch

Temporary Diversion Dike

A temporary diversion dike is a channel constructed across a slope with an excavated ditch, a compacted berm, or both in combination. Most diversions are constructed by excavating a ditch and using the excavated material to construct a berm on the downhill side. Diversion dikes may be either temporary or permanent. This BMP is illustrated in Figure I-17.

Selection

Use of a temporary diversion dike works well on sites where stormwater runoff can be redirected to protect areas from erosion and sediment. Temporary diversion dikes are used to temporarily divert stormwater runoff to protect disturbed areas and slopes, or to retain sediment on-site during construction. This measure should be used in construction areas where runoff can be diverted and disposed of properly to control erosion, sedimentation, or flood damage. Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 acres. Diversion dikes should be carefully designed where ditch slopes are steeper than 10 percent.

Implementation

Temporary diversion dikes should be designed so that the runoff velocities are high enough to create self-cleaning flows so that sediment deposition in the channel is minimized. Compact the berm to prevent unequal settlement and to provide stability against seepage. Stabilize the diversion after installation.

Maintenance

Temporary diversion dikes should be inspected periodically for erosion damage, especially after heavy rainfall. Sediment should immediately be removed from the flow area. Outlet areas should be checked, and timely repairs should be made as needed.

- Look for flow impediments in the channel.
- Check for erosion at the outfall.
- Remove trash accumulations.
- Check for sediment accumulations; remove when deeper than 2 inches.

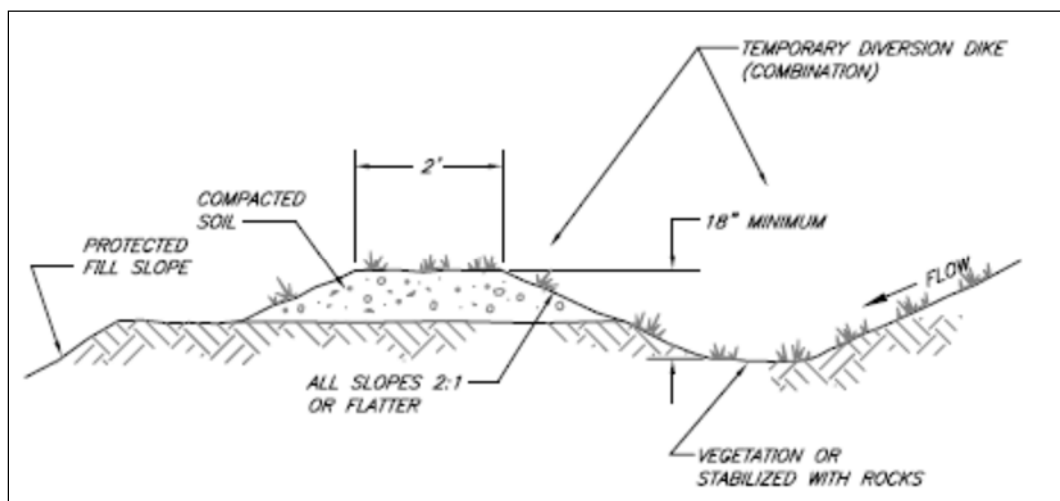


Figure I-17: Temporary Diversion Dike

Down Drains

Down drains, also called slope drains, are applicable wherever concentrated stormwater runoff must be conveyed down a steep slope to avoid erosion of the slope. Typically, down drains are used to convey stormwater collected in diversion dikes and benching for discharge at the bottom of steep slopes. Down drains may be either temporary or permanent. See Figure I-18.

Selection

Long uninterrupted slopes are ideal for down drains. Contributing flow drainage area should not exceed five acres per down drain.

Implementation

The design information in the project plans and specifications should be followed. Provide both inlet and outlet protection to minimize erosion at these locations. The down drain must be adequately secured, all connections must be watertight, and the conduit must be securely staked.

Maintenance

After every significant rainfall, the down drain should be inspected and any required repairs made. When the protected area has undergone final stabilization, temporary measures may be removed and materials may be disposed of.

- Check inlet and outlet points regularly, especially after storms.
- Look for and repair undercutting of the inlet.
- Check for outlet protection at the outlet point.
- Look for and repair erosion at the outlet point.
- Check for and remove debris lodged in the pipe.

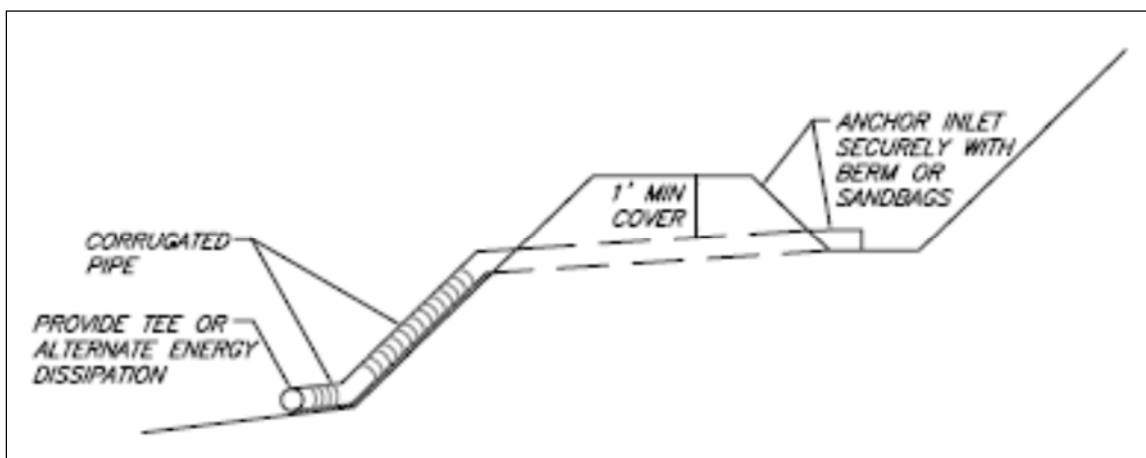


Figure I-18: Down Drain

Gravel Check Dam

Gravel check dams are used to reduce the velocity of the runoff in a ditch as shown in Figure I-19. By reducing the velocity of the runoff, they reduce the potential for ditch erosion. Gravel check dams can be both a temporary or permanent control measure.

Selection

Gravel check dams are appropriate for any ditch where the runoff velocity is no greater than 6 feet per second. 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. Rock check dams are used in narrow ditches and gullies. Straw bales are used primarily in wide swales.

Implementation

Gravel check dams should be constructed from angular rock, sized for the design flow velocity (refer to the MOA Design Criteria Manual Chapter 2). They should be keyed into the surrounding earth to prevent erosion. The check dams should be placed closer together on steeper slopes. The layout of the check dams must be done in a manner that overtopping of the ditch does not occur. Runoff from the contributing drainage area should be evaluated along with expected velocities in order to assure appropriate BMP design.

Maintenance

Cleaning is required if the rocks become half full of sediment. If the earth near the check dam is eroded, the area must be stabilized with rocks or other materials.

- Look for sediment filling the check dam.
- Check to see if the area near the check dam is eroded.
- Look for erosion in the ditch between check dams.
- Check for overtopping of the ditch.
- Repair check dam voids and undercuts.

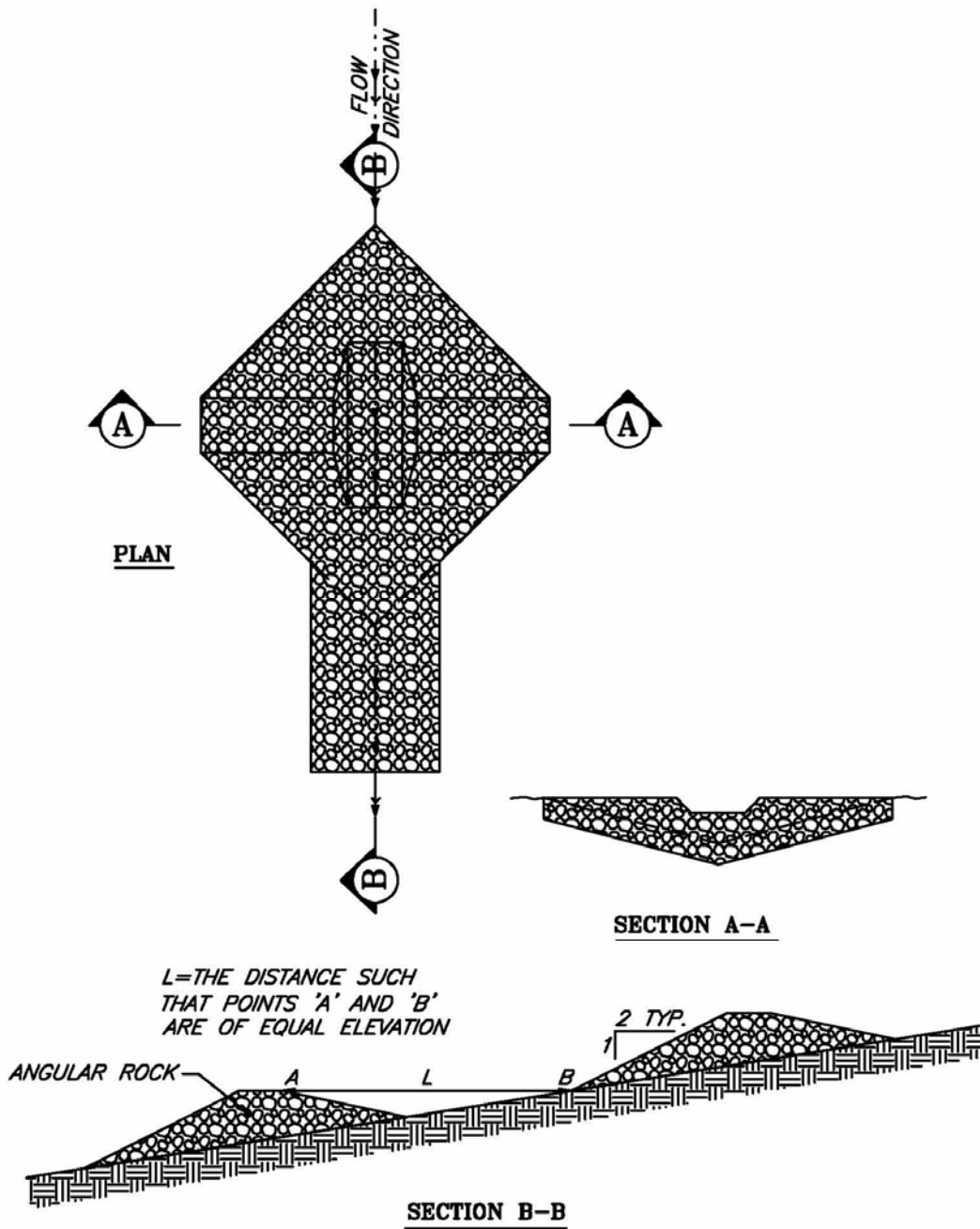


Figure I-19: Gravel Check Dam

Storm Drain Diffuser

Storm drain diffusers are useful in areas where drainage systems do not exist to address concentrated runoff from a site. Figure I-20 shows plan and section views of a storm drain diffuser. A storm drain diffuser can function as both a temporary and permanent measure.

Selection

Storm drain diffusers are used when a concentrated flow of water needs to be dispersed over a large area with existing stable vegetation.

Implementation

The outflow must be essentially level to work correctly. Care must be taken to not create a surcharged drainage system or a system that does not drain entirely.

Maintenance

The diffuser should be inspected after every runoff event to ensure that it is functioning correctly.

- Look for and remove trash accumulation in the diffuser.
- Look for and remove sediment accumulation in the diffuser.
- Check for and repair erosion on the diffuser outlet.
- Check the drainage system for blockages and clear any blockage.
- Confirm that the system drains properly before freeze-up.

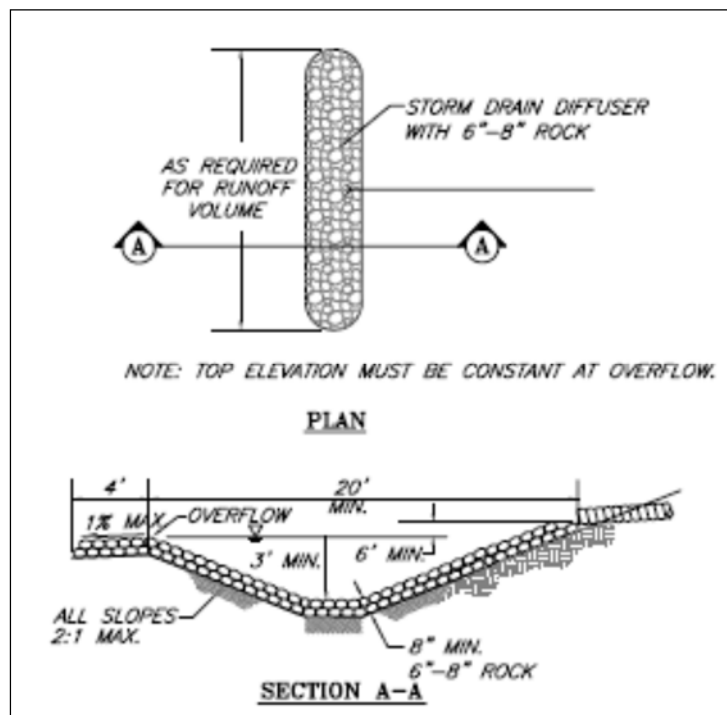


Figure I-20: Storm Drain Diffuser

Outlet Protection

Outlet protection can be either a temporary or permanent control that prevents scour at pipe outlets and reduces the velocity of the concentrated discharge. Guidelines for implementation of outlet protection are shown in Figure I-21.

Selection

Outlet protection is applicable wherever high-velocity discharge must be released on erodible soils. A lined apron is the most commonly used practice for this purpose because of its low cost and ease of installation. Select the gravel or riprap diameter based on the design flow velocity (refer to the MOA Design Criteria Manual Chapter 2). 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.

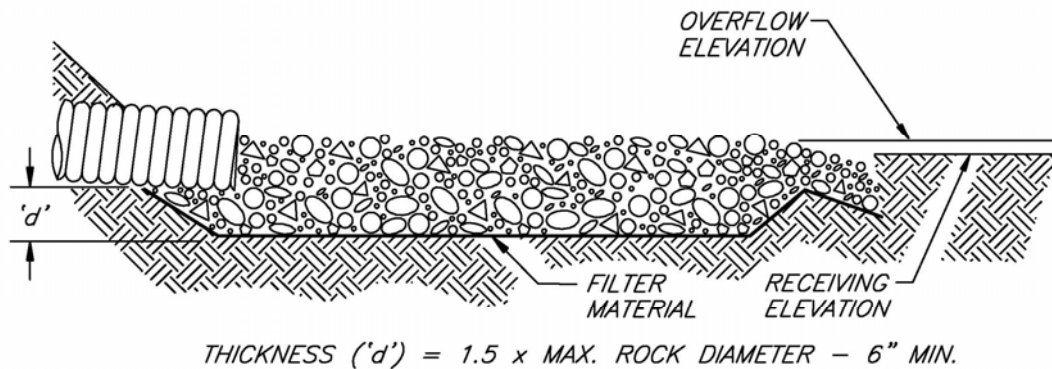
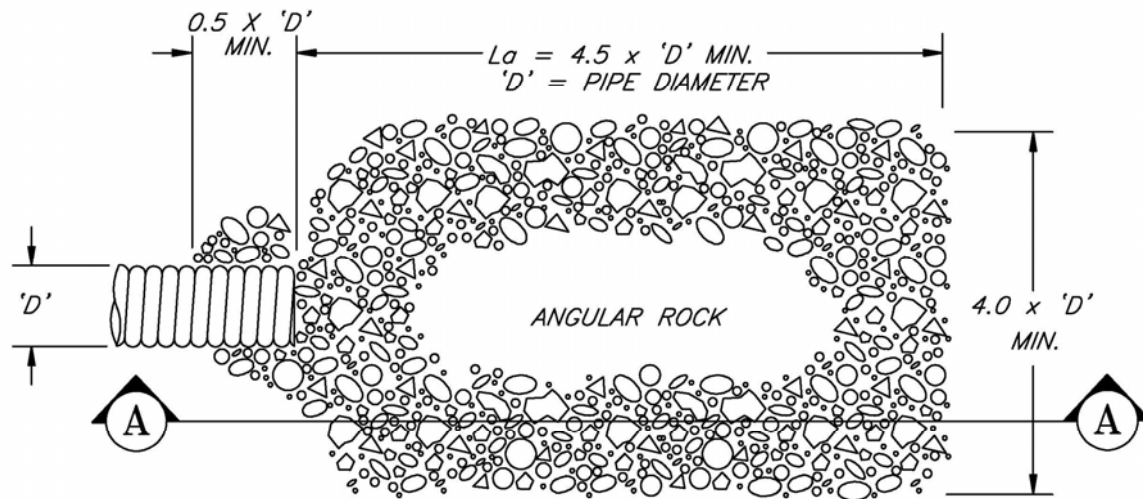
Implementation

The installation must conform to the required lines and grades shown in the plan. All elements of the outlet protection installation should follow the plans and specifications. Designs will vary based on discharge specifics and receiving area conditions.

Maintenance

Outlet protection should be inspected after heavy rains to see if any erosion has occurred or if rock has been dislodged. All repairs should be made immediately to prevent further damage.

- Look for and correct erosion at the outlet.
- Check that rocks are in place and replace them as necessary.
- Ensure that any geotextile installed is in working order.
- Remove sediment when it fills the voids between rocks.

**NOTES:**

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM GRADED GRAVEL LAYER.

Figure I-21: Outlet Protection

Rock Swale

Rock swales are used to reduce water velocities and provide an erosion-resistant channel. See Figure I-22 for this temporary or permanent BMP.

Selection

Rock swales are generally used on steeper slopes or in situations where water velocities are anticipated to exceed five feet per second. The contributing flow area shall not exceed 10 acres per swale.

Implementation

The inlet and outlet should have appropriate devices to inhibit erosion. The channel should have the rock placed in a manner that adequately covers the underlying soils. The stone shall be adequately sized to prevent displacement during the design storm. The ditch should be deep enough to convey the water without overtopping. If geotextile is included in the installation, it should be firmly attached with staples and should be keyed into the surrounding earth. Provide both inlet and outlet protection to minimize erosion at these locations.

Maintenance

The inlet, outlet, and channel should be kept free of flow impediments. The channel should be checked for scour and additional rock should be installed if scour has occurred. The rock should be cleaned or replaced if sediment accumulates to one half the height of the rock. If geotextile fabric is included in the installation, it shall be kept in operable condition.

- Look for evidence that the rock swale needs cleaning of flow impediments or sediment.
- Check for erosion of the inlet and outlet.
- Confirm that the inlet and outlet are functioning properly.
- Confirm that the geotextile is anchored.
- Look for geotextile that is torn or frayed.
- Confirm that the stones have not been displaced by the flow.

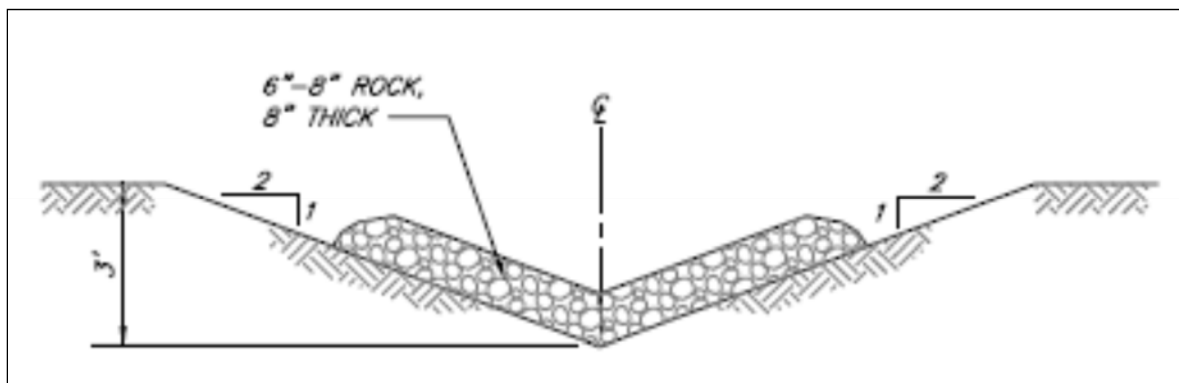


Figure I-22: Rock Swale

CONSTRUCTION ACTIVITIES CONTROL

Stockpile Topsoil and Reapply to Revegetate Site

Because of the high organic content of topsoil, it cannot be used as fill material or under pavement, and is typically removed. Since topsoil is essential to establish new vegetation, it should be stockpiled and then reapplied to the site for revegetation, if appropriate. Unprotected stockpiles are very prone to erosion and therefore must be protected. Small stockpiles can be covered with a tarp to prevent erosion. Large stockpiles should be stabilized by erosion blankets, seeding, and/or mulching.

Concrete Washout

Concrete waste management includes procedures and practices that minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

Selection

Concrete washout facilities should be considered on construction projects where

- Slurries containing Portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition
- Concrete trucks and other concrete-coated equipment are washed on site, and
- Mortar-mixing stations exist.

Implementation

- Temporary concrete washout facilities shall be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses,
- Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.
- Install a sign adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material.
- The soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.
- Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

Maintenance

- Supervise onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.
- Vacuum slurry residue and dispose in a temporary facility and allow slurry to dry. Dispose of dry slurry residue and concrete wastes as solid waste.
- Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 4 inches for above grade facilities and 2 inches for below grade facilities.
- Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition.
- Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- Temporary concrete washout facilities shall be inspected for damage (i.e. tears in PVC liner, missing sand bags, etc.). Damaged facilities shall be repaired.

Dewatering Controls

Definition and Purpose

Dewatering controls are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location so that construction work may be accomplished.

Controls are required to ensure that water that is discharged to surface waterbodies or the storm drain system meets water quality standards and does not cause erosion or flooding.

Appropriate Applications

- These practices are implemented for discharges of non-stormwater and stormwater (accumulated rain water) from construction sites. Non-stormwater includes, but is not limited to, groundwater, dewatering of piles, water from cofferdams, water diversions, and water used during construction activities that must be removed from a work area.
- Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (stormwater) from depressed areas at a construction site.
- Excavation dewatering options include:
 - Haul it off for proper disposal elsewhere
 - Discharge to sanitary sewer (requires permit from AWWU)
 - Discharge clean water to storm sewer (requires permit from MOA)
 - Discharge to uplands or areas that provide infiltration and no runoff to surface waters
 - Install well points and discharge clean water
 - Provide for settling prior to discharge to storm sewer (requires permit from MOA) or waterbody
 - Provide filtration prior to discharge to storm sewer (requires permit from MOA) or waterbody
- A dewatering plan shall be submitted as part of the SWPPP detailing the location of dewatering activities, equipment, and discharge point. PM&E may require that the plan be stamped by a registered engineer.

Limitations

- Dewatering operations for non-stormwater will require, and must comply with, applicable state permits, project-specific permits, and regulations.
- Discharges to surface water must comply with state of Alaska Water Quality Standards, which can be found in 18 Alaska Administrative Code 70.020.
- Coverage under the Alaska Department of Environmental Conservation (ADEC) General Permit for excavation dewatering is required for discharges that don't otherwise have coverage under the ADEC CGP. More information can be found at:
http://www.dec.state.ak.us/water/wwdp/online_permitting/ind_ww_apps.htm.
- Site conditions will dictate design and use of dewatering operations.
- Removal efficiency by settling (sedimentation) depends on particle size, flow rate, water temperature, and other factors. This may not be a treatment option if soil particles are fine. Consult the Design Criteria Manual for additional information on design of sedimentation facilities.
- The controls discussed in this best management practice (BMP) address sediment only. If the presence of polluted water with hazardous substances is identified in the contract, the contractor shall contact the ADEC. If the quality of water to be removed by dewatering is not identified as polluted in the dewatering plan, but is later determined by observation or testing to be polluted, the contractor shall notify PM&E and ADEC.
- Avoid dewatering discharges where possible by using the water for dust control, by infiltration, etc.

- Dewatering discharges must not cause flooding or erosion at the discharge point.
- Dewatering records shall be maintained for a period of 3 years.

Maintenance and Inspection

- Inspect all BMPs implemented to comply with permit requirements frequently and repair or replace to ensure the BMPs function as designed.
- Conduct water quality monitoring pursuant to the “Stormwater Dewatering Operations BMP Discharge Monitoring Forms”.
- Accumulated sediment removed during the maintenance of a dewatering device may be incorporated in the project at locations designated in the dewatering plan or disposed of outside the right-of-way in conformance with applicable laws and regulations.
- Accumulated sediment that is commingled with other pollutants must be disposed of in accordance with all applicable laws and regulations.
- Assure that there is no downstream flooding if discharges are made to storm sewers, creeks, or streams.

Summary of Water Quality Standards (see 18 Alaska Administrative code 70.200.)

Maximum Concentrations in Dewatering Effluent

Indicator	Maximum Concentration or value
Turbidity	5 nephelometric turbidity units above natural conditions
Total aqueous hydrocarbons	15 microgram/liter
Total aromatic hydrocarbons	10 micrograms/liter
Settleable solids	0.2 milliliters per liter
pH	Between 6.5 and 8.5 pH units
Additives, such as antifreeze or solvents	None in detectable amounts
Toxic substances	None in detectable amounts
Sheen due to grease and oils	None in detectable amounts
Foam in other than trace amounts	None
Garbage, debris, or other contaminants	None in detectable amounts

Sediment Treatment

A variety of methods can be used to treat water during dewatering. Several devices are presented in this section that provide options to achieve sediment removal. The size of particles present in the sediment and receiving water quality limitations are key considerations for selecting sediment treatment option(s); in some cases, the use of multiple devices may be appropriate.

Category 1: Constructed Settling Technologies

The devices discussed in this category are to be used exclusively for dewatering operations only. Removal efficiency depends on particle size, flow rate, water temperature, and other factors. This may not be a treatment option if soil particles are fine. Consult the Design Criteria Manual for additional information on design of sedimentation facilities.

Sediment/Desilting Basin

Description:

A desilting basin is a temporary basin with a controlled release structure that is formed by excavation and/or construction of an embankment to detain sediment-laden runoff and allow sediment to settle out before discharging.

Appropriate Applications:

Effective for the removal of trash, gravel, sand, and silt and some metals that settle out with the sediment.

Implementation:

- Excavation and construction of related facilities is required.
- Temporary desilting basins must be fenced if safety is a concern.
- Outlet protection is required to prevent erosion at the outfall location.

Maintenance:

- Maintenance is required for safety fencing, vegetation, embankment, inlet and outfall structures, as well as other features.
- Removal of sediment is required when the storage volume is reduced by one-third.

Sediment Trap

Description:

A sediment trap is a temporary basin formed by excavation and/or construction of an earthen embankment across a waterway or low drainage area to detain sediment-laden runoff and allow sediment to settle out before discharging.

Appropriate Applications:

Effective for the removal of large and medium sized particles (sand and gravel) and some metals that settle out with the sediment.

Implementation:

- Excavation and construction of related facilities is required.
- Trap inlets shall be located to maximize the travel distance to the trap outlet.
- Use rock or vegetation to protect the trap outlets against erosion.

Maintenance:

- Maintenance is required for vegetation, embankment, inlet and outfall structures, as well as other features.
- Removal of sediment is required when the storage volume is reduced by one-third.

Category 2: Mobile Settling Technologies

These devices are typical of tanks that can be used for sediment treatment of dewatering operations.

Weir Tank

Description:

A weir tank separates water and waste by using weirs. The configuration of the weirs (over and under weirs) maximizes the residence time in the tank and determines the waste to be removed from the water, such as oil, grease, and sediments.

Appropriate Applications:

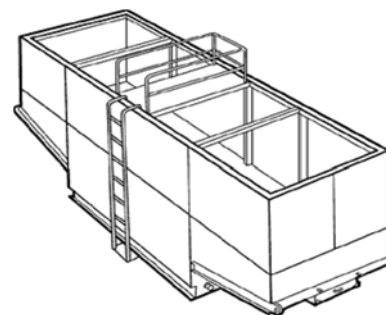
The tank removes trash, some settleable solids (gravel, sand, and silt), some visible oil and grease, and some metals (removed with sediment). To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for other methods.

Implementation:

- Tanks are delivered to the site by the vendor, who can provide assistance with set-up and operation.
- Tank size will depend on flow volume, constituents of concern, and residency period required. Vendors shall be consulted to appropriately size tank.

Maintenance:

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by licensed waste disposal company.



Weir Tank

Dewatering Tank

Description:

A dewatering tank removes debris and sediment. Flow enters the tank through the top, passes through a fabric filter, and is discharged through the bottom of the tank. The filter separates the solids from the liquids.

Appropriate Applications:

The tank removes trash, gravel, sand, and silt, some visible oil and grease, and some metals (removed with sediment). To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for other methods.

Implementation:

- Tanks are delivered to the site by the vendor, who can provide assistance with set-up and operation.
- Tank size will depend on flow volume, constituents of concern, and residency period required. Vendors shall be consulted to appropriately size tank.

Maintenance:

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by licensed waste disposal company.



Dewatering Tank

Category 3: Basic Filtration Technologies

Gravity Bag Filter

Description:

A gravity bag filter, also referred to as a dewatering bag, is a square or rectangular bag made of non-woven geotextile fabric that collects sand, silt, and fines.

Appropriate Applications:

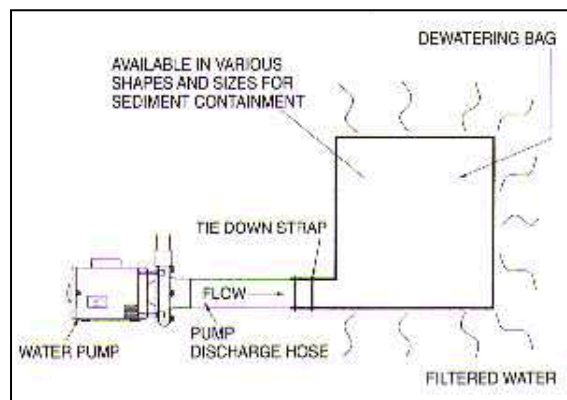
- Effective for the removal of sediments (gravel, sand, and silt). Some metals are removed with the sediment.

Implementation:

- Water is pumped into one side of the bag and seeps through the bottom and sides of the bag.
- A secondary barrier, such as a rock filter bed or straw/hay bale barrier, is placed beneath and beyond the edges of the bag to capture sediments that escape the bag.
- Assure that the size and mesh openings of the bag are appropriate for site soils and anticipated flow rate.

Maintenance:

- Inspection of the flow conditions, bag condition, bag capacity, and the secondary barrier is required.
- Replace the bag when it no longer filters sediment or passes water at a reasonable rate.
- Dispose of the bag off-site.



Gravity Bag Filter

Category 4: Advanced Filtration Technologies

Sand Media Particulate Filter

Description:

Water is treated by passing it through canisters filled with sand media. Generally, sand filters provide a final level of treatment. They are often used as a secondary or higher level of treatment after a significant amount of sediment and other pollutants have been removed.



Sand Media Particulate Filters

Appropriate Applications:

- Effective for the removal of trash, gravel, sand, and silt and some metals, as well as the reduction of biochemical oxygen demand (BOD) and turbidity.
- Sand filters can be used for standalone treatment or in conjunction with bag and cartridge filtration if further treatment is required.
- Sand filters can also be used to provide additional treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance with installation and operation.

Maintenance:

- The filters require monthly service to monitor and maintain the sand media.

Pressurized Bag Filter

Description:

A pressurized bag filter is a unit composed of single filter bags made from polyester felt material. The water filters through the unit and is discharged through a header, allowing for the discharge of flow in series to an additional treatment unit. Vendors provide pressurized bag filters in a variety of configurations. Some units include a combination of bag filters and cartridge filters for enhanced contaminant removal.

Appropriate Applications:

- Effective for the removal of sediment (sand and silt) and some metals, as well as the reduction of BOD, turbidity, and hydrocarbons. Oil absorbent bags are available for hydrocarbon removal.
- Filters can be used to provide secondary treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance with installation and operation.

Maintenance:

- The filter bags require replacement when the pressure differential exceeds the manufacturer's recommendation.



Pressurized Bag Filter

Cartridge Filter

Description:

Cartridge filters provide a high degree of pollutant removal by utilizing a number of individual cartridges as part of a larger filtering unit. They are often used as a secondary or higher (polishing) level of treatment after a significant amount of sediment and other pollutants are removed. Units come with various cartridge configurations (for use in series with pressurized bag filters) or with a larger single cartridge filtration unit (with multiple filters within).

Appropriate Applications:

- Effective for the removal of sediment (sand, silt, and some clays) and metals, as well as the reduction of BOD, turbidity, and hydrocarbons. Hydrocarbons can effectively be removed with special resin cartridges.
- Filters can be used to provide secondary treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance.

Maintenance:

- The cartridges require replacement when the pressure differential exceeds the manufacturer's recommendation.



Cartridge Filter

DEWATERING OPERATIONS DISCHARGE MONITORING FORM

GENERAL INFORMATION			
Project Name			
Operator			
Location			
Sampler's Name			
Sampler's Signature			
Date Discharge Began		Date of Sampling	
Size of Pump		Hours of operation	
Time pump started		Time pump shut off	
WATER SAMPLE LOG			
Constituent	Units	Sample Results	
Turbidity	NTUs		

One sample shall be taken at a point representative of discharge prior to its entering the receiving water. A second sample shall be taken of the receiving water upstream of the discharge point or in the case of receiving waters with low or no flow, prior to discharge at a location representative of the receiving water. Both samples shall be taken during the same day within a reasonable timeframe (i.e., thirty minutes).

DISCHARGE LIMITATION (See Alaska Water Quality Standards in 18 Alaska Administrative Code 70.200)

Constituent	Units	Receiving Water
pH	Standard	between 6.5 and 8.5
Turbidity	NTUs	5 NTU above background

Notes:

Dust Control

Dust control is a temporary BMP that is necessary during dry periods when soil is exposed to wind. This BMP prevents dust from leaving disturbed soil surfaces and falling onto surface waters, which causes sedimentation.

Selection

Dust control is necessary on construction haul routes and disturbed areas.

Implementation

The most common method for dust control is application of water to exposed soil surfaces to reduce the generation of dust, with re-application as needed. Alternate dust control methods include covering and acrylic soil treatments.

Other soil treatments may be acceptable; check with PM&E.

Sweeping

Street sweeping is an effective temporary BMP to prevent construction mud and sediment from entering the stormwater collection system.

Selection

All construction sites shall institute sweeping or equivalent measures to ensure that sediment and mud is not tracked onto roadways.

Implementation

- The haul route within a 500-foot radius of the construction exit, or farther as required, shall be cleaned from curb to curb thoroughly at the end of each day, and more often as necessary to ensure that sediment and mud is not tracked onto roadways.
- The entire haul route shall be cleaned thoroughly from curb to curb each week.
- Sediment shall be removed from roads by shoveling or pickup sweeping and shall be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner.
- Street sweeping equipment, such as vacuum trucks, must be equipped with an effective baghouse or other filtering devices. The use of sweeping equipment with air pollution control devices that are in disrepair is prohibited.
- Mechanical devices without filtering equipment may be used only when wet sweeping methods are effectively employed.
- Vacuum sweepers must be used with water.
- The use of leaf blowers and other similar equipment for sweeping is prohibited.
- Manual broom sweeping is allowed
- Reasonable measures must be employed to prevent dust from becoming airborne during any operation where particulate matter is handled, transported or stored.
- Control dust and particulate matter to comply with MOA fugitive emissions standards (AMC 15.35.090).

Maintenance

- Each hour during hauling operations, check to see that sediment and mud are not tracked onto the roadways.

Gravel Construction Exit

The gravel construction exit is used to reduce mud and sediment on a roadway adjacent to a construction site. Figure I-23 illustrates this BMP. The gravel acts to remove the excess dirt on dump trucks as they travel across the bumpy surface. Gravel construction exits are a temporary measure used during construction. The effectiveness of this BMP is enhanced when used with a truck wash basin.

Selection

Gravel construction exits are appropriate on all projects where soil is being hauled from the site. Mud on a road can create a safety hazard as well as a sediment problem. If the exit is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This will include street sweeping, an increase in the dimensions of the entrance, or the installation of a truck wash basin.

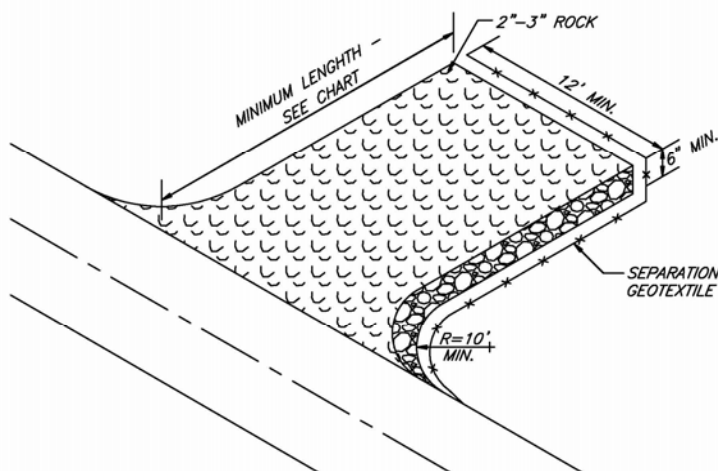
Implementation

The gravel construction exits should be installed at all construction site exits in a manner that minimizes sediment leaving the site. They should not be placed at locations that have steep grades or at curves in public roads where sight distance may be a problem. Rocks should be installed so that a bumpy and rough surface is created.

Maintenance

The gravel construction exit should be cleaned or replaced as needed. Remove all mud and sediment deposited on paved roadways within 24 hours.

- Check for and remove dirt present on roadways adjacent to the site.
- Verify that the dump trucks leaving the site are using the exit.
- Confirm that the surface is rough and bumpy.
- Check for sediment that has accumulated in the rocks. Replace or provide additional gravel as necessary.



Area of Disturbance	Minimum Length
Less than 10,000 square feet	25 feet
10,000 square feet or more	50 feet

Figure I-23: Gravel Construction Exit

Truck Wheel Wash Basin

Truck wheel wash basins are a temporary measure for removing dirt and debris from dump trucks to reduce tracking of sediment onto roadways adjacent to the construction site. An illustration is shown in Figure I-24. The basins are most effective when used in combination with a gravel construction exit.

Selection

Truck wheel wash basins are appropriate on all projects where soil is being hauled from the site.

Implementation

The truck wheel wash basin should be installed at all construction site egress points in a manner that keeps sediments from leaving the site. The rocks should be installed so that a bumpy and rough surface is created. Construction of the truck wash basin should prevent the water from overflowing the basin.

Maintenance

The truck wash basin water should be replaced weekly or more frequently as necessary to clean the trucks. The rocks should be cleaned or replaced as needed.

- Check for dirt present on roadways adjacent to site.
- Verify that dump trucks leaving the site are using the basin.
- Check for and correct water overflowing the basin.
- Check on whether the water needs changing.
- Look for the accumulation of sediment in the rocks and remove or add additional gravel as necessary.
- Confirm that the basin is rough and bumpy.

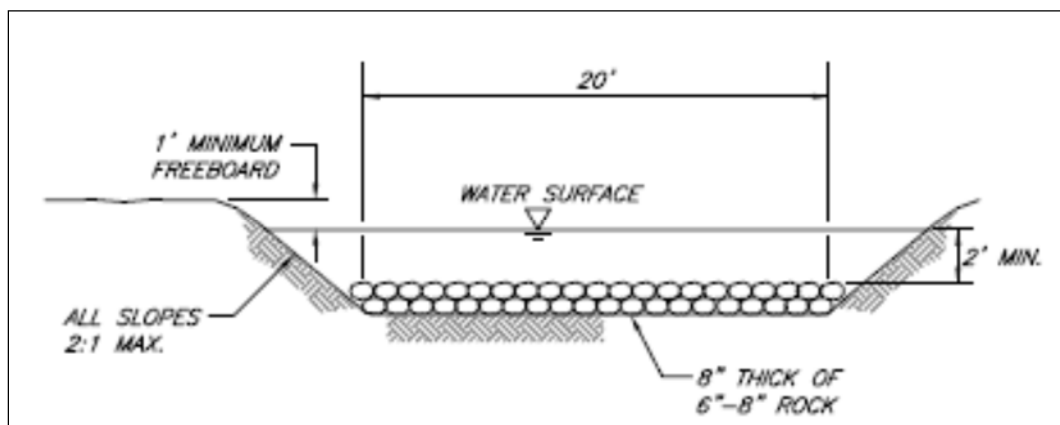


Figure I-24: Truck Wheel Wash Basin

Mud Mats

Mud mats are a temporary measure for providing parking on dirt surfaces to reduce tracking of sediment onto roadways adjacent to the construction site. The mats are most effective when used in on flat slopes with light to moderate traffic.

Selection

Mud mats are appropriate on projects where worker parking is not provided in stabilized areas.

Implementation

Mud mats should be installed at all dirt parking areas in a manner that keeps sediments from leaving the site, either by foot or on vehicle wheels. The mats should be installed so that the entire area that may be used for parking or driving is covered..

Maintenance

The mud mat should be inspected weekly or more frequently as necessary to assure proper coverage and usage. The mats should be cleaned or replaced as needed.

- Check for dirt present on roadways adjacent to site.
- Verify that workers are parking in designated areas.
- Check on whether the mats need changing or sweeping.