

STORM WATER TREATMENT PLAN REVIEW

Guidance Manual

Third Edition

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LIST OF ACRONYMS AND ABBREVIATIONS

AAC.....	The Alaska Administrative Code
ADEC.....	Alaska Department of Environmental Conservation
ADF&G.....	Alaska Department of Fish and Game
ADOT&PF.....	Alaska Department of Transportation and Public Facilities
AMC.....	Anchorage Municipal Code
APDES	Alaska Pollutant Discharge Elimination System
AWWU.....	Anchorage Water and Wastewater Utility
BMP.....	Best Management Practice
cfs	Cubic Feet per Second
CGP.....	Construction General Permit
CWA.....	Clean Water Act
DCM	Design Criteria Manual
EPA	Environmental Protection Agency
ESCA.....	Erosion and Sediment Control Administrator
ESC	Erosion and Sediment Control
LID.....	Low Impact Development
MEP.....	Maximum Extent Practicable
MOA	Municipality of Anchorage
MSGP.....	Multi-Sector General Permit
MS4	Municipal Separate Storm Sewer System
MUSLE	Modified Universal Soil Loss Equation
NAICS.....	North American Industry Classification System
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOT.....	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRC.....	National Response Center
OGS.....	Oil and Grit Separator
OSC.....	On Scene Coordinator
SIC.....	Standard Industrial Classification
State	State of Alaska
SPCC.....	Spill Prevention, Control, and Countermeasure Plans
SWPPP.....	Storm Water Pollution Prevention Plan
SWTP	Storm Water Treatment Plan
SWTPRGM.....	Storm Water Treatment Plan Review Guidance Manual
TMDL.....	Total Maximum Daily Load
U.S.C.	United States Code
USCG.	United States Coast Guard
USFWS.....	United States Fish and Wildlife Service
WMS.....	Watershed Management Services

1 INTRODUCTION

Federal and State regulations require the Municipality of Anchorage (MOA) to implement storm water management programs to control storm water runoff and associated pollutants within municipal boundaries. These regulatory requirements extend to the control of storm water discharges from sites both during and after construction.

MOA regulations regarding storm water pollution control are set forth in the Anchorage Municipal Code (AMC) Title 21. The AMC requires the development, implementation, and maintenance of a *Storm Water Treatment Plan Review Guidance Manual* (SWTPRGM). The AMC further requires anyone who constructs, installs, modifies, or operates a storm water treatment or disposal system to comply with the SWTPRGM regarding storm water runoff system plan requirements and plan reviews.

Developers of both new and redeveloped sites are required to prepare and submit a Storm Water Treatment Plan (SWTP) to the MOA for review and approval prior to the start of construction. **This requirement applies to anyone who will disturb the ground or discharge or route storm water within municipal boundaries.**

This Second Edition of the SWTPRGM is intended for use in the preparation and implementation of SWTPs by designers, engineers, and contractors. SWTPs must address the following issues:

- Potential sources of pollution that may be expected to affect the quality of storm water discharges from a site;
- Temporary practices to be used to reduce pollutants in storm water discharges during construction;
- Permanent practices to be used to reduce pollutants from post-construction storm water discharges; and
- Compliance with the terms and conditions of relevant Federal, State, and MOA storm water discharge regulations.

The Storm Water Treatment Plan generally consists of the following components:

- Existing and proposed site conditions, with a detailed plot plan or construction plan
- A Stormwater Pollution Prevention Plan (SWPPP);
- A Dewatering Plan;
- A Permanent Stormwater Control Plan; and
- An Operations and Maintenance Plan

Depending on the nature of the project, not every component may be required.

1.1 Guidance Manual Overview

The goal of this manual is to provide:

- An overview of applicable pollution prevention regulations, requirements, and minimum standards;
- Information on the selection, implementation, and maintenance of temporary and permanent erosion, sediment, and stormwater management controls; and
- Guidance for the preparation and implementation of a concise and complete SWTP.

The manual addresses storm water pollution prevention and control for construction projects from developed or redeveloped sites and for discharges from permanent facilities. Topics in this manual that relate to pollution prevention requirements for **construction projects** include:

- applicable storm water pollution prevention regulations and standards;
- the selection, implementation, and maintenance of temporary erosion and sediment control Best Management Practices (BMPs);
- the development, approval, and implementation of SWTPs;
- site inspection requirements;
- violations;
- special requirements related to dewatering and underdrains; and
- termination of coverage.

Topics covered in this manual that relate to control of stormwater discharges from **permanent facilities** include:

- applicable regulations and standards;
- the selection, implementation, and maintenance of permanent BMPs;
- materials storage and handling requirements;
- pollution prevention guidance for vehicle and equipment washing;
- oil spill pollution prevention and reporting requirements;
- guidance for control of pollutants from parking areas; and
- requirements and guidance for the operation of both private and commercial snow storage facilities.

A listing of references and resources is included in Section 10.

1.2 Repeal of Prior Guidance Manuals

This manual replaces the following MOA storm water management manuals:

- *Storm Water Treatment Plan Review Guidance Manual 2nd Edition (December 2007)*,
- *Storm Water Treatment Plan Review Guidance Manual (January 1999)*, and
- *Erosion and Sediment Control and Materials Containment Guidance Manual (January 1998)*.

The prior manuals are repealed.

2 REGULATORY REQUIREMENTS FOR POLLUTION PREVENTION

The MOA is required to manage storm water 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 and its Oil Pollution Prevention (OPP) program which regulates oil spill pollution prevention and reporting.

The MOA is also required to manage storm water and associated pollutants in accordance with specific requirements set forth in the Alaska Administrative Code (AAC), the Alaska Pollutant Discharge Elimination System, and Alaska Department of Environmental Conservation (ADEC) water quality standards, as well as its own municipal code.

2.1 EPA National Pollutant Discharge Elimination System (NPDES) Permit Program

As authorized by the CWA, the EPA's NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are specific discharges such as pipes or constructed ditches. Industrial, construction, municipal, residential, and other facilities must obtain NPDES permits if their discharges go directly to surface waters. Since its introduction in 1972, the NPDES permit program has been responsible for significant improvements to our nation's water quality.

The EPA, in coordination with the State, the regulated community, and the public, develops, implements, and conducts oversight of the NPDES permit program based on statutory requirements contained in the CWA and regulatory requirements contained in the NPDES regulations.

A NPDES permit may set a numeric limitation for a pollutant or pollutant parameter in a discharge. The permittee may typically choose which technologies to use to attain compliance. Some permits, however, contain certain generic erosion and sediment controls such as installing a screen over a pipe to keep debris out of a waterway. NPDES permits make sure that a state's mandatory standards for clean water and Federal minimum requirements are being met.

There are various methods used to monitor NPDES permit compliance, with required sampling and reporting being the most prevalent. EPA and state regulatory agencies will also send inspectors to facilities in order to determine if they are in compliance with the conditions imposed under their permits.

Federal laws provide EPA and authorized state and local regulatory agencies with various methods for taking enforcement actions against violators of permit requirements. For example, EPA and state regulatory agencies may issue administrative orders that require facilities to correct violations or impose fines. The laws also allow EPA and state agencies to pursue civil and criminal actions that may include mandatory injunctions or penalties, as well as jail sentences for persons found willfully violating requirements, and endangering the health and welfare of the public or environment. The general public can also enforce permit conditions. The facility monitoring reports are public documents, and the public can review them. If any member of the public finds that a facility is violating its NPDES permit, that member can independently start a legal action, unless EPA or the state regulatory agency has already taken an enforcement action.

The Clean Water Act intends for states to run the NPDES program, but provides for EPA to do so when states elect not to. With EPA's approval of Alaska's application, the State is implementing an EPA-approved state program, the Alaska Pollutant Discharge Elimination System (APDES) program.

Stormwater was transferred to ADEC on October 31, 2009. When this occurred, existing EPA permits were transferred to ADEC. The transferred permits will remain in effect (along with the state certifications) until ADEC issues APDES permits to replace the EPA-issued permits.

EPA will oversee the state's implementation of the program and can intervene on any permit issued, renewed or modified by the State. EPA will also continue to exercise certain responsibilities involving Tribes and other federal agencies. For example, EPA has a continuing responsibility to consult with Alaska Tribes, as well as the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on impacts to endangered species and essential fish habitat. Finally, a small number of special permits not eligible for transfer to the State will continue to be issued and enforced by EPA.

See Section 2.3 for a description of APDES stormwater permits.

2.2 EPA Oil Pollution Prevention and Reporting Regulations

On July 17th, 2002, the EPA issued a final rule amending the Oil Pollution Prevention (OPP) regulation promulgated under the authority of the Federal Water Pollution Control Act (Clean Water Act). The 2002 amendments address requirements for Spill Prevention, Control, and Countermeasure (SPCC) plans, and some provisions that may also affect Facility Response Plans. The EPA incorporated revisions proposed in 1991, 1993, and 1997. The new SPCC rule addresses these revisions and became effective August 16, 2002. EPA published a final rule on April 17, 2003 that extended the compliance deadlines that facilities must amend (or, for new facilities, prepare) and implement SPCC plans conforming to the new regulation.

Title 40, Part 112 of the Code of Federal Regulations (July 3, 2003 edition) established procedures, methods, and equipment requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities, into or upon the navigable waters of the United States or adjoining shorelines. These regulations apply to owners or operators of onshore and offshore facilities engaged in producing, storing, transferring, distributing, and / or consuming oil and oil products. Amendments to these regulations were adopted in February 2007. The current OPP regulations can be referenced on the EPA's web page: <http://www.epa.gov/oilspill/lawsregs.htm>.

The 2002 changes to the OPP regulations clarify applicability to owners or operators that use oil. The changes also allow for tracking the scope of the rule to conform to the expanded jurisdiction of the amended CWA. The broadened range includes waters of the contiguous zone, and waters connected with activity under the Outer Continental Shelf Lands Act or Deepwater Port Act, as well as waters affecting certain natural resources of the United States.

In simple terms, any facility that stores more than 1,320 gallons of petroleum products must comply with Federal regulations for oil pollution prevention.

The 2002 Federal regulations require that SPCC plans be prepared in accordance with good engineering practices, be approved by a person with the authority to commit the resources necessary to implement the plan, and must be certified by a licensed professional engineer. At a minimum, SPCC plans must address the following three areas:

- Operations and management procedures that prevent oil spills;
- Control measures installed to prevent a spill from reaching navigable waters; and
- Countermeasures to contain, clean up, and mitigate the effects of an oil spill that could reach navigable waters.

2.3 State Regulations

2.3.1 Alaska Pollutant Discharge Elimination System (APDES)

Permit requirements in APDES-issued permits are not expected to change significantly from those issued as NPDES permits by EPA. Permit limits will continue to be based on state water quality standards and reflect wastewater treatment requirements in state and federal law.

Three things are expected to change under APDES: First, a single state permit will replace the current requirement for both a federal permit and a state certification or a state permit. Second, ADEC, instead of EPA, will monitor and enforce compliance with the permits. Finally, appeals of permits will be heard by ADEC and in the Alaska judicial system instead of by the federal Environmental Appeals Board and federal courts.

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

1. **Construction General Permit (CGP)** – applies to the control of storm water discharges and associated pollutants on construction projects with one acre or more of land disturbance. The existing CGP was transferred from EPA to ADEC on October 31, 2009. ADEC reissued the permit on December 31, 2009, with changes in the NOI and NOT submittal processes and standard permit conditions. ADEC has developed an eNOI system to similar to EPA's. Contractors will operate under this APDES CGP until ADEC reissues the permit in the Spring of 2011.
2. **Municipal Separate Storm Sewer System (MS4) Permit** – applies to municipal separate storm sewer systems. The existing MS4 permits were transferred from EPA to ADEC on October 31, 2009.
3. **Multi-Sector General Permit (MSGP)** – applies to post-construction storm water discharges and potential pollutants at industrial facilities. The existing MSGP was transferred from EPA to ADEC on October 31, 2009. Facilities will operate under the EPA-issued MSGP until ADEC reissues the permit, estimated to be the fall of 2013.

The three APDES permits are described in more detail below.

2.3.2 Construction General Permit (CGP)

The CGP, as currently modified, governs all storm water discharges associated with construction on projects with one or more acres of land disturbance, including off-site borrow and haul areas. The permit is available at: <http://www.dec.state.ak.us/water/wnpspc/stormwater/docs/AKR100000CGP.pdf>.

The CGP regulates storm water and uncontaminated surface discharges from construction sites in EPA Region 10, which includes Alaska. The goal of the CGP is to reduce or eliminate storm water 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 discharges of certain non-storm water 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) waterbody assessment; and
- Those that are likely to affect Endangered or Threatened Species.

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

- Post-construction discharges including support activity;

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

The CGP requires that persons 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 storm water associated with construction activities to EPA; and implement the SWPPP. Implementation of the SWPPP requires that controls to reduce erosion and prevent sediments from discharging from the construction site be instituted and maintained. 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 SWPP at prescribed inspection frequencies and locations.

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

In order to obtain coverage under the CGP, the permittee must first complete a SWPPP and submit an NOI as described in Section 5.

2.3.3 Municipal Separate Storm Sewer System (MS4) Permit

The MOA and the Alaska Department of Transportation and Public Facilities (ADOT&PF) are co-permittees under an MS4 permit issued by the EPA and now administered by ADEC. The MS4 permit allows the MOA and ADOT&PF, as operators of a MS4, to discharge storm water meeting specified requirements into waters of the United States. The MS4 permit requirements are implemented through the Storm Water Management Program and include a program substantially similar to the CGP program discussed above.

The regulatory definition of an MS4 (40 CFR 122.26(b)(8)) is “a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catchbasins, curbs, gutters, ditches, man-made channels, or storm drains):

- Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created to or pursuant to state law) ... including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges into waters of the United States;
- Designed or used for collecting or conveying storm water;
- Which is not a combined sewer; and
- Which is not part of a Publicly Owned Treatment Works as defined at 40 CFR 122.2.”

In compliance with the MS4 permit, the MOA developed the SWTP program and associated guidances describing MOA storm water treatment requirements, reviews, and inspections. The SWTP program is the basis for this guidance document, which will continue to be updated periodically as EPA and ADEC regulations change or as the MOA revises its program.

The MOA SWTP review requirements outlined in this manual apply to all land areas and land disturbances within the corporate limits of the MOA and / or served by the MS4, and refer to those portions of the MS4 that are owned and operated by the MOA or ADOT&PF, and that discharge to receiving waters.

2.3.4 Multi-Sector General Permit (MSGP)

Activities that take place at industrial facilities, such as material handling and storage, often expose potential pollutants to storm water. When runoff from these activities discharges industrial pollutants into nearby storm sewer systems and waterbodies, the discharges may adversely

affect water quality. To limit pollutants in storm water discharges from industrial facilities, the APDES permit program includes an industrial storm water permitting component. Operators of industrial facilities included in one of the 30 sectors of “storm water discharges associated with industrial activity” (40 CFR 122.26 (b)(14)(i)-(xi)) that discharge storm water to an MS4, or directly to waters of the United States, require authorization under an APDES industrial storm water permit. If an industrial facility has a Standard Industrial Classification (SIC) code, or conducts operations that are contained in the narrative description listed in one or more of the 30 sectors, the facility operator must determine if the facility is eligible for coverage under either a general or an individual APDES industrial storm water permit. The North American Industry Classification System (NAICS) may eventually replace the SIC system. The U.S. Census Bureau has a conversion table to bridge the two systems online. In some cases, a facility operator may be eligible for a conditional / temporary exclusion from permitting requirements.

General permits contain requirements for numerous types of industrial activities, allowing a facility operator to quickly obtain permit coverage. In Alaska the MSGP, as currently modified, is the general permit available to facility operators. The MSGP provides facility-specific requirements for several types of industrial facilities within one permit. The MSGP presents all requirements up front, allowing facility operators to become familiar with, and prepare for, activities such as industrial SWPPP implementation and monitoring before applying for permit coverage. This consolidated permit that applies to Alaska as of the date of this review manual is available at: http://www.epa.gov/npdes/pubs/msgp2008_finalpermit.pdf

The MSGP contains general permit requirements that pertain to all sectors, and sector-specific requirements that apply only to facilities within each of the 30 industrial sectors. Most industrial sectors have visual, analytical, and / or compliance monitoring requirements.

To apply for permit coverage under the MSGP, a facility operator must complete and submit an NOI form to ADEC. The NOI requests a variety of information, including the latitude and longitude of the facility, information related to the Endangered Species Act, and the National Historic Preservation Act.

To obtain authorization under the new modification of the MSGP permit, a facility owner will be required to:

1. Meet the eligibility requirements;
2. Develop and implement an industrial SWPPP; and
3. Submit a complete NOI.

Facility operators must submit their Annual Reports and MultiSector Discharge Monitoring Report (MDMR) to ADEC.

To discontinue permit coverage, a facility operator must complete and submit a Notice of Termination (NOT) form to the ADEC.

2.3.5 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 9 of this manual.

2.3.6 State Water Quality Standards

The mission of the ADEC Water Quality Standards program is to protect the waters of Alaska from pollutants. The ADEC Water Quality Standards establish water quality criteria for the protection of designated uses for water supply, water recreation, and growth and propagation of fish, shellfish, other aquatic life, and wildlife. The most stringent of these criteria are those for drinking, culinary, and food processing water supply. The ADEC Water Quality Standards specify the degree of degradation that may not be exceeded in a waterbody because of human actions. The water quality standards are set by the ADEC's antidegradation policy.

The State antidegradation policy includes provisions for full protection of existing (functional) uses, maintenance of water quality of high-quality waters, and a prohibition against lowering water quality in outstanding resource waters. The antidegradation policy provides a powerful tool for the protection of water quality in regulation of point and non-point source discharges. In conjunction with beneficial uses and narrative criteria, antidegradation is used to address impacts that cannot be fully addressed by chemical criteria, such as physical and hydrologic modifications.

The specific requirements are set forth in 18 AAC 70 Water Quality Standards. The AAC is available online (<http://dec.alaska.gov/regulations/pdfs/18%20AAC%2070.pdf>), at the ADEC offices, and through other sources.

2.4 MOA Storm Water Pollution Control Regulations

Storm water pollution control requirements are set forth in Title 21 (Land Use Planning) of the AMC and include the following:

- Development, implementation, and maintenance of a Storm Water Treatment Plan Review Guidance Manual;
- The requirement of anyone who constructs, installs, modifies, or operates a storm water treatment or disposal system within the municipal boundaries to comply with the SWTPRGM regarding storm water runoff system plan requirements and plan reviews;
- Prohibited discharges or acts;
- Sewer construction standards;
- Storm water runoff restrictions;
- Inspection requirements;
- Plan review and inspection fees; and
- Penalties.

3 SWTP REQUIREMENTS OVERVIEW

Storm water treatment plan approval is required under AMC 21 prior to the commencement of land clearing or ground disturbing activities; the discharge of surface water (including meltwater from snow disposal sites); the construction, alteration, installation, modification, or operation of a storm water treatment or disposal system; demolition or utility work; connection to the municipal storm sewer system; work in waterways or watercourse; or dewatering activities. All construction, development, and maintenance activities shall be in accordance with the approved Storm Water Treatment Plan.

The Storm Water Treatment Plan is a comprehensive report containing all of the technical information and analysis necessary for regulatory agencies to evaluate proposed BMPs and determine if minimum requirements will be met. Contents of the plan vary with the size of the parcel, size and type of proposed development, individual site characteristics, and activities and land use associated with the site.

3.1 Submission Requirements

Table 3-1 presents the required elements of a Storm Water Treatment Plan. Individual elements are described below.

1. Handout AG.21 is included in Appendix B and available on the MOA website (<http://www.muni.org/Departments/development/BSD/Handouts/handoutag21.pdf>). Handout AG.21 serves as the application for a SWTP review.
2. Unless included in items 4 or 6 below, the existing and proposed conditions should include a description of the proposed development, site drainage and receiving waters, and calculations used to determine runoff quantity and to select and design BMPs. The Existing and Proposed conditions should summarize preliminary conditions and include an off-site analysis, if required. A Drainage Report, which may be required for the project, may be used to provide this information, too.
3. Plot plan, site plan, construction plan, drawing, or map showing, at a minimum
 - Vicinity map clearly locating the property
 - Existing structures, topography, vegetation, soils, wetlands, drainage systems, and critical areas
 - Road rights-of-way and easements, drainage easements, buffers, and setback requirements
 - Proposed permanent lot layout, topography, structures, drainage system, impervious areas, and access points
 - Locations of all construction-phase (if applicable) and permanent physical storm water controls, and locations where potential pollutants are or will be stored.
4. Construction Activities Stormwater Quality Control – applicable to all activities disturbing 500 square feet or more or that are greater than 4 feet in depth and some activities that are smaller. See Section 5 of this manual.
5. A copy of the Construction General Permit Notice of Intent must also be submitted if the construction project will disturb 1 acre or more. Notices of intent are covered in more detail in Section 5.3.1.
6. Dewatering Plan - Applicable to all activities involving groundwater or pumped discharges. See Section 6 of this Manual.

Table 3-1 Storm Water Treatment Plan Elements

Type of Activity:		Any new or redevelopment project					Existing Commercial Operation
Land disturbance area or depth and project setting:		Less than 500 sq ft, less than 4 ft in depth, and sufficient buffer ¹	Less 500 sq feet and less than 4 feet but insufficient buffer ¹	Greater than 4 feet in depth OR 500 sq feet up to 10,000 sq feet	Greater than 10,000 square feet but less than 1 acre	1 acre or greater	Not Applicable
SWTP Element or Submittal Item		Submittal Required?					
1	Applicable checklist and signed certification from MOA Handout AG.21	No submittal required ²	AG.21 checklists #1 and #3	AG.21 checklists #1 and #3	AG.21 checklists #2 and #3	AG.21 checklist #2, and checklist #3 if less than 5 acres	No
2	Existing and proposed conditions	No	No	No	Yes	Yes	No
3	Plot Plan or Construction Plan	No	Yes	Yes	Yes	Yes	Yes
4	Stormwater Pollution Prevention Plan	Follow AG.21 checklist #1 ^{3, 4}	Type 1 SWPPP ^{4, 5}	Type 1 SWPPP ^{4, 5}	Type 2 SWPPP ^{4, 6}	Type 3 SWPPP ⁷	No
5	Copy of Notice of Intent for CGP	No ⁸	No ⁸	No ⁸	No ⁸	Yes	No
6	Dewatering Plan	No	Required if pumped discharges will be involved				No
7	Permanent Stormwater Quality Control Plan ⁹	Single family or duplex	No	No	No	No	No
		All other ¹⁰	No	Yes	Yes	Yes	Yes
8	Permanent Maintenance and Operations Plan	Single family or duplex	No	No	No	No	No
		All other ¹⁰	No	Yes	Yes	Yes	Yes
9	Other information ¹¹	Single family or duplex	No	No	Yes	Yes	No
		All other ¹⁰	No	Yes	Yes	Yes	Yes
10	As-built drawings ¹²	Single family or duplex	No	No	No	No	No
		All other ¹⁰	No	Yes	Yes	Yes	Yes

There is sufficient buffer if the distance between the disturbed area and adjacent creeks or wetlands is the greatest of one of the following:

- 25 feet if the slope is flatter than 4:1 and 50 feet if the slope is steeper than 4:1
- The stream setback width required under Anchorage Municipal Code Title 21
- A distance specifically required by MOA

² Submittal is required if project is part of a common plan of development that collectively disturbs 10,000 square feet or more. See Section 5 of this manual.

³ Although no submittal is required, operators of these projects must follow the controls specified in Checklist #1 of Handout AG.21 (Appendix B). These sites are subject to municipal inspection.

⁴ See Section 5 for SWPPP requirements for projects that are part of a larger common plan of development.

⁵ Type 1 SWPPP – Certify to and follow requirements for erosion and sediment control as shown in AG.21 Checklist #1 (included in Appendix B).

⁶ Type 2 SWPPP – Prepare, certify, and implement a SWPPP as described in Section 5 of this manual. Generally the SWPPP is prepared in accordance with the APDES General Permit for

stormwater discharges from construction activities (CGP) but submittal of an NOI is not required for a Type 2 SWPPP.

⁷ Type 3 SWPPP – Prepare, certify and implement a SWPPP in accordance with the CGP. Submit NOI for the CGP and fulfill permit requirements applicable to the construction project.

⁸ Required if the project is part of a common plan of development that collectively disturbs one or more acres

⁹ Permanent stormwater controls are discussed in Chapter 7 and Appendix A of this manual.

¹⁰ 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.

¹¹ Other information includes a Drainage Plan, if prepared in compliance with Title 21.07 and the DCM; special reports and studies, such as soils, geotechnical, wetlands, or hydrological reports or analyses; pollution prevention plans 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.

¹² To be submitted when construction of permanent stormwater control facilities is completed

7. Permanent Stormwater Quality Control Plan – Applicable to new or redevelopment of triplex or larger residential developments and all commercial developments. See Section 7 of this manual.
8. Permanent Maintenance and Operations Plan – Applicable to most projects other than single family or duplex projects. See Section 8 of this manual.
9. Other information required for submittal includes:
 - Special Reports and studies, such as soils, geotechnical, wetlands, or hydrological reports or analysis
 - Other permits, such as a Corps of Engineers Section 404 (wetlands) permit, an Alaska Department Environmental Conservation dewatering permit, an Alaska Department of Natural Resources Temporary Water Use Permit, an Anchorage Water and Wastewater Utility (AWWU) discharge permit, or an MOA or ADOT&PF right-of-way permit.
10. As-built drawings. See Section 3.2, Step 10, of this manual.

3.2 Developing Storm Water Treatment Plans

The Storm water Treatment Plan is the comprehensive report containing all of the technical information and analysis necessary for the WMS to evaluate the proposed Best Management Practices and determine if the requirements will be met. Contents of Storm Water Treatment Plans will vary with the size of the parcel, type and size of proposed development, individual site characteristics, and other information required by PM&E to assess compliance with Chapter 21.67 of the Municipal code.

The steps involved in developing a Storm Water Treatment Plan are presented below. Not all steps will be needed for each site, but you must do Step 1 to determine the rest of your necessary steps to completion.

1. Determine Applicable Plan Components
2. Collect and Analyze Existing Conditions Information
3. Prepare Preliminary Development Layout
4. Perform the Existing and Proposed Conditions Section, including Off Site Analysis
5. Prepare a Permanent Stormwater Quality Control Plan
6. Finalize Development Layout
7. Prepare a Storm Water Pollution Prevention Plan and
8. Prepare a Dewatering Plan
9. Include a Maintenance and Operation Manual
10. Submit As-Built Drawings

Each of these steps is described below.

Step 1: Determine Applicable Plan Components

The required submittals, based on project type, are listed in Table 3-1 and described in Section 3.1

Step 2: Collect and Analyze Existing Conditions Information

Collect and review information on the existing site condition, including topography, drainage patterns, and waterbodies in the vicinity of the proposed system, soils, ground cover, critical areas, adjacent areas, existing development, existing stormwater facilities, and on- and off-site utilities. Analyze data to determine site limitations including: (1) areas with high potential for erosion and sediment deposition (based on soil properties, slope, etc.) and (2) locations of sensitive and critical areas (e.g., wetlands, water quality sensitive areas, etc.).

In this step you prepare what will become the Existing and Proposed Conditions (Part 2 of your Storm Water Treatment Plan, see Table 3-1), Part of the information you gather here will be useful as you prepare your SWPPP (Part 4).

Step 3: Prepare Preliminary Development Layout

Based on the results of the analysis of existing site condition limitations, locate the buildings, roads, parking lots, and landscaping features for the proposed development. Consider the following points when laying out the site: (1) fit development to the terrain to minimize land disturbance, (2) confine construction activities to least critical areas, (3) minimize impervious areas, and (4) utilize the natural drainage systems. Include flow diagrams showing the direction and amount of each stormwater discharge and the receiving systems.

You'll use the development layout you design here for your plot plan or construction plan (Part 3 of the Storm Water Treatment Plan).

Step 4: Perform Off Site Analysis

The off-site analysis, which is not required for all projects, is to be included with the Existing and Proposed Conditions (Part 2 of the Storm Water Treatment Plan).

Conduct an analysis of off-site water quality impacts resulting from the project. The study area should include areas that are upstream and/or tributary to the points of discharge from the site, including the site itself, and extend a distance of ¼ mile downstream of the proposed site discharge location(s).

The off-site analysis should include the following components:

1. A description of the tributary area contributing runoff to the site, drainage channels, conveyance systems, stormwater discharge location(s) including the receiving area(s) (a distance of ¼ mile downstream of the site), and downstream receiving waters
2. A review of existing or potential problems resulting from the development, including but not limited to:
 - sedimentation
 - streambank erosion
 - violations of water quality standards
 - spills and discharge of priority pollutants
3. Demonstrate that the proposed stormwater control Best Management Practices will sufficiently mitigate potential water quality and quantity impacts (e.g. detain flows to meet Minimum Requirement #5)
4. Demonstrate adequate capacity of the downstream system to handle flow conditions after development with proposed BMPs.

Step 5: Prepare a Permanent Stormwater Quality Control Plan

The Permanent Stormwater Quality Control Plan addresses permanent control of stormwater pollution from the developed site. It involves selecting and designing permanent stormwater control BMPs, including the conveyance system for managing runoff on the site. The Permanent Stormwater Quality Control Plan will become Part 6 of the Storm Water Treatment Plan.

The Permanent Stormwater Quality Control Plan should contain the following sections:

1. Narrative including
 - Selected source control BMPs
 - Selected permanent runoff treatment and streambank erosion control BMPs
 - Description of maintenance procedures for each BMP
2. Site Plan, including
 - Vicinity map clearly locating property

- Existing structures topography, vegetation, soils, critical areas, drainage systems, etc.
- Road rights-of-way and easements and setback requirements
- Proposed lot layout, topography, structures, drainage system, impervious areas, access, etc.
- Location of all stormwater control Best Management Practices, including structural details

3. Calculations, showing how treatment controls were sized and designed

The selection process for permanent stormwater control BMPs is discussed in detail in Section 7.

Step 6: Finalize Development Layout and the Existing and Proposed Conditions Section

Locate the design permanent stormwater control and related conveyance facilities on-site to provide discharge at natural locations. Account for these facilities when finalizing the development layout. The final development layout should be shown on the plot plan or construction plan for Part 3 of the Storm Water Treatment Plan.

Incorporate the information developed from steps 2, 4, and 5 into a narrative describing the Existing and Proposed conditions, including all pertinent information that justifies BMP selection, sizing, and location.

Step 7: Prepare a Storm Water Pollution Prevention Plan and Evaluate Threat to Water Quality

A SWPPP is a plan for temporary control of pollution generated during construction. The Storm Water Treatment Plan should contain one of three types of SWPPPs (Type 1, 2, and 3) which differ in detail and scope depending on the area of disturbance. Complete and submit either Checklist #1 or Checklist #2 (from AG-21; Appendix B). See Section 5 of this manual for detailed information.

If the area of disturbance is less than five acres, evaluate the site's potential threat to water quality by completing the Construction Runoff Threat Analysis Form, Checklist #3 (from AG-21, Appendix B). Submit this with the SWPPP.

Step 8: Prepare a Dewatering Plan

If groundwater will be involved or it is known that dewatering is planned, the Storm Water Treatment Plan must include Dewatering Plan that describes how and under what conditions and controls groundwater, pumped water, and other non-stormwater or stormwater mixed with non-stormwater will be discharged from the site. See Section 6 of this manual for detailed information.

Step 9: Prepare a Maintenance and Operation Manual

The Storm Water Treatment Plan must contain the maintenance and operations procedures for all BMPs and related structures. Include a statement identifying persons who will own, operate, and maintain the proposed system(s). If site activities require coverage under the MultiSector General Permit, submit the SWPPP that has been prepared. If site activities require a Spill Prevention Control and Countermeasure (SPCC) plan, submit the SPCC plan that has been prepared for the site.

Step 10: Submit As-built Drawings of Stormwater Control Facilities

Submit as-built drawings, stamped by the engineer, at the completion of construction activity involving permanent BMPs and other permanent stormwater control facilities. As-built information shall be marked on a clean set of full-size paper copy drawings and submitted to WMS. Crossed out information shall remain legible. The name of the as-built drawing preparer and the date of preparation shall appear on each sheet.

3.3 SWTP Reviews

The SWTP will be reviewed by the MOA and approved if deemed acceptable. If not, comments will be provided, noting corrections that must be addressed and resubmitted. Written approval will be provided when the plan is acceptable.

3.4 Changes in Approved SWTPs

3.4.1 Changes in Temporary Controls

Updated plans for changing site conditions are required for all activities requiring a Type 2 or 3 SWPPP. These updates allow the construction team to address differing site conditions; changes in the schedule, sequences, or methods of construction. Plan updates also allow removal of areas from permit coverage, for sites covered by the EPA CGP. BMP substitutions can expose the environment to erosion and sedimentation when done improperly.

Changes in temporary controls do not need to be submitted to WMS but must be described, dated, and signed in the on-site copy of the Type 2 or 3 SWPPP. Changes in Type 3 SWPPPs must be documented and conducted in accordance with the CGP.

3.4.2 Changes in Permanent Controls

To ensure that the BMPs are appropriate for a construction project, the MOA requires that any changes to permanent controls in an approved plan be submitted for approval prior to implementation, unless waived in writing by a Municipal stormwater inspector. Any re-submittal must go to the MOA for storm water review and approval. The re-submittal should include enough information to allow the reviewer to determine if the change is warranted, and that the substitution or revised plan will work as intended.

3.4.3 Changes in Maintenance Plans and SWPPPs for Industrial Facilities

Changes in maintenance plans or SWPPPs written for industrial facilities other than construction sites do not need to be resubmitted to WMS but must be described, dated, and signed in the on-site copy of the maintenance plan or SWPPP. For SWPPPs written for compliance with the MSGP, changes must be documented and conducted in accordance with the MSGP.

3.5 Municipal Inspections

Site inspections performed by the MOA stormwater inspectors will be completed periodically during construction. At a minimum, these will be conducted at the frequency listed in Table 3-2, and will result in the production of an inspection report. The inspection report contains a record of any compliance or non-compliance found at the project site.

Table 3-2 Municipal Inspection Frequency

Site	Municipal Inspection Frequency
(A) All sites disturbing 5 acres or more (B) All other sites disturbing 10,000 square feet or more, or are part of larger common plan of development, which are determined to be a significant threat to water quality	At least monthly during the construction season.
C) All other construction sites disturbing 10,000 square feet or more, or part of larger common plan of development and do not meet the criteria specified in (A) or (B)	At least once per construction season
(D) Construction sites disturbing less than 10,000 square feet	Inspection must occur as needed based on evaluation of the factors that are a threat to water quality.

MOA inspection frequency may depend on evaluation of the site condition's threat to water quality. Factors affecting this evaluation include soil erosion potential, site slope, project size and type, site proximity to receiving water bodies, sensitivity of receiving water bodies, non-storm water discharges, and past record of non-compliance by the operators of the construction sites. In order for the operator to know whether and MOA to be informed when a project disturbing five acres or less is a threat or significant threat to water quality, the Construction Runoff Threat Analysis Form (Checklist #3 on AG-21) must be completed and submitted with the SWTP.

4 BEST MANAGEMENT PRACTICES

Stormwater controls are often referred to as Best Management Practices, or 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 storm water 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, many designs incorporate multiple BMPs in series, called treatment trains. Through the use of multiple BMPs, the strengths of each BMP can be taken advantage of, and the joining and combining of processes can address weaknesses.

4.1 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 ultimately work, however, 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 Appendix A. The toolbox presented, however, is not intended to be comprehensive, and alternate individual engineering solutions will be reviewed and considered by the MOA.

4.1.1 Best Management Practice Equivalency and Design Parameters

BMP design and implementation is a dynamic and creative process. All potential scenarios have not been addressed in this manual for the design, construction, materials, and implementation of BMPs. To allow for creativity and innovations in BMP use, general design principles are given as guidance in this manual (see the BMP Toolbox in Appendix A). Equivalency to these principles is generally acceptable as well. 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.

4.1.2 Site Considerations

Assuming the design is correct, the implementation of the BMPs should be in accordance with the approved plans. The only exception is that the characteristics of the project site will change over time as the earth-moving and land-disturbance operations progress. As the site characteristics change, BMPs may also need revision and replacement to accommodate the different grades and slopes of the landmasses. In some instances, the design may not have considered all features of the site and adjacent areas, and may need revisions to operate effectively. The contractor should be aware of this fact and that immediate action to remedy the deficiencies, such as contacting the engineer, may be required.

4.2 Best Management Practices Types

The selection of a BMP must be based on the soil properties, topography, rainfall characteristics, construction schedule, and storm water flow characteristics at a construction site. BMPs fall into two main categories - procedural and physical - both of which can be either permanent or temporary controls. 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.

4.2.1 Temporary Controls: Erosion and Sediment Control (ESC) Practices

The goal of erosion and sediment control (ESC) practices is to keep sediments from leaving a construction site. The operator must implement control measures to minimize pollutants in storm water discharges. The term “minimize” means reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice.

The operator must select, install, and maintain control measures (e.g., Best Management Practices (“BMPs”), controls, practices, etc.) 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.¹

The most cost-effective and efficient way of reducing erosion and sedimentation from a construction site is to not let the soil mobilize in the first place. In recognition of this fact, upstream controls work more effectively, and are less costly in reducing erosion and sedimentation than are downstream controls. It is much easier and cheaper to reduce erosion than to remove mobilized sediments. Appendix H gives an overview of the effect of land disturbing activities on erosion, sedimentation, and runoff.

ESC practices fall into three major classes: erosion prevention, erosion control, and sediment control. These three classes are discussed in more detail below.

- **Erosion Prevention**

Erosion prevention is any means used to keep soil particles in place. Erosion prevention is the least expensive option of all ESC practices 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 ESC practice, erosion prevention would result in a no-build alternative, which is normally not feasible.

- **Erosion Control**

Erosion control is a practical alternative to the exclusive use of erosion prevention, and should be the primary ESC practice 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 several 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 ESC 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.

¹ 2009 APDES CGP Part 3

- Reduce runoff quantities and velocities – Keeping runoff velocities low offers significant savings in ESC. 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 ESC measures can create bigger problems than if no controls were present.

• **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 ESC 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.² The two-year 24-hour storm event is defined in the *Municipality of Anchorage Drainage Design Guidelines*.

4.2.2 Permanent Physical Controls

Physical controls are devices that alter the flow, velocity, duration, and other characteristics of runoff to provide environmental protection. They vary from simple grass-lined ditches to elaborate proprietary systems. Most physical controls require regular maintenance or other procedural controls. Three categories of physical controls are described below and discussed further in Section 7.

• **Source Control**

Source control BMPs prevent pollution, prevent or minimize the loss of soil from the land, or prevent other adverse effects of storm water. Source control BMPs can be either procedural or physical.

• **Treatment Controls**

Treatment BMPs include facilities that remove pollutants by simple gravity settling of particulate pollutants, filtration, centrifugal force, biological uptake, chemical addition, or soil adsorption.

• **Flow Attenuation and Control**

Flow control BMPs typically control the rate, frequency, and flow duration of storm water 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.

² 2009 APDES CGP Part 3.1.1

4.2.3 Materials Management and Maintenance and Operations Best Management Practices

Materials management and maintenance and operations practices are largely procedural practices for preventing pollution and maintaining existing storm water 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.
- Materials containment practices that address spill prevention and handling, transporting, or storing potentially polluting bulk materials to prevent releases to surface water.

Appendix D contains a list of land use types and their potential pollutants and the types of BMPs that should be considered and discussed in the SWTP.

5 CONSTRUCTION ACTIVITIES REQUIREMENTS

The submittal contents, review, implementation, maintenance, and inspection requirements for the construction phase of the project are modeled on the requirements of the CGP, with reductions depending on the project size.

In this section of the Manual, the numbers noted in brackets (e.g. [2.1.3]) are references to specific sections of the APDES Construction General Permit.

5.1 SWPPP Type Based on Area of Disturbance

The SWTP submittal and review requirements for construction are based on the area of land disturbance and project setting, as summarized in Table 3-1. Either the project will require no submittal or it will require submittal of one of three types of SWPPPs. Requirements for each of these SWPPP types are described below.

5.1.1 Projects Requiring No Submittals

Operators of small projects that disturb less than 500 square feet, are less than 4 feet in depth, have sufficient buffer³ between land disturbance and surface waters, and are not part of a common plan of development that collectively disturbs 10,000 square feet or more are not required to submit an SWTP and a review is not required.

However, for these projects, operators must follow the erosion control practices specified in Handout AG.21 Checklist #1 (Appendix B) as applicable to their project. The project is subject to inspection by municipal storm water inspectors.

5.1.2 Projects Requiring a Type 1 SWPPP

This category includes projects that:

- Disturb less than 500 square feet, are less than 4 feet in depth, but do not have adequate buffer between land disturbance and surface water; or
- Disturb between 500 and 10,000 square feet

AND

- Are not part of a common plan of development that collectively disturbs more than 10,000 square feet

5.1.3 Projects Requiring Type 2 SWPPPs

This classification includes:

- Projects disturbing between 10,000 square feet up to one acre that are not part of a common plan of development that collectively disturbs one or more acres OR
- Land disturbing activities, no matter their size, that a part of a common plan of development which collectively disturbs 10,000 feet up to one acre

³ There is sufficient buffer if the distance between the disturbed area and adjacent creeks or wetlands is the greatest of one of the following:

- 25 feet if the slope is flatter than 4:1 and 50 feet if the slope is steeper than 4:1
- The stream setback width required under Anchorage Municipal Code Title 21
- A distance specifically required by MOA

These projects do not fall under the coverage of the CGP. Preparation of a SWTP for projects of this size includes preparation of a Type 2 SWPPP.

5.1.4 Projects Requiring Type 3 SWPPPs

This classification includes:

- Projects with one acre or more of land disturbance OR
- Land disturbing activities, no matter their size, that are part of a common plan of development which collectively disturbs one or more acres

These projects fall under the coverage of the CGP and a Type 3 SWPPP must be prepared.

5.2 SWPPP Contents

SWPPPs are the tool by which developers and operators communicate with field staff in accomplishing ESC goals. SWPPP Preparation must be **site specific**. The SWPPP preparer must 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. SWPPPs are living documents and **updates are required when changes occur in the field**.

In addition, the SWPPP is intended to document the selection, design, installation, and implementation of control measures that are being used to comply with standards in Sections 4.2.1 and 5.5.2 of this Manual. All management practices and control measures should be properly selected in accordance with manufacturer's specifications and good engineering practices.

For each major activity identified in the project description, the plan shall describe: all control measures, the schedule during construction when control measures will be installed and maintained, and the operator(s) responsible for accomplishing the installation.

Appendix A of this manual provides information on the selection, implementation, and maintenance of ESC and materials management BMPs that are useful in Anchorage. These and other controls should be used, as appropriate, to reduce pollutants in storm water discharges associated with construction.

5.2.1 Type 1 SWPPPs

Operators of these projects must complete Checklist #1 in Handout AG.21 (Appendix B). This checklist requires the following:

- Specific erosion control practices, as applicable to the site, including
 - Location of temporary soil storage piles.
 - Location of temporary gravel access drive(s).
 - Location of sediment controls
 - Location of sediment barriers around storm sewer inlets.
 - Location of diversions and 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)
- A plot plan or construction plan showing the site, the location of the specific ESC practices, and
 - Parcel boundaries, adjacent streets and roadways, existing drainage ways, streams, rivers, lakes, wetlands, or wells, existing and planned storm sewer inlets and culvert crossings within 100 feet of the site and overland runoff (sheet flow) coming onto the site from adjacent areas
 - Existing and proposed buildings and paved areas, limits and approximate dimensions of the proposed disturbed area on the site

- Approximate gradient and direction of slopes before and after grading operations
- A description of how the site will be temporarily and permanently stabilized.
- Certification by the operator that the project is properly classified and that the practices specified will be carried out.

5.2.2 Type 2 SWPPPs

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

- Address all potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the construction site;
- Describe the practices to be used to reduce pollutants in storm water discharges from the construction site;

The operator must prepare a SWPPP which documents the storm water controls implemented at the 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 Table 5-1 and described below.

5.2.2.1 Type 2 SWPPP Elements

A. **Narrative, Schedules, Permits.** Provide a narrative that briefly describes the nature of the construction activity and proposed controls, as follows.

- 1 Identify operators for the project site [5.2.1] and the designated qualified person who will perform the inspections.
- 2 Project description [5.2.2] listing:
 - a. The function of the project (e.g., low density residential, shopping mall, highway, etc.) [5.2.2.1]
 - b. The intended sequence and timing of activities that disturb soils at the site [5.2.2.2]
 - c. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas [5.2.2.3]
- 3 A description of construction and waste materials expected to be stored on-site (provide a place for updates as appropriate) [5.2.4]
- 4 Identify all potential sources of pollutants that may reasonably be expected to affect the quality of storm water discharges from the construction site [5.1.2.1]
- 5 Describe control measures to be used to comply with the temporary controls set forth in Sections 4.2.1 and 4.2.3. [5.1.2.2]
- 6 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 measure's implementation. [5.3.1]
- 7 A description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. [5.3.2]
- 8 Specification of the inspection schedule to be followed [4.1], as required in Section 5.3.3 of this Manual.
- 9 A copy of the U.S. Army Corps of Engineers Section 404 fill permit if one has been obtained for the project.

Table 5-1: Requirements for the Construction Projects Requiring a Type 2 or Type 3 SWPPP

<i>Parts of EPA's Construction General Permit that Apply:</i>	Type 2 SWPPP	Type 3 SWPPP
	<i>Commercial Project with area of disturbance between 10,000 square feet and one acre</i>	<i>Any project with an area of disturbance of one acre or more</i>
Part 1: Coverage Under the CGP	No	Yes
Part 2: Authorization for Discharges of Storm Water from Construction Activity	No	Yes
Part3: Effluent Limits	Generally Yes	Yes
Part 4: Inspections	Yes	Yes
Part 5: Storm Water Pollution Prevention Plans (SWPPP)		
5.1 Storm Water Pollution Prevention Plan Framework	Yes	Yes
5.2 SWPPP Contents: Site and Activity Description	Yes	Yes
5.3 Description of Control Measures to Reduce Pollutants	Yes	Yes
5.4 Non-Storm Water Discharges	Yes	Yes
5.5 Documentation of Permit Eligibility Related to Endangered Species	No	Yes
5.6 Documentation of Permit Eligibility Related to Total Maximum Daily Loads	No	Yes
5.7 Copy of Permit Requirements	No	Yes
5.8 Applicable State, Tribal, or Local Programs	No	Yes
5.9 Inspections (non-MOA)	Yes	Yes
5.10 Maintaining an Updated Plan	Yes	Yes
5.11 Signature, Plan Review, and Making Plans Available	No	Yes
5.12 Requirements for Different Types of Operators	Yes	Yes
Part 6: Termination of Coverage	No	Yes
Part 7: Retention of Records	No	Yes
Part 8: Reopener Clause	No	Yes
Part 9: Standard Permit Conditions	No	Yes
Part 10: Permit Conditions Applicable to Specific States, Indian Country, or Territories	No	Yes

- 10 Identification of sources of non-storm water discharges that are combined with storm water discharges associated with construction activity at the site. The SWPPP must also describe the pollution prevention measures used to eliminate or reduce non-storm water discharges. [5.4]
- B. **Site Map** – Provide a legible site map, showing the entire site, [5.2.3] identifying:
- 1 Direction(s) of storm water flow and approximate slopes before and anticipated after grading activities
 - 2 Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted)
 - 3 Locations of major structural and nonstructural BMPs identified in the SWPPP
 - 4 Locations where stabilization practices are expected to occur
 - 5 Locations of off-site material, waste, borrow or equipment storage areas
 - 6 Locations of all waters of the United States (including wetlands)
 - 7 Locations where storm water discharges to a surface water
 - 8 Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.
- C. **Recordkeeping.** Provide a place in the SWPPP for the following records
- 1 Dates when [5.3.3]
 - a. grading activities occur;
 - b. construction activities temporarily or permanently cease on a portion of the site
 - c. stabilization measures are initiated.
 - 2 Provide inspection report forms to record the following [4.8.1]. An example checklist is included in Appendix F.
 - a. The inspection date
 - b. Names, titles, and qualifications of personnel making the inspection
 - c. Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred
 - d. Weather information and a description of any discharges occurring at the time of the inspection
 - e. Location(s) of discharges of sediment or other pollutants from the site
 - f. Location(s) of BMPs that need to be maintained
 - g. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location
 - h. Location(s) where additional BMPs are needed that did not exist at the time of inspection
 - i. Corrective action required including implementation dates
 - j. Signed certification statement by qualified inspector

5.2.2.2 Type 2 SWPPP Availability

The Type 2 SWPPP will be made available upon request by the MOA agency approving sediment and erosion plans, grading plans, or storm water management plans and to local government officials. [5.11.3]

5.2.3 **Type 3 SWPPPs**

SWPPPs for these projects 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 <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>. The Type 3 SWPPP must be prepared before an NOI is submitted.

The Municipality accepts 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 EPA or ADEC**. The EPA and ADEC each determine and interpret 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 and all SWPPP requirements from the CGP, the Type 3 SWPPP must contain the following elements.

5.2.3.1 Documentation of Permit Eligibility Related to Endangered Species [3.3, 5.5]

Documentation of the project's eligibility for CGP coverage related to Endangered Species is required. The procedures in the CGP should be followed to assess the potential effects of the project's storm water on Endangered Species and critical habitat. The information should include Federally-listed Endangered or Threatened species, and Federally-designated critical habitat in the project area; confirmation of NOI delivery to ADEC's electronic NOI system; and project correspondence with the United States Fish and Wildlife Service (USFWS) and the U.S. National Marine Fisheries Service (NMFS) on listed species and critical habitat associated with the project. If Federally-listed Endangered or Threatened species or Federally-designated critical habitat exist in the project area, a description of measures necessary to protect the species or habitat must be provided. 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.**

5.2.3.2 Documentation of Permit Eligibility Related to Total Maximum Daily Loads [3.5, 5.6]

The SWPPP must include documentation supporting a determination of CGP eligibility with regard to waters that have EPA-established or approved TMDLs, including:

- Identification of whether the discharge is identified in a TMDL, either specifically or generally, and any associated waste load allocations, requirements, and assumptions that are identified 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 G. More current TMDL information can be found through EPA's website, <http://cfpub.epa.gov/npdes/stormwater/tmdl.cfm>, on the ADEC website at

<http://www.dec.state.ak.us/water/tmdl/approvedtmdls.htm>, or the ADEC's direct phone line at 907-269-3066.

5.2.3.3 Copy of Permit Requirements [5.7]

A copy of the entire CGP must be included in the SWPPP. The CGP is available from ADEC and can be downloaded from ADEC's website at:

<http://www.dec.state.ak.us/water/tmdl/approvedtmdls.htm> .

5.2.3.4 State, Tribal, or Local Programs [3.8, 5.8]

The SWPPP and the construction project must be consistent with all applicable Federal, State, tribal, and MOA requirements for ESC and storm water management. The SWPPP should include updates, as necessary, to reflect any revisions to applicable Federal, State, tribal, and local requirements for ESC.

5.2.3.5 Signature, Plan Review, and Making Plans Available [5.11]

- A current copy of the SWPPP, all SWPPP updates, and the MOA approval should be kept at the construction site from the date of commencement of construction activities to the date of final stabilization. The party that has day-to-day operational control over SWPPP implementation must have a copy of the SWPPP available at a central location on the site for the use of all those identified as having responsibilities under the SWPPP whenever they are on the construction site. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the construction site.
 - The SWPPP should be signed and certified in accordance with the CGP
 - A copy of the CGP, the NOI, and acknowledgement letter from ADEC should be kept at the construction site along with the SWPPP.
- A sign or other notice should be posted conspicuously near the main entrance of the construction site. It should contain the following information:
 - A copy of the completed NOI as submitted to the ADEC eNOI system;
 - If there are changes to the Type 3 SWPPP NOI, the sign must show the current location of the SWPPP and the name and telephone number of the contact person for scheduling SWPPP viewing times; and
 - For linear projects, the sign or other notice must be posted at a publicly accessible location near the active part of the construction project (such as where a pipeline project crosses a public road).
- The Type 3 SWPPP will be made available upon request by the EPA; or a State, tribal, or MOA agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; the operator of an MS4 receiving discharges from the site; and representatives of the UFWs or NMFS. The copy of the SWPPP that is required to be kept on the site or locally available must be made available, in its entirety, to EPA or ADEC staff for review and copying at the time of an on-site inspection.

5.3 Requirements for Different Types of Operators

For Type 3 SWPPPs, if both the owner and the contractor have operational control components under the definition of an operator, both parties will need to apply for coverage under the CGP. This may be accomplished by having each party submit an NOI where a common SWPPP is used. Therefore, both the owner and the contractor would become co-permittees for the project. Typically, in this arrangement, the owner retains control over any changes to site plans, SWPPPs, or storm water conveyance or control designs, and the contractor is responsible for

overseeing actual earth-disturbing activities and daily implementation of SWPPP and other CGP conditions.

For both Type 2 and Type 3 SWPPPs, usually, the responsibilities are distinct; the owner has operational control over the plans and specifications, whereas the contractor has day-to-day operational control of the activities at the construction site and the means or methods employed during construction. Therefore, the sole responsibility for implementation of the SWPPP rests with the contractor. In this arrangement, the owner has operational control over construction plans and specifications and ensures adherence to the following requirements: [5.12.1]

- The project specifications meet the minimum requirements of all applicable CGP conditions;
- The SWPPP indicates the areas of the project where the operator has operational control over project specifications, including the ability to make modifications in specifications;
- All other operators implementing portions of the SWPPP (or their own SWPPP) who may be affected by a change to the construction plan are notified of such changes in a timely manner; and
- The SWPPP indicates the name of the party with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other permit conditions.

Along with the owner's responsibilities, the contractor (who will have operational control over day-to-day activities) needs to ensure adherence to the following requirements: [5.12.2]

- The SWPPP meets the minimum requirements of all applicable CGP conditions and identifies the party (or parties) responsible for implementation of control measures identified in the plan;
- The SWPPP indicates areas of the project where the contractor has operational control over day-to-day activities; and
- The SWPPP indicates the name of the party (or parties) with operational control over project specifications (including the ability to make modifications in specifications).

When a party has operational control over only a portion of a larger project (for example, one of four homebuilders in a subdivision), that party is responsible for compliance with the SWPPP and, if a Type 3 SWPPP project, all applicable terms and conditions of the CGP, as it relates to activities on the individual's portion of the construction site. For Type 3 SWPPPs, this includes protection of Endangered Species, critical habitat, and historic properties. The responsible party must ensure, either directly or through coordination with other operators, that their activities do not render another party's SWPPP ineffective. The party responsible for permit compliance must either implement their portion of a common SWPPP or develop and implement their own SWPPP. [5.12.3]

For more effective coordination of BMPs and opportunities for cost sharing in the above scenario, a cooperative effort by the different operators at a site to prepare and participate in a comprehensive SWPPP is encouraged by both the ADEC and the MOA. Individual operators at a site may, but are not required to, develop separate SWPPPs that cover only their portions of the project, provided that reference is made to other operators at the site. In instances for which there is more than one SWPPP for a site, cooperation between the operators is encouraged to ensure that storm water discharge controls and other measures are consistent with one another (for example, the use of similar provisions to protect Endangered Species and critical habitat).

5.4 Submittal Requirements

Table 5-2 provides a matrix of SWPPP submittal requirements. Note that submittals to ADEC are in addition to the MOA submittal requirements for the construction portion of the SWTP. [5.13.2]

5.4.1 Alaska Department of Environmental Conservation

Required for Type 3 SWPPPs

- A. NOI Submittals. The NOI form provided at <http://dec.alaska.gov/water/wnpspc/pdfs/CGPNOI.pdf> must be used to initiate CGP coverage. If ADEC makes other NOI forms available either directly, by public notice, or by making information available on the Internet, these options may be used to satisfy the NOI requirements. Submission of the NOI using ADEC's electronic NOI system (eNOI), as detailed at <http://dec.alaska.gov/water/wnpspc/stormwater/APDESeNOI.html> , is also permissible.
- B. **SWPPP submittals** Operators of government (federal, state, municipal) road projects and other government transportation projects such as ports, railroads, or airport, disturbing one or more acres must submit a copy of the SWPPP and NOI to the ADEC for review, accompanied by the State-required fee.

The SWPPP and NOI must be submitted to ADEC at the address shown on Table 5-2.

5.4.2 Municipality of Anchorage

- A. Type 1 SWPPPs - Operators of projects that fall in this category shall submit to WMS a completed, signed copy of Checklist #1 from Handout AG.21 to the address shown in Table 5-2.
- B. Type 2 SWPPPs - Operators of private projects that fall in this category shall submit a Type 2 SWPPP and, if the project is other than single family residential or duplex, a signed copy of Checklist #2 from Handout AG.21 to the MOA at the address shown in Table 5-2.
- C. Type 3 SWPPPs. Operators of construction projects other than government (federal, state, municipal) road project or other government transportation projects such as ports, railroads, or airports disturbing one or more acres or that are part of a common plan of development which collectively disturbs one or more acres shall submit a copy of the SWPPP and NOI to the MOA at the address shown in Table 5-2. If the project is other than single family residential or duplex, a signed copy of Checklist #2 from Handout AG.21 must also be submitted. Submittal of the SWPPP to the MOA should be made before or at the same time the NOI is submitted to ADEC and shall be accompanied by any MOA-required fee.

Table 5-2: SWPPP Submittal Matrix

Agency:	Alaska Department of Environmental Conservation			Municipality of Anchorage		
	Original Notice of Intent	Copy of Type 3 SWPPP	Authorization Fee	Copy of Notice of Intent	Copy of Type 1, 2, or 3 SWPPP	Review Fee
If your construction disturbs 1 acre or greater or is part of a common plan of development that collectively disturbs one or more acre and is:						
a government (federal, state, municipal) road project or other government transportation project such as port, railroad, or airport	Yes	Yes	Yes	No	No	No
- A utility project for which the utility is initiating the work; - Work that requires a building permit or a grading and fill permit, or - A non-publicly funded transportation project	Yes	No	No	Yes	Type 3	Yes
Disturbs at least 500 square feet but less than one acre and is not part of a common plan of development that collectively disturbs one or more acres	NOI is not applicable	No	No	NOI is not applicable	Type 1 or 2	Yes for private projects; No otherwise

1. Operators of government (federal, state, municipal) road projects or other government transportation projects such as ports, railroads, or airports **disturbing one or more acres** or are part of a common plan of development that collectively disturbs one or more acre within the MOA must submit copies of the Type 3 SWPPP and the NOI for review by the ADEC at the address below, along with the State-required fee (18 AAC 72.995). A coordination copy of the submittal should be sent to the MOA at the address listed below.

Alaska Department of Environmental Conservation
Water Quality Permitting / Storm Water
555 Cordova Street
Anchorage, Alaska 99501

Municipality of Anchorage, Office of Planning Development and Public Works
4700 South Elmore Road
P.O. Box 196650
Anchorage, Alaska 99519-6650

Operators of Municipally-funded or municipally-managed projects must follow SWPPP submittal requirements in the Municipality of Anchorage Standard Specifications.

2. Operators of **all other construction projects disturbing one or more acres** or that are part of a common plan of development which collectively disturbs one or more acres shall submit a copy of the Type 3 SWPPP and NOI to the MOA at the address listed above.
3. Operators of **construction projects disturbing 500 square feet up to one acre** that are not part of a common plan of development which collectively disturbs one or more acres shall submit a copy of the Type 1 or Type 2 SWPPP to the MOA at the address listed above.

Where required, submittal of the SWPPP to the MOA should be made before or at the same time the NOI is submitted to the ADEC. SWPPP submittal shall be accompanied by any MOA required fee (AMC 21).

5.5 Implementing Type 2 and 3 Storm Water Pollution Prevention Plans

SWPPPs are living documents and **updates are required when changes occur in the field.**

During the course of construction, once a definable area has been stabilized, 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. The operator shall implement the SWPPP from commencement of construction activity until final stabilization is complete.

5.5.1 Project Initiation

In accordance with MOA regulations, MOA approvals of SWPPPs and, in accordance with the CGP, the submission of the NOI for Type 3 SWPPPs to ADEC are required before initiation of land disturbances. [5.1.1] 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.

Once the project is permitted and construction is ready to begin, BMP installation must occur before land disturbances start. The BMP installations need to address any existing structures, vegetation, or sensitive areas to be protected. All existing drainage structures must be protected from storm water discharges during construction. Planning for street sweeping and dewatering must occur so that the contractor is prepared in advance.

BMPs are necessary to address the sequencing and phasing of the work as operations such as mass excavation or fill operations change the characteristics of the site. Permanent BMPs usually cannot be relied upon to provide protection during the initiation of construction. At a minimum, an approved SWTP addressing the following must be implemented at the onset of the construction project:

- Before beginning land disturbing activities, clearly mark all clearing limits, sensitive areas and their buffers, and vegetation that are to be preserved within the construction area. These shall be clearly marked in the field to prevent off-site impacts or damage to retained vegetation.
- Storm drain inlets shall be protected during construction so that storm water runoff does not enter the drainage system without first being filtered or treated to remove sediment.
- Establish a construction site exit and a cleaning schedule so that streets will be cleaned thoroughly at the end of each day. Sediment should be removed from roads by street sweeping or other methods.
- Any diversions to reduce the amount of surface and storm water traveling through the site should be installed early in the land disturbance process. These practices shall be approved by WMS prior to implementation.
- Storm water detention facilities and sediment traps shall be constructed as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.
 - The contractor shall have a plan if groundwater will be involved, even if pumped discharges are not proposed. The plan must address unanticipated dewatering that includes storage of dewatering equipment and materials on site.

5.5.2 Site Maintenance

Site maintenance must include the following:

- A. Stabilize the site. Ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Avoid using impervious surfaces for stabilization. [3.1.8.1]

- 1 Initiate stabilization measures, except as provided below, as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. [3.1.8.2]
 - 2 Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable. [3.1.8.2.1]
 - 3 Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the site. [3.1.8.2.2]
- B. Divert flows from exposed soils, retain/detain flows or otherwise minimize runoff and the discharge of pollutants from exposed areas of the site. [3.1.3]
 - C. Place velocity dissipation devices at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course [3.1.4]
 - D. Prevent the discharge of solid material, including building materials, to waters of the United States [3.1.6.1]
 - E. Minimize off-site tracking of sediments to paved surfaces and the generation of dust [3.1.2]
 - F. Minimize exposure of construction and waste materials to storm water, and the occurrence of spills through the use of storage practices, prevention, and response practices, and other controls [3.1.6.2]
 - G. Prevent litter, construction debris, and construction chemicals (e.g., diesel fuel, hydraulic fluids, and other petroleum products) that could be exposed to storm water from becoming a pollutant source in storm water discharges [3.1.6.3]
 - H. Minimize pollutant discharges from areas other than construction (including stormwater discharges from dedicated asphalt or concrete plants). [3.1.7]
 - I. Minimize non-stormwater discharges. [3.2]
 - J. Implement sediment controls. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided. For drainage areas serving 10 or more acres disturbed at one time, see the CGP. [3.1]

5.5.3 Maintenance of Controls

BMPs are effective only if properly maintained. In some instances, un-maintained BMPs can make situations worse than if none were present. Specific maintenance requirements are identified below. Applicable requirements must be included in the SWPPP.

All control measures should be properly installed and maintained in accordance with manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, a replacement or modification to the control to address site situations should occur as soon as practicable.

- A. Maintain all control measures and other protective measures in effective operating condition. If site inspections required Section 5.5.3 identify BMPs that are not operating effectively, the operator must perform maintenance as soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls. [3.6.1]
- B. All ESC measures and other protective measures identified in the SWPPP should be maintained in effective operating condition throughout the life of the project. If required site inspections identify BMPs that are not operating effectively, maintenance should be performed as soon as possible, and before the next storm event. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, the operator must complete implementation before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the operator must implement alternative BMPs as soon as possible. [3.6.2]

- C. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation should be completed before the next storm event, whenever practicable. If implementation before the next storm event is not possible, the situation should be documented in the SWPPP, and BMPs should be implemented as soon as possible.
- D. Sediment control structures should be monitored to ensure continuous structural integrity. Sediment from sediment traps or sedimentation basins should be removed when design capacity has been reduced by 50 percent. Collected sediments should be removed and disposed of in accordance with all applicable regulations. Remove sediment from sediment traps or sedimentation ponds when design capacity has been reduced by 50 percent. [3.6.3] Remove trapped sediment from a silt fence before the deposit reaches 50 percent of the above-ground fence height (or before it reaches a lower height based on manufacturer's specifications). [3.6.4]
- E. Any vegetated areas that become damaged should be regraded and reseeded, as necessary, during the life of the project.
- F. Silt fences should be repaired or replaced if damaged, clogged, or disintegrated.
- G. Any ditches that fill with sediment should be cleaned and regraded.
- H. Train employees and subcontractors as necessary to make them aware of the applicable control measures implemented at the site so that they follow applicable procedures. [3.7]

5.5.4 Self Inspections

- A. Inspections must be conducted by qualified personnel See section 5.6 of this Manual for definition of qualified personnel. [4.4]
- B. Inspections should commence within a minimum of one week after land-disturbing activities begin. Inspections must be conducted at least once every seven days OR at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. [4.1]
- C. A waiver of the inspection requirements is available if frozen conditions are anticipated to continue for extended periods of time (i.e., more than one month). The waiver of the inspection requirements is available after freeze-up until one month before thawing conditions are expected to result in a discharge, if the following requirements are met: [4.3, modified]
 - a. The entire site is temporarily stabilized;
 - b. Land disturbance activities have been suspended; and
 - c. The beginning and ending dates of the waiver period are documented in the SWPPP.
- D. Each inspection must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking. [4.5]
- E. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the construction areas. Inspection of these areas could require that vehicles damage temporarily or even permanently stabilized areas in order to perform the inspections. In these circumstances, representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 miles above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction

site and allows access to the areas described above. The conditions of the controls along each inspected 0.25-mile segment may be considered as representative of the condition of controls along that reach extending from the end of the 0.25-mile segment to either the end of the next 0.25-mile inspected segment, or the end of the project, whichever occurs first. [4.7]

- F. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with the SWPPP. [5.9]
- G. For each inspection, an inspection report should be completed, containing all the information specified in Section 5.2.3.1.C.2 of this Manual. [4.8.1] An example checklist, with the minimum information required, is included in Appendix F.
- H. The report must be signed in accordance with the CGP (Type 3 SWPPPs) or by the qualified person (Type 2 SWPPPs). [4.8.2]
- I. A record of each inspection and of any actions taken must be retained as part of the Type 3 SWPPP for at least three years from the date that CGP coverage expires or is terminated [5.9] or, for Type 2 SWPPPs, until the site is stabilized.
- J. The MOA will also conduct inspections to confirm that ESC requirements are being met. During the inspection, an MOA stormwater inspector will review all documentation of the required inspections. More information on MOA inspections is included in Section 3.4 of this Manual.

5.5.5 Maintaining an Updated SWPPP

The SWPPP should be considered a living document. Consistent updates and documentation provide good insurance against getting into compliance issues with regulatory agencies. Documentation is also a way to minimize administrative requirements on stabilized areas because they can be removed from permit coverage through the SWPPP update process. The update process is described below.

- A. The SWPPP, including the site map, should be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the control of pollutants in discharges to waters of the United States, that has not been previously addressed in the SWPPP. [5.10.1]
- B. The SWPPP should be amended if, during inspections or investigations by site staff, or by MOA, State, tribal, or Federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site. [5.10.2]
- C. If an inspection determines there are deficiencies, the SWPPP should be modified as necessary to include additional or modified BMPs designed to correct identified problems. Revisions to the SWPPP must be completed within seven calendar days following an inspection noting deficiencies. Implementation of these additional or modified BMPs should be accomplished before the next storm event, whenever practicable. [5.10.3]

Revisions and substitutions in the SWPPP update process could render erosion and sediment controls ineffective if not done correctly. Contact the Municipal Storm Water Plan reviewer for questions and clarifications.

5.6 Inspector Qualifications

Qualified personnel must conduct inspections. “Qualified personnel” means the inspector must: [4.4]

1. Be knowledgeable in the principles and practice of ESCs;

2. Possess the skills to assess conditions at the construction site that could affect storm water quality; and
3. Be able to assess the effectiveness of any ESC measures selected to control the quality of storm water discharges from the construction activity.

A qualified person, who shall be responsible for the erosion, sedimentation, and best management practices during construction, shall be identified in the SWPPP. Evidence of contractual liability shall be provided when requested. In order to be considered qualified, a person shall take a training course approved by WMS and successfully complete an examination of the materials presented in the course. The MOA considers those obtaining and maintaining valid AKCESL certification as qualified. Contact WMS for information about obtaining this certification.

5.7 Suspension of Construction Activity

The site operator should anticipate winter conditions and be prepared to have the site stabilized when work is suspended for adverse winter weather that makes it impractical to continue construction.

Prior to suspension of construction activity for winter shutdown, the entire site must be temporarily stabilized. Controls in rights-of-ways must be removed to maintain traveled ways or detours from curb to curb to allow for snow removal and other winter operations. Controls that interfere with anticipated snow removal operations must be modified. This includes, for instance, the removal of filter fabric wrap that elevates drop inlet grates above the street grade and sand bags, wattles, or other controls installed at the curb line. Controls must also be modified as required to allow drainage of snow and ice melt during the winter period even if construction activity is suspended.

Inspection and maintenance requirements for winter periods are described in Sections 5.5.4 and 5.5.3 respectively. If inspections are terminated for the winter, they must be resumed at least one month before thawing conditions are expected to result in a discharge.

5.8 Termination of Construction Activity

Termination of coverage for construction activities under a Type 1, 2 or 3 SWPPP must meet MOA and, if applicable, CGP requirements.

5.8.1 Type 3 SWPPP CGP Notice of Termination Requirements

For projects requiring Type 3 SWPPPs, you may only submit a Notice of Intent (NOT) after one or more of the following conditions have been met:

- Final stabilization, as defined in the CGP, has been achieved on all portions of the site;
- Another operator has assumed control over all areas of the site that have not been finally stabilized;
- Coverage under an individual or alternative general NPDES permit has been obtained; or
- For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

Operators are responsible to submit a complete and accurate NOT, using the form provided at <http://dec.alaska.gov/water/wnpspc/pdfs/CGPNOT.pdf>. If ADEC notifies operators (either directly, by public notice, or by making information available on the Internet) of other NOT form options (for example, electronic submission), these options may be used to satisfy the NOT requirements.

The NOT must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight of the day the NOT is signed. Operators of

construction projects disturbing one acre or more within the MOA shall submit a copy of the NOT to the MOA at the address in Table 5-2 at the same time that the NOT is submitted to the ADEC.

The CGP defines “Final Stabilization” to mean:

1. All soil-disturbing activities at the site have been completed and either of the two following criteria are met:
 - Establishment of a uniform perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area, on all unpaved areas and areas not covered by permanent structures; or
 - Equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
2. When background native vegetation covers less than 100 percent of the ground, the 70 percent coverage criteria is adjusted per the CGP requirements. On a beach with no natural vegetation, no stabilization is required.
3. All soil-disturbing activities at the site have been completed and both of the following criteria have been met:
 - Temporary erosion control measures (for example, biodegradable 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; and
 - The temporary erosion control measures are selected, designed, and installed to achieve 70 percent vegetative coverage within three years. If the site requires three years to reach final stabilization, it is the operator's responsibility to schedule the final inspection or closeout inspection to confirm that final stabilization criteria have been met.
4. 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 informed the homeowner of the need for, and benefits of, final stabilization.

For construction projects on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Disturbed areas that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the United States, and areas that are not being returned to their preconstruction agricultural use, must meet the final stabilization criteria (1), (2), or (3) above.

5.8.2 Municipality of Anchorage Closeout

Operators of private construction projects requiring a Type 1, 2, or 3 SWPPP:

- Shall submit the storm drainage record drawings to the MOA at the address shown in Table 5-2. The MOA will review the record drawings, and approve them if deemed acceptable, or provide comments.
- Shall schedule a final storm water 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.

6 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 sewer system except as allowed by the AMC Title 21 or as permitted through an approved SWTP covering the specific activity. Dewatering activities cannot be conducted within the stream setback zone or in a manner that will affect other properties. In addition, other approvals may be required, as described in Sections 6.3 through 6.6.

6.1 Dewatering Plan

Every SWTP that involves land disturbance greater than 500 square feet or 4 feet in depth must address a project's 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. Resubmittal to the MOA shall occur on all projects that encounter unexpected dewatering requirements not addressed in the original submittal.

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 contaminant containment or treatment methods

6.2 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 waterbodies 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 6-1. 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 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).

Table 6-1 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 exceedences of the maximum values in Table 6-1 occur. More information on BMPs for dewatering controls is included in Appendix A.

6.3 AWWU and MOA Construction Dewatering Approvals

- A one-time permission to discharge to the sanitary sewer is handled through AWWU and is done on a case-by-case basis. A copy of the AWWU Application for Discharge Permit is included in Appendix C.
- For dewatering discharges and underdrains that do not discharge to a sanitary sewer, a Municipal Dewatering Notification Form, also included in Appendix C, is required, since the 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 SWTP.
- Discharges to the storm sewer 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 <http://www.muni.org/Departments/development/ROW/Pages/PermitsApplications.aspx> or by contacting Right of Way Division at 343-8240. Right of Way offices are located at 4700 Elmore Road. 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.

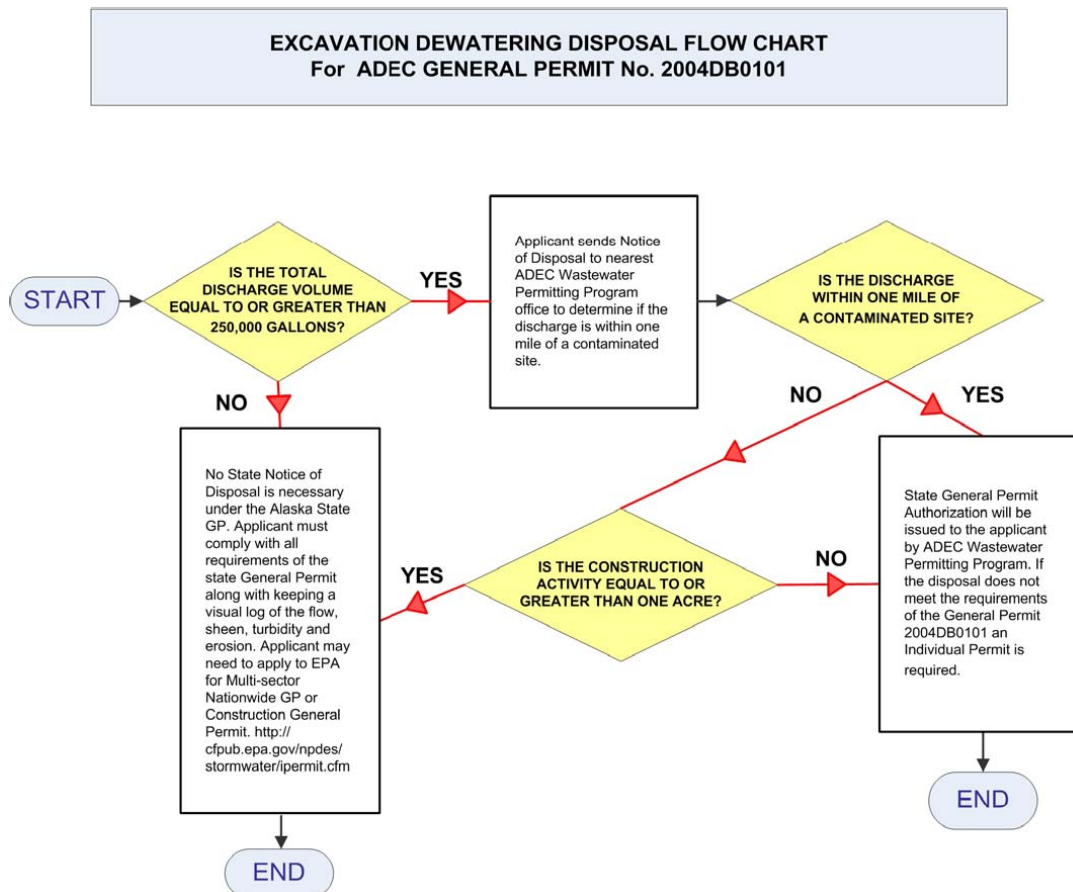
6.4 Alaska Department of Environmental Conservation General Permit

The ADEC requirements for construction dewatering are contained in the Wastewater Disposal General Permit for Excavation Dewatering Permit No. 2004DB0101. Ultimately, discharges from dewatering must meet water quality standards. A flowchart for ADEC dewatering permitting is found in Figure 6-1. Additional information on the dewatering permit can be found on the ADEC website http://www.dec.state.ak.us/water/wwdp/online_permitting/ind_ww_apps.htm.

- If a project will discharge more than 250,000 gallons over its life and is within 1 mile of a contaminated site, it requires written ADEC approval. Most areas within Anchorage are within 1 mile of a contaminated site, so it is advisable to obtain written approval from ADEC for any and all dewatering activities since final quantities can be difficult to determine. If the project will discharge more than 250,000 gallons, include the written ADEC approval as part of the Dewatering Plan.
- If a project will discharge less than 250,000 gallons over its life but is associated with construction activity disturbing less than 1 acre, the dewatering discharge is not covered under the CGP and it must be covered under the ADEC Wastewater Disposal General Permit.

Figure 6-1: Excavation Dewatering Disposal Flow Chart

(See also: http://www.dec.state.ak.us/water/wwdp/online_permitting/pdfs/ex_dewatering_logic.pdf)



6.5 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. The permit application form is included in Appendix C.

6.6 Allowable Non-Storm Water Discharges under the Construction General Permit

For projects that qualify for the CGP (disturb one or more acres), the CGP allows certain non-storm water discharges to be co-mingled with storm water 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 storm water discharges associated with construction activity at the site are included in the list. The EPA encourages that non-storm water 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-storm water component(s) of the discharge.

7 PERMANENT CONTROLS FOR NEW AND REDEVELOPED SITES

The Permanent Storm Water Quality Plan is the portion of the SWTP that addresses permanent control of stormwater pollution from the developed site and involves selecting and designing permanent stormwater control BMPs, including the conveyance system for managing runoff on the site. Submission of the Permanent Storm Water Quality Control Plan is required for new and redeveloped commercial facilities and projects other than single family and duplex residential development for which the disturbed area exceeds 500 square feet.

The permanent site controls must be designed to mitigate stormwater pollution from ongoing site conditions and activities. This includes controlling the development's storm water runoff and associated pollutants before it is discharged into the receiving drainage system.

7.1 Water Quantity Considerations

Where development takes place within the Anchorage Road and Drainage Service Area (ARDSA, see Figure 7-1), the storm water sewer system is usually sized adequately for additional water. However, where projects are undertaken outside the ARDSA in a limited road service area (LRSA) or non-road service area, receiving systems are frequently insufficient to receive additional water resulting from development. In all cases, it is the responsibility of the developer to determine the quantities, routes, and fate of stormwater discharging from the site. It is the responsibility of the developer to maintain predevelopment site discharge rates and ensure that no adverse downstream impacts occur. Drainage plan requirements for developments are specified in Chapter 2 of the MOA Design Criteria Manual (DCM).

7.2 Water Quality Minimum Requirements

In addition to managing the runoff quantity, it is the responsibility of the developer to provide BMPs that will protect water quality. Post-construction site runoff shall meet State water quality standards as well as any published MOA requirements.

A project site must use available BMPs, described in Appendix A, to provide source controls and treatment controls for the specific types of pollutants on the project site, based on land use activities and site conditions. However, BMPs not included in Appendix A may also be used, based on approval from the WMS. Refer to Appendix D for a table of typical pollutants based on different land uses.

Considerations for source controls, which are generally procedural rather than physical, are described in Section 8.

Development projects within the MOA shall include permanent BMPs designed to mitigate to the *maximum extent practicable* for potential pollutants on the site. Minimum requirements for permanent stormwater quality are described below.

7.2.1 New or Redeveloped Single Family or Duplex

Adequate final site stabilization measures must be assured, but a Permanent Stormwater Quality Plan is not required. Stabilization must be addressed in the Type 1 or Type 3 SWPPPs prepared for the site.

- Type 1 SWPPPs (described Handout AG-21, included in Appendix B) require that permanent vegetative stabilization be described and other site stabilization (such as pavement or structures) be shown on the Plot Plan or construction plan.

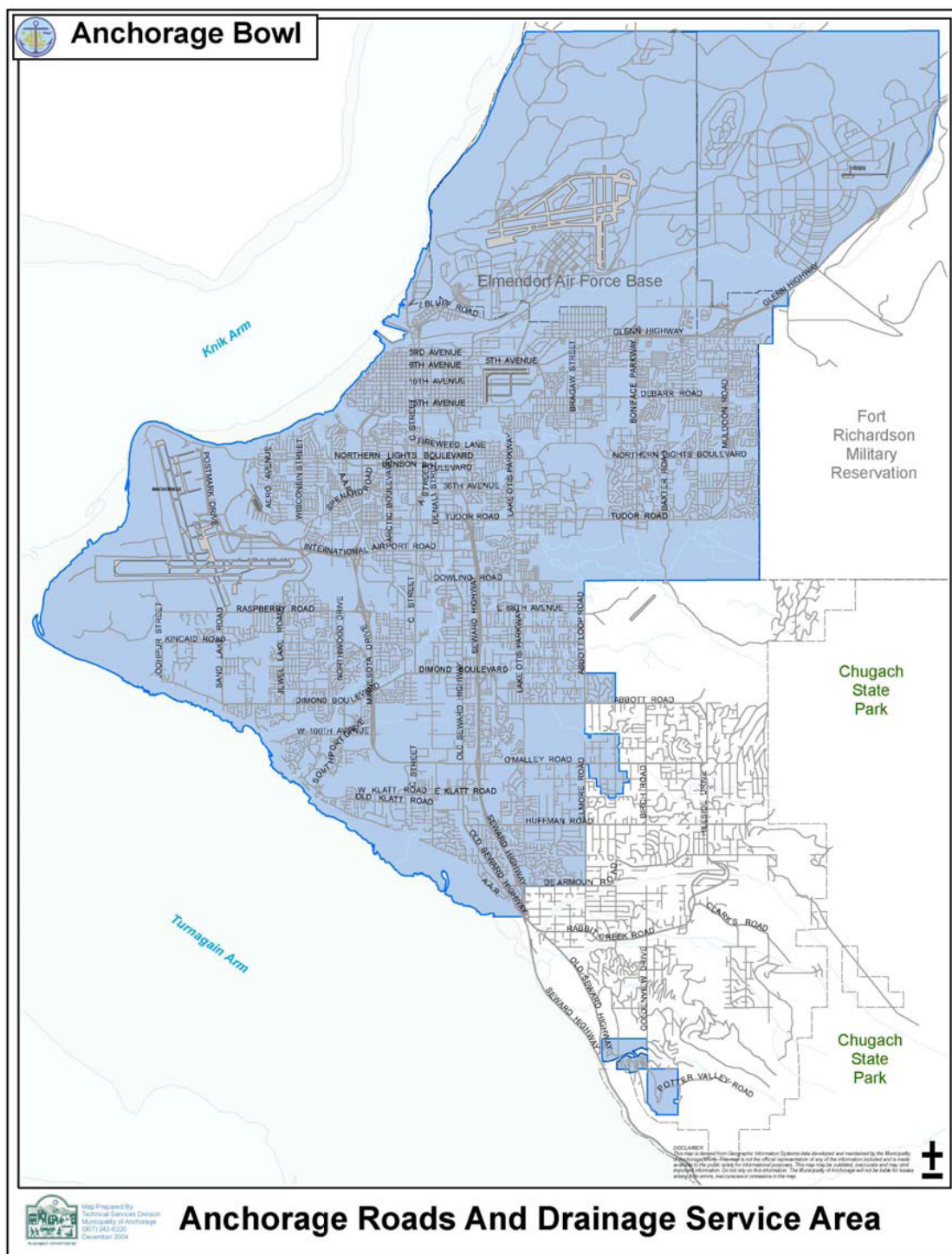


Figure 7-1: Anchorage Roads and Drainage Service Area (ARDSA)

- Type 3 SWPPPs, prepared in compliance with the EPA's Construction General Permit, require a description of all post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed.

7.2.2 New or Redeveloped Commercial and Other Types of Projects

The following minimum requirements must be considered and discussed in the Permanent Stormwater Quality Control Plan, part 7 of the Storm Water Treatment Plan.

1. Preservation and Use of Natural Drainage Systems is intended to assure that discharge from the site occurs at natural locations so that natural drainage patterns can be maintained. Discharge from the project must not damage adjacent property.
3. Source Control of Pollution prevent stormwater from being contaminated by any pollutant on site during and after construction. Approved source control BMPs must be selected and applied to the maximum extent possible.
4. Runoff Treatment BMPs reduce pollutant loads and concentrations in stormwater. This must be achieved by providing effective treatment before stormwater leaves the site. Treatment BMPs must be sized to accommodate the water quality criteria specified in the MOA's DCM. BMPs shall not be built within natural vegetated buffers, except for necessary conveyance systems as approved by WMS.
5. Streambank Erosion Control is applicable to sites where stormwater runoff discharges either directly to a stream, lake, or other waterbody. The intention is to reduce stream bank erosion from direct stormwater runoff.
6. Wetlands – This requirement is applicable to sites where stormwater runoff discharges directly to a wetland. The protection of wetlands from stormwater pollutants and changes in hydrologic function is the primary goal of this requirement. Stormwater discharge to wetlands should occur only after evaluating alternative discharge locations. Discharges to wetlands are regulated and shall maintain hydroperiod and flows of existing condition to the extent necessary to protect characteristic functions.
7. Water Quality Sensitive Areas – This requirement is applicable to sites that discharge stormwater to a water quality sensitive area as identified through jurisdiction-wide inventories, watershed planning, critical area designations, basin planning, and/or site-by-site basis. The overall intent of this requirement is the protection of water quality sensitive areas.
8. Off-site Analysis and Mitigation – is intended to control the impacts of a project on existing and future site conditions. To evaluate off-site impacts, an off-site analysis shall be prepared in accordance with this manual, the MOA DCM, or other approved method. This analysis shall extend a distance of ¼ mile downstream from the project. Existing or potential impacts include, but are not limited to, sedimentation, streambank erosion, violations of water quality standards, and spills and discharges of priority pollutants.
9. Operation and Maintenance considerations are necessary to ensure adequate maintenance and operation of physical stormwater control facilities.

7.3 Specification of Water Quality Treatment Controls

7.3.1 Sites Requiring Oil and Grit Separators

Sites that have the following land uses must include an oil/grit separator BMP and demonstrate the degree of treatment that will be achieved, unless other treatment or flow reduction facilities are provided and approved.

- Industrial machinery and equipment, trucks, and trailers
- Railroad equipment

- Airfields and aircraft maintenance areas
- Fleet vehicle yards
- Railroads
- Gas stations
- Retail / Wholesale Vehicle and Equipment dealers
- Construction businesses (paving, heavy equipment storage and maintenance, storage of petroleum products)
- Sites with uncovered, paved surfaces intended for vehicular traffic (parking lots and aisles, loading docks, driveways and drive-throughs, vehicle storage, etc.) exceeding 12,000 square feet

7.3.2 Source Control BMPs

Land use activities are associated with specific common pollutants, which have specific source control BMPs. Consult Table D-1 in Appendix D for pollutants related to the proposed land use activities on the developed site and Table D-2 for potential source control BMPs for those pollutants. In the Storm Water Treatment Plan, list the source controls that will be employed for the developed site.

7.3.3 Runoff Treatment BMPs

Runoff treatment BMPs must be considered and included, as applicable to the given site, in the Permanent Storm Water Quality Plan. Site specific conditions that dictate applicability include soils and terrain conditions, as described in this section.

Limitations and opportunities based on on-site soils' infiltration capacity are listed in Table 7-1.

Table 7-1 BMP Screening Based on Limiting Site Soils

BMP Type	Soil Type	Coarse Sands, Cobbles, or Sand	Loamy Sand, Sandy Loam, or Loam	Silty Loam or Sandy Clay Loam	Clay Loam, Silty Clay Loam, or Sandy Clay	Silty Clay or Clay
Infiltration Facilities (Infiltration basins, trenches, rain gardens)		1	1	3	3	3
Wet Ponds (presettling basins, wet pond)		3	3	3	1	1
Dry Ponds (Extended detention dry pond)		3	3	3	1	1
Biofiltration (grassed swale, vegetative filter strips)		3	1	1	1	3

Key: 1 Indicates that use of the BMP is appropriate for this soil type
3 Indicates that use of the BMP is not appropriate for this soil type

Limitations and opportunities based on on-site terrain, groundwater, depth to bedrock, and other conditions are listed in Table 7-2.

Table 7-2 BMP Screening Based on Limiting Site Features

BMP Type	Site conditions	Sloped Site	High Water Table	Shallow Depth to Bedrock	Proximity to Foundations	High Sediment Input
Infiltration Practices						
Infiltration basin		2	3	3	3	3
Infiltration Trench		3	3	3	3	3
Retention						
Roof runoff management						
Wet Pond		1	1	2	2	2
Presettling basin		1	1	2	1	1
Constructed wetland		1	1	2	1	1
Detention and Separation						
Extended detention dry pond		1	1	2	1	1
Oil and grit separator		1	1	2	1	3
Biofiltration						
Grassed swale		1	1	1	2	3
Vegetative filter strip		1	1	1	2	3
Rain garden		1	3	3	2	2

Key: 1 Generally not a restriction 2 Can be overcome with careful design 3 May preclude the use of the BMP

The comparative benefits of different physical BMPs shown in Table 7-3 can be used to select the most appropriate BMP(s) for a given site.

Table 7-3 Comparative Stormwater Management Benefits and Restrictions for Runoff

	Treats conventional pollutants	Pre-treatment required?	Provides Pre-treatment?	Provides Flow Attenuation?
Infiltration Practices ¹				
Infiltration basin	Yes	Yes	No	Some
Infiltration Trench	Yes	Yes	No	Some
Detention and Separation				
Roof runoff management	Yes	No	No	Some
Wet Pond	Yes	No	No	Yes
Presettling basin	Limited ²	No	Yes	Some
Constructed wetland	Yes	No ³	Yes	Yes
Extended detention dry pond	Limited ²	No	Yes	Yes
Oil grit Separator	No ⁴	No ⁵	Some	No
Biofiltration				
Grassed swale	Yes	No ¹	Yes	No
Vegetative filter strip	Yes	No ¹	Yes	No

Key: ¹ Proper soil conditions required; infiltration BMPs may not be effective during spring breakup due to frozen soil

² Provides pretreatment only

³ Except when oil/grit separators are required for specific land uses

⁴ Provides oil treatment only

⁵ Assumes low influent concentration of suspended solids

BMP selection should be made after comparing site conditions to suitable BMPs and evaluating comparative benefits. The basis for BMP selection should be described in the Permanent Stormwater Quality Control Plan.

7.3.4 Erosion Control BMPs

In addition to these on-site controls, the Permanent Storm Water Quality Plan must demonstrate appropriate streambank and channel erosion controls, including flow attenuation, for open ditches, channels, and points of discharge (outlets and outfalls). BMPs and design criteria appropriate for these situations are included in Appendix A and Chapter 2 of the MOA DCM.

Streambank or channel erosion control BMPs are required for stormwater that discharges directly to a surface water body, such as a stream, lake, or tidal waters.

7.4 Low Impact Development Concepts

Low Impact Development, or LID, BMPs are a subset of physical BMPs. The primary goal of LID BMPs is to mimic predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff. Use of these techniques helps to reduce off-site runoff and ensure adequate groundwater recharge. This management technique involves disconnecting impervious surfaces from one another and directing runoff to infiltration features such as rain gardens or infiltration trenches.

In the 1990's, Prince George's County, Maryland became the first municipality to adopt the LID philosophy in the United States. Since then, numerous municipalities, including Portland Oregon, have incorporated LID techniques into their urban resource protection programs. Though LID concepts are still relatively new to some urban planners in the United States, LID has been used successfully in Europe and Asia for many years (DOD, 2004). LID methods typically require the integration of storm water management early in site planning activities, with an emphasis on prevention and minimization rather than mitigation at the "end of the pipe." LID mimics predevelopment site hydrology by:

- Minimizing land disturbance;
- Preserving or recreating natural landscape features;
- Reducing or disconnecting impervious areas;
- Increasing drainage flow paths; and
- Facilitating detention and infiltration opportunities.

Those who stand to gain the most from the application of LID are:

- Individual homeowners of new or existing units;
- Potential homeowners;
- Designers / developers of commercial and industrial sites; and
- Those in residential land developments, including planned unit developments.

Projects within Anchorage where LID can be successfully applied include:

- New residential or commercial development that can incorporate predevelopment site features, such as riparian corridors or wetlands;
- Retrofit of commercial development parking and landscaping, especially in areas of town that are underlain by soils with favorable infiltration rates; and
- Redevelopment that changes current developed land uses, such as conversion of industrial areas to residential or institutional areas.

Additional opportunities to implement LID into Anchorage storm water management are:

- Use of swales and ditches in place of curb and gutter to reduce the size or extent of piped storm water systems;

- Disconnection of impervious surfaces through the use of vegetated areas between sidewalks, paved parking and roads, and buildings; and
- Reduction in the extent of pavement in areas where it does not serve a functionally important purpose.

Some LID elements can be incorporated into site design as additions, such as reinforced turf pavers or rain gardens. These elements are easily installed by homeowners following development and by contractors during development. Other LID elements are incorporated into site design on a more integrated level, such as reduced-lot-grading. Such integrated LID elements can only be installed by the contractor during development, and thus need to be considered in the initial design of a project. Designers are encouraged to use LID BMPs in favor of traditional “end of pipe” BMPs. Brief descriptions of a number of LID BMPs are presented within the BMP Toolbox section of this document (Appendix A). These LID elements include reduced-lot grading, reinforced turf pavers, and rain gardens.

In addition, the Municipality of Anchorage’s Low Impact Development Design Guidance Manual provides specific design guidance for bioretention/rain gardens, infiltration trenches, and soak-away pits (MOA, 2008). This manual is available at:

http://www.muni.org/Departments/project_management/Pages/Publications.aspx.

8 REQUIREMENTS FOR OTHER ACTIVITIES REQUIRING SWTP APPROVAL

Projects that involve new or redeveloped permanent site controls must submit a maintenance and operation plan as part of the SWTP. This section provides information on operations and maintenance requirements. In addition, other activities, including activities at existing facilities, which affect waterways in Anchorage also require SWTP approval. This section describes SWTP requirements for those activities.

8.1 Operations and Maintenance of New Storm Water Treatment Control Facilities

New and redevelopment projects that include physical BMPs must include an operations and maintenance (O&M) plan for those BMPs in the SWTP. The plan must specify inspection scope and frequency, what maintenance will be conducted and at what frequency or level of service, how maintenance wastes will be disposed, and how inspections and maintenance will be documented. Maintenance requirements are included with BMP descriptions in Appendix A.

The MOA is developing a program to track and enforce O&M agreements. When this program becomes effective, the SWTP will be required to include a legally binding and transferable, signed O&M Agreement to implement the O&M Plan in the SWTP.

8.2 Parking Lot Maintenance

Parking lots collect sediments, which are often released in large concentrations during spring breakup and storm events. In order to protect water quality, permanent BMPs are to be included in the SWTP for parking areas. Some examples of suitable BMPs for parking lots include oil and grit separators (OGS), bioswales and other biofiltration techniques, and sedimentation basins.

In addition to structural BMPs, parking lot maintenance practices, such as sweeping, must be addressed in the SWTP for commercial facilities that provide off-street parking. In particular, the management and storage of snow from parking areas is an important part of controlling pollutants in snowmelt runoff. However, unseen pollutants from vehicles such as lead, zinc, copper, and petroleum products may also be present. In addition, the snow contains sand and salt used on streets and parking lots during the winter. Chloride levels in runoff rise sharply during periods of melting and taper off after a few weeks of warm weather. Because chloride and other pollutants can be present at high levels during breakup, the discharges from snow storage facilities and parking lot snow piles have a high potential to impact local water quality.

The SWTP must address how developed sites will manage parking areas and on-site snow storage as part of the permanent BMPs.

Collection and storage of snow is permissible at any facility provided the snow storage is from on-site sources only. Discharges from these on-site snow storage areas must also meet water quality standards. Parking lot maintenance BMPs are included in the BMP Tool Kit in Appendix A. The following parking lot guidance documents are available from WMS:

- *The Anchorage Parking Lots: 2002 Best Management Practices Guidance*
[\[http://wms.geonorth.com/library/Documents/Reports/BMP_Guidance/02_Pkglot_doc.pdf\]](http://wms.geonorth.com/library/Documents/Reports/BMP_Guidance/02_Pkglot_doc.pdf)
provides design and maintenance information to reduce impacts of snowmelt runoff, and control pollutants from sand and deicers used for traction and ice control.
- *Private Snow Disposal Sites (On-Site Snow Storage Only)*
[\[http://wms.geonorth.com/library/Documents/Reports/BMP_Guidance/PrivtSnoBMPs.pdf\]](http://wms.geonorth.com/library/Documents/Reports/BMP_Guidance/PrivtSnoBMPs.pdf)
provides information for management of on-site snow storage areas associated with parking lots.

8.3 Commercial (Off-Site) Snow Disposal Facilities

Snow disposal facilities are facilities used for the concentrated storage and disposal of snow transported to that site from other locations. Snow storage on the same property or on development contiguous to where it fell does not constitute a snow disposal site. If a commercial snow storage facility is constructed and off-site snow is received for storage, the operator shall abide by all design requirements for runoff and pollutant source controls as described in the latest MOA DCM.

Ongoing storm water discharges from the facility shall meet water quality standards. Snow storage facility maintenance BMPs are included in the BMP Tool Kit in Appendix A. **Management practices of commercial snow storage facilities must be addressed in the SWTP.**

Snow storage facilities are a conditional use in most zoning districts, including residential districts. If your project site is proposed for use as a snow storage site you must comply with the standards for snow storage facilities. These conditional use standards are presented in AMC 21. The conditional use application is available on the municipal website.

Snow storage facilities are currently a permitted principal use in the I-2, I-3, and T zoning districts without specific administrative permit requirements. They are also permitted in an industrial PC district if the snow storage facility is included in the master plan for the development.

In the I-1 District, snow storage facilities are a permitted principal use, subject to the conditional use standards (but not the public hearing requirements) of AMC 21.50.270, and an annual administrative permit. The application form for the permit is available as an MOA Planning Department, Planning and Zoning Application form (http://www.muni.org/Departments/Planning/Documents/App_SnowSite.pdf). Check the municipal website for the most current Annual Administrative Permit Application.

New Title 21 Use Regulations propose changes to snow disposal facilities and zoning districts. Under the proposed changes, snow disposal sites will no longer be permitted uses (i.e., allowed by right) in any zoning district. Snow disposal sites will be subject to an administrative site plan review in Zoning Districts I-1, I-2, and MI. Certain residential districts and the B-3 and PLI zoning districts will allow snow disposal as conditional uses.

8.4 APDES Multi-Sector General Permit Requirements

Post-construction discharges that originate from the site after construction activities have been completed and the site has achieved final stabilization may need to be covered by a separate APDES MSGP. The MSGP requirements for industrial activities are available on the EPA website and are discussed in Section 2 of this manual. An owner or operator of a facility will need to determine if their facility needs permits for operations after construction.

8.5 Management Practices for Facilities not Requiring MSGP Coverage

Under its MS4 permit, the MOA must implement an industrial and commercial discharge management program to reduce, to the maximum extent practicable, the discharge of pollutants from all industrial operations within the MOA. The MOA has identified the following classes of industrial operations that must prepare and implement a SWTP to reduce pollutants from their sites.

- Storage yards (e.g., bus barns, materials storage areas)
- Vehicle impoundment yards
- Salvage yards

BMP considerations for these facilities are described in Appendix D.

8.6 In-water work

A SWTP must be submitted for in-water and in-stream work describing how materials and activities will be conducted to prevent polluted runoff and violations of state water quality standards. These types of projects include stream, off-channel, and riparian restoration and rehabilitation, streambank stabilization, and installation of outlet and diversion structures.

In addition to construction phase erosion and sediment controls applicable to land disturbing activities, the SWPPP portion of the SWTP should describe:

- Temporary diversions. Further information on stream diversions is available from the Alaska Department of Fish and Game (ADF&G) for the following
 - o ADF&G Temporary stream diversion: <http://www.habitat.adfg.alaska.gov/streamdiversion.php>
 - o ADF&G stream fluming: <http://www.habitat.adfg.alaska.gov/streamfluming.php>
- Monitoring and On-site Construction Management
- Timing and Sequencing of Work For fish bearing waters, depending on the species present, the recommended period of in-stream restriction (no in-stream activities allowed) is from March 15 to July 31 and/or September 15 to November 30 for all streams in the Anchorage area. ADF&G should be contacted to determine if a permit is necessary for the proposed project.
- Potential Pollutant Controls and Spill Management
- Isolation of the Work Area

The Permanent Storm Water Quality Plan portion of the SWTP should demonstrate or detail:

- Maintenance of active floodplain capacity
- Design considerations for sediment and erosion control within the waterbody, including long-term bed and bank protection
- Long-term icing controls

8.7 Projects Developing in the Floodplain

The SWTP for new or redeveloped projects within floodplains (as defined in Title 21) must include a Maintenance and Operations Plan outlining how materials and activities at the facility will be managed to prevent polluted runoff.

8.8 Utility Work in Riparian Areas

The following standards apply to any installation which requires trenching across stream channels or excavation within riparian corridors and stream setbacks, involving such utilities as gas lines, sewer lines, buried electrical and communications lines, water lines, or similar lines or pipes.

8.8.1 General Siting and Design

Utility siting and design should consider short and long-term effects on surface and subsurface water.

- Avoid paralleling drainageways and streams with linear utility facilities
- Use appropriately sized and placed trench blocks in areas of high groundwater or known subsurface drainage to prevent preferential flow paths in utility trenches

8.8.2 Clearing of Vegetation

Clearing of vegetation for utility facilities should consider short and long-term effects on surface water runoff due to precipitation, snowmelt and run-on from adjacent sites.

At a minimum, when conducting maintenance vegetation clearing that does not involve excavation,

- Do not disturb soil mat
- Do not cross streams and drainageways in motorized vehicles
- Do not cut vegetation shorter than 18 inches tall within stream setbacks and in wetlands

8.8.3 Excavation in Riparian Areas, including Utility Line Crossings

Guidance for work in waters of the United States, including wetlands, may also be applicable to work within stream setbacks. These guidelines are available from the Alaska District, U.S. Army Corps of Engineers at <http://www.poa.usace.army.mil/reg/NWPs/BMP.pdf>

Any disturbed streambanks or floodplains should be returned to a stable condition and revegetated with appropriate native species. Guidance is available in the following:

- Revegetation guidance: http://www.dnr.alaska.gov/ag/ag_pmc.htm
- Section 16.8 of ADOT&PF's Highway Drainage Manual, which can be accessed from <http://www.dot.state.ak.us/stwddes/dcspubs/manuals.shtml#>
- ADF&G's guidance at. Streambank or streambed disturbance <http://www.habitat.adfg.alaska.gov/streambankdisturbance.php>

9 OIL SPILL REPORTING

All facilities within MOA jurisdiction must comply with all applicable oil pollution prevention regulations, including the production and implementation of SPCC plans and spill reporting. More information is included in Section 2, and on the websites maintained by the ADEC and EPA.

9.1 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 and in Figure 9-1. 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 has come to be 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, call 911 and 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.

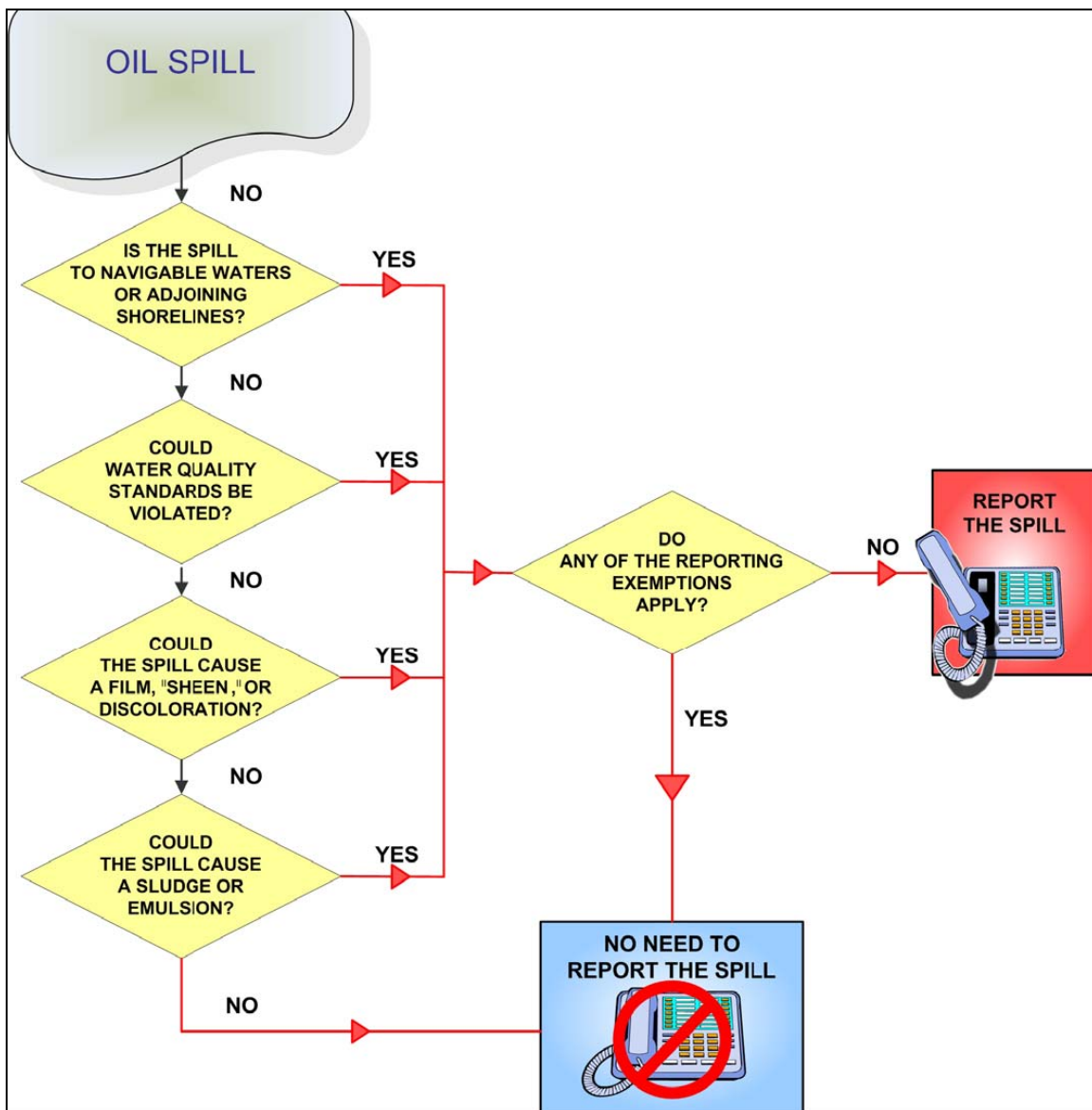


Figure 9-1: Oil Spill Reporting Requirements

The NRC maintains all reports of hazardous substance releases and oil spills made to the Federal government. The NRC records and maintains all reports in a computer database called the Emergency Response Notification System, which is available to the public. The NRC relays the release information to an EPA or USCG On Scene Coordinator (OSC), depending on the location of the incident. In every area of the country, OSCs are on-call and ready to respond to an oil or hazardous substance release at any time of the day. After receiving a report of an oil or hazardous substance release, the Federal OSC evaluates the situation and, if they decide that a Federal emergency response action is necessary, the National Response System will be activated. Otherwise, the OSC will monitor the clean up activities of the responsible party and the local and state governments, and will assist in the clean up as warranted.

9.2 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. The spill report form is included in Appendix E.

State notification requirements for hazardous substances and oil discharges are as follows:

Hazardous Substance Discharges

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

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.

10 REFERENCES AND RESOURCES

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11 GLOSSARY

Best Management Practice- means structures, treatment devices, schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

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. The “plan” is broadly defined as any announcement or piece of documentation or physical demarcation indicating construction activities may occur on a specific plot; included in this definition are most subdivision and industrial parks. Exceptions to this are as follows:

- *Separation in time by completion of construction.* After construction of the initial “common plan” is completed for a particular parcel within the common plan, any subsequent construction changes to that parcel would be regarded as new or redevelopment and no longer as part of the original common plan of development.
- *Separation in space.* (From EPA's Fact Sheet for the 2003 Construction General Permit, as modified effective January 21, 2005) When discrete construction projects within a larger common plan of development or sale are located $\frac{1}{4}$ mile or more apart and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline, or utility that is part of the same “common plan” is not concurrently being disturbed. For example, two oil and gas well pads separated by $\frac{1}{2}$ mile could be treated as separate “common plans.” However, if the same two well pads and an interconnecting access road were all under construction at the same time, they would generally be considered as part of single “common plan” for permitting purposes. If a utility company was constructing new trunk lines off an existing transmission line to serve separate residential subdivisions located more than $\frac{1}{4}$ mile apart, the two trunk line projects could be considered to be separate projects.

Construction General Permit – a National Pollutant Discharge Elimination System permit that authorizes discharges of stormwater and certain other types of wastewater from construction sites

Currently-credentialed Erosion and Sediment Control Administrator - a person who has taken a training course approved by the municipal Watershed Management Services division, successfully completed the training course examination, and for whom the certification has not expired or been revoked

Dewater - to remove water from (an excavation or streambed, for example)

Erosion - the process by which the surface of the earth is worn away by the action of water, wind, glaciers, waves, etc.

Flow attenuation - reduce the magnitude of peak flows

Land disturbance –any activity that disturbs land, including clearing, excavation, embankment or grading activities

Municipal storm sewer system (MS4) - a publicly-owned conveyance or system of conveyances (i.e., ditches, curbs, catch basins, underground pipes, etc.) that is designed or used for collecting or conveying stormwater and that discharges to surface waters

Operator - the party that has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications OR the party that has day-to-day operational control of those activities at a project which are necessary to

ensure compliance with a SWPPP for the site (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP).

Pollutants - as defined at 40 Code of Federal Regulations §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, and industrial or municipal waste.

Sediment - solid fragments of inorganic or organic material that come from the weathering of rock and are carried and deposited by wind, water, or ice

Sedimentation - the deposition or accumulation of sediment.

Stabilization – surface treatment that prevents the erosion of soil. Stabilization includes uniform perennial vegetative cover with a density of 70 percent or greater of the native background vegetative cover, pavement, permanent structures; or equivalent permanent features such as gravel, riprap, gabions, or geotextiles

Stormwater - storm water runoff, snow melt runoff, and surface runoff and drainage.

Wetland - those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.