ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT FOR STORM WATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

FINAL - FACT SHEET

Permit Number: AKS053406

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

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Proposed reissuance of the Alaska Pollutant Discharge Elimination System (APDES) Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) within the

City of Fairbanks,
City of North Pole,
University of Alaska - Fairbanks, and
Alaska Department of Transportation and Public Facilities
(hereinafter co-permittees)

The Alaska Department of Environmental Conservation (the Department or DEC) proposes to reissue an APDES MS4 Permit (permit) for discharges from small MS4s. The permit authorizes and sets conditions on the discharge of pollutants from municipal activities to waters of the United States. In order to ensure protection of water quality and human health, the permit establishes conditions, prohibitions, and management practices for discharges of storm water from the MS4s owned or operated by the co-permittees.

This fact sheet explains the nature of potential discharges from MS4 activities and the steps in the development of the permit, including:

- information on public comment, public hearing, and appeal procedures,
- a listing of proposed control measures and other conditions,
- technical material supporting the conditions in the permit, and
- proposed inspection, monitoring, and reporting requirements in the permit.

Appeals Process

The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 15 days after receiving the Department's decision to the Director of the Division of Water at the following address:

Director, Division of Water
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review. See http://dec.alaska.gov/commish/review-guidance/informal-reviews for information regarding informal reviews of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See http://dec.alaska.gov/commish/review-guidance/adjudicatory-hearing-guidance for information regarding appeals of Department decisions.

Documents are Available for Review

The permit, fact sheet, and related documents can be reviewed or obtained by visiting or contacting the Department between 8:00 a.m. and 4:30 p.m., Monday through Friday at the addresses below. The permit, fact sheet, and related documents can also be located on the Departments Wastewater Discharge Authorization Program website http://dec.alaska.gov/water/wastewater.

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501
(907) 269-6285

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
610 University Ave.
Fairbanks, AK 99709
(907) 451-2183

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1.0 INTRODUCTION

Storm water is the surface runoff that results from rain and snow melt. Urban development alters the land's natural infiltration, and human activity generates pollutants that can accumulate on paved or impervious surfaces. Uncontrolled storm water discharges from urban areas can negatively impact water quality[1].

The federal Clean Water Act (CWA) and the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) storm water regulations establish permit requirements for discharges from certain publicly-owned separate storm sewer systems located in urban areas to control pollutants to the maximum extent practicable.

EPA defines "municipal separate storm sewer" and those considered to be "large", "medium", and "small" MS4s at 40 Code of Federal Regulations (CFR) §122.26(b). In general, a MS4 includes any publicly-owned conveyance or system of conveyances used for collecting and conveying storm water, which discharges to waters of the United States. An MS4 includes roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains. EPA has designated large, medium, and small MS4s based on the population the system served; these regulated MS4s must obtain NPDES permit coverage for their discharges. Permits for MS4s require the implementation of a storm water management program (SWMP) to control pollutants in the MS4 discharge to the maximum extent practicable.

The permit and fact sheet reference various state and federal regulations. The state regulations are found in the Alaska Administrative Code (AAC), Chapter 83 "Alaska Pollutant Discharge Elimination System Program" (18 AAC 83). The federal regulations are adopted by reference into the state APDES regulations in 18 AAC 83.010(b)(3). As an aid to readers, however, the permit and fact sheet in some areas cite the federal regulations where specific regulatory language can be found.

EPA previously issued an NPDES permit for an MS4 owned and operated by four permittees: City of Fairbanks, City of North Pole, University of Alaska, and the Alaska Department of Transportation and Public Facilities on June 1, 2005. The permit expired on May 31, 2010. In October 2009, EPA transferred authority to administer the APDES program to DEC. When the permit expired in May 2010, DEC administratively extended the permit pursuance to 18 AAC 83.155(c) until it was reissued on June 10, 2013. Following the application requirements in 18 AAC 83.110(d), the co-permittees submitted an application for reissuance of their permit on January 9, 2018. The permit was administratively extended pursuant to 18 AAC 83.155(c).

The permittees have continued to implement SWMP activities in compliance with the previous permit and to submit Annual Reports.

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[1] See Results of the Nationwide Urban Runoff Program, Executive Summary, EPA Office of Water (1983); NPDES Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges, 64 Fed. Reg. 68726 (Dec. 8, 1999); and National Water Quality Inventory, 1998 Report to Congress, EPA.

The permit associated with this fact sheet implements the requirements of the Phase II storm water program for small MS4s in urbanized areas[2]. The permit requires the co-permittees to continue implementation of a comprehensive jurisdiction-wide municipal SWMP and outlines the actions and activities to be used by the co-permittees to control pollutants in urban storm water discharges to the maximum extent practicable. Monitoring of certain storm water discharges is required to determine the effectiveness of best management practices (BMPs) and to estimate pollutant loading to impaired receiving waters. Annual reporting is required to provide information on the collective status of the SWMP implementation.

2.0 BACKGROUND

2.1 Delegation of Authority

In October 2008 EPA approved Alaska's application to administer the NPDES Program. The State's program is called the Alaska Pollutant Discharge Elimination System (APDES) Program. EPA's approval of the application included transferring authority to administer the APDES Program in phases. Authority to administer the storm water program transferred to DEC on October 31, 2009; however, EPA retains oversight authority over DEC's APDES Program.

2.2 Permit Area and Applicants

In accordance with Section 402(p) of the CWA and federal regulations at 40 CFR §122.32, the permit coverage area is on a system-wide basis for the following MS4 permittees:

City of Fairbanks 2121 Peger Road Fairbanks, AK 99709	City of North Pole 125 Snowman Lane North Pole, AK 99705
University of Alaska- Fairbanks P.O. Box 757380 Fairbanks, AK 99775	Alaska Dept of Transportation and Public Facilities Northern Regional Office 2301 Peger Road Fairbanks, AK 99709

The four permittees are collectively referred to as the co-permittees. The storm sewer systems owned and operated by the co-permittees are located within the boundaries of the City of Fairbanks, City of North Pole, and University of Alaska Fairbanks. The permit area for the Alaska Department of Transportation and Public Facilities (ADOT&PF) consists of an MS4 owned or operated within the urbanized area boundary of the Fairbanks area. See APPENDIX A for a map of the Fairbanks Urbanized Area. A comprehensive storm sewer system map for the Fairbanks area is available at http://fnsb.us/gis/Pages/GIS-Viewers.aspx and is maintained on behalf of both the Fairbanks North Star Borough and the co-permittees. Note the Fairbanks Urbanized Area encompasses Fort Wainwright, which is federal property and where the co-permittees do not own or operate the MS4; therefore, this permit does not include permit

[2] 64 FR 68754 (December 8, 1999) http://www.gpo.gov/fdsys/pkg/FR-1999-12-08/pdf/99-29181.pdf

coverage for Fort Wainwright and other similar federal property located within the Fairbanks Urbanized Area.

2.3 Description of the Co-permittees MS4s in the Fairbanks Urbanized Area and Discharge Locations

The terms municipal separate storm sewer and small municipal separate storm sewer system are defined at 40 CFR §122.26(b)(8) and (b)(16), respectively. MS4s include any publicly-owned conveyance or system of conveyances used for collecting and conveying storm water that discharges to waters of the United States. The term municipality is defined at 40 CFR §122.2. An MS4 can be owned or operated by a federal, state, local or tribal entity, and includes systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

The co-permittees' surface runoff within their jurisdictions is directed to a system of mostly interconnected conveyances, which consist of subsurface storm sewers, roadside ditches, and surface streets. These systems provide drainage for an area of approximately 14.4 square miles, encompassing the City of Fairbanks, City of North Pole, and the University of Alaska–Fairbanks. The MS4 operated by the ADOT&PF provides drainage for approximately 610 miles of roads and highways within the Fairbanks area.

Drainage systems in some areas of the co-permittees' respective jurisdiction have been documented in a hydrologic study conducted by the co-permittees. Many roadside ditches are designed to facilitate drainage from the paved areas and, because of the local geology, may function as infiltration basins and therefore are not conveying any significant flow of water. During the 2005 permit term, co-permittees completed a detailed system assessment and map to further define the extent of the systems and identify the location of all outfalls.

2.4 Storm Water Management Program Accomplishments

The co-permittees have managed urban storm water discharges from their MS4s in accordance with their SWMP since 2005. The co-permittees have developed a variety of specific local requirements, assessments, and guidance material which allow them to effectively manage pollutants in storm water discharges within the Fairbanks Urbanized area, including:

- Ordinances:
  - City of Fairbanks Code of Ordinances
    - Division 10 – Construction Site Storm Water Runoff
    - Division 11 – Illicit Discharge Detection and Elimination
    - Division 12 – Post-Construction Storm Water Management
  - City of North Pole Code of Ordinaces
    - Chapter 12.24 – Illicit Discharge Detection and Elimination
    - Chapter 15.66 – Construction Site Storm Water Runoff
    - Chapter 15.74 – Post-Construction Storm Water Management
- Fairbanks and North Pole Storm Water Management Program Guide (April 2010, 2nd Edition)

- Site Development Plan Review – Storm Water BMP Design Guide (Fairbanks North Star Borough, Dept of Public Works, March 2010)
- Fairbanks Storm Water Advisory Committee
- Comprehensive MS4 and Industrial Facilities Map
- Annual Stream Cleanup Day
- Adopt-A-Stream Program
- Volunteer Water Quality Monitor (Tanana Valley Watershed Association)
- Storm Drain Stenciling Program and Art Contest
- 10 Ways you can prevent Storm Water Runoff Pollution Brochure, Fairbanks Storm Water Advisory Committee, 2010
- Green Infrastructure Resource Guide for Fairbanks, Alaska – Cold Climate Housing Research Center, 2012
- BMP Effectiveness Report for Fairbanks, Alaska – Shannon & Wilson, 2006
- Storm Water BMP Design Supplement for Cold Climates, Center for Watershed Protection, 1997
- Alaska Storm Water Pollution Prevention Plan Guide, Alaska Department of Transportation & Public Facilities, 2005

Links to these materials and other relevant references are posted on the Fairbanks Stormwater Management Program website at *http://www.fnsb.us/pw/Pages/Storm-Water.aspx*

3.0 DESCRIPTION OF MUNICIPALITY AND RECEIVING WATERS

3.1 Municipal Summary

The City of Fairbanks serves as the regional service and supply center for Interior Alaska. The city and surrounding development offers a diverse economy, including city, borough, state and federal government services, as well as being the regional center for transportation, communication, repair services, financial services, and medical services. The University of Alaska is the largest employer. Based on the results of the 2010 census, the population of the City of Fairbanks is 31,535 people.

The City of North Pole is located 14 miles southeast of the City of Fairbanks. Based on the results of the censuses in 2010, the population of the City of North Pole is 2,117 people.

3.2 Precipitation and Temperature

The region has a continental subarctic climate with the warmest summers in the state, as well as the lowest record winter temperatures with extremes ranging from above 90 ºF to below -60 ºF. Mean annual temperatures average slightly below freezing, with a mean summer (June through August) temperature of approximately 59 ºF and a mean winter (November through March) temperature of approximately -1 ºF. Wintertime temperatures are strongly controlled by ground-based inversions, and may vary widely over short distances and in response to human modification of the local environment. The average annual precipitation is slightly above 10

inches with July and August on average the wettest months and April the driest. Snow covers the ground continuously from mid-October to late April with an average annual snowfall of approximately 68 inches and a mean monthly snow depth of approximately 14 inches. Figure 1 and Figure 2 show the average total monthly precipitation and the average daily temperature and precipitation for the Fairbanks International Airport.

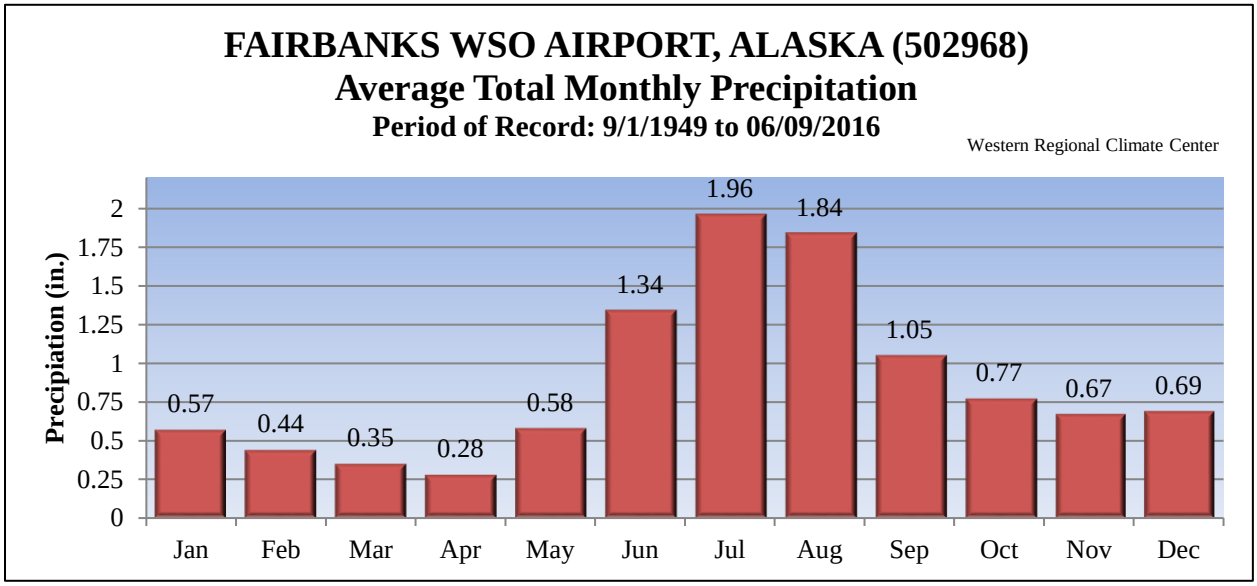

Figure 1: Average Total Monthly Precipitation

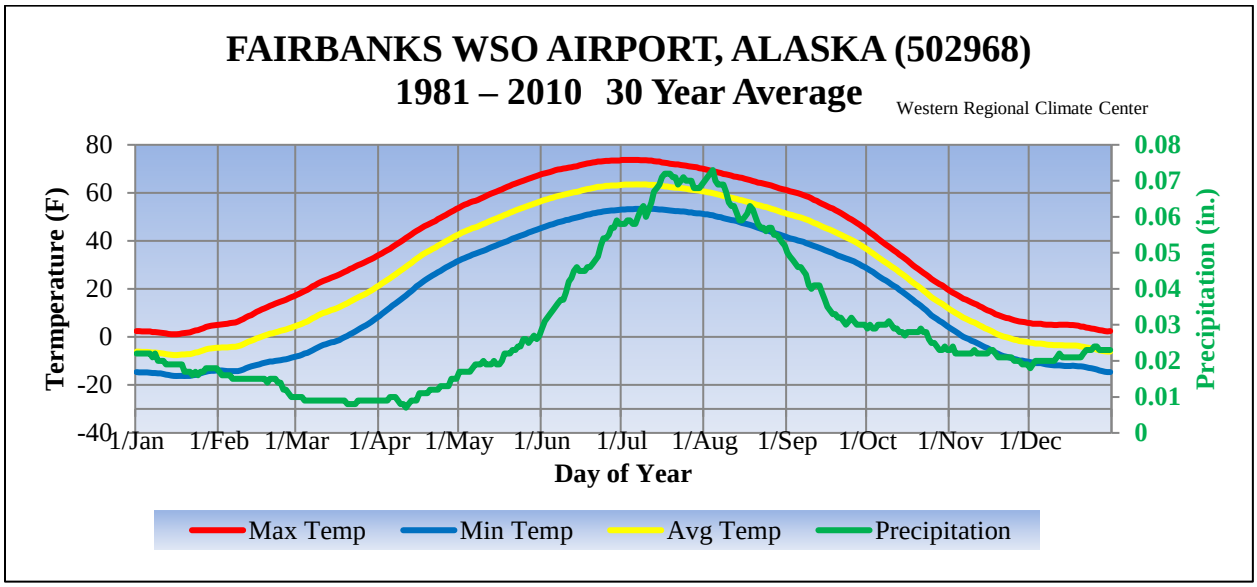

Figure 2: Average Daily Temperature and Precipitation for Fairbanks International Airport

The National Oceanic and Atmospheric Administration's Western Regional Climate Center maintains historical climate information for various weather stations throughout the western United States. Annual average rainfall for the Fairbanks area is approximately 10.54 inches per year, with most of the precipitation occurring during the summer months. Snow is the

predominant precipitation during the winter months in the Fairbanks area. Dates of spring breakup and fall/winter freezing cannot be predicted exactly. Using Figure 2, average daily temperature and precipitation, the aforementioned events are expected to occur from late April to early May and around mid-October.

3.3 Receiving Waters

3.3.1 Water Quality Standards

The protection of surface water occurs primarily through the development, adoption, and implementation of Water Quality Standards (WQS) and the use of the WQS in APDES permits. The WQS designate specific uses for which water quality must be protected. Alaska WQS designate seven uses for fresh waters (A) water supply: (i) drinking, culinary, and food processing; (ii) agriculture, including irrigation and stock watering; (iii) aquaculture; (iv) industrial; (B) water recreation: (i) contact recreation, (ii) secondary recreation; and (C) growth and propagation of fish, shellfish, other aquatic life, and wildlife. State waters within the Fairbanks Urbanized Area have been classified by DEC in 18 AAC 70.020 as fresh water with all seven designated uses mentioned above. Specific state water reclassified under section 18 AAC 70.0230(e) for Chena River from the confluence with Chena Slough to the confluence of Chena and Tanana Rivers is protected only for the following mentioned designated uses (A) water supply: (ii) agriculture, including irrigation and stock watering; (iii) aquaculture; (iv) industrial; (B) water recreation: (i) contact recreation, (ii) secondary recreation; and (C) growth and propagation of fish, shellfish, other aquatic life, and wildlife.

3.3.2 Potential Municipal Pollutants of the Receiving Waters

Storm water discharges can have highly variable levels of pollutants. EPA's Federal Register Notice states that turbidity levels in discharges from Construction and Development (C&D) sites may range from as low as 10–50 Nephelometric Turbidity Unit (NTU) to several thousand NTU. (Fed. Reg. Vol. 73, No. 230 p. 72572) Sediment from construction projects that discharge to the clear-water tributaries can have the greatest impact on the fisheries.

Sediment in water is generally considered in two broad categories. First, settleable solids rapidly settle out of the water and move downstream or down a ditch if rolled along the bottom or resuspended by currents. Second, suspended sediment remains in the water column due to water turbulence, particle shape, and/or low specific gravity of individual particles. EPA selected turbidity as a measure of the fine-material fraction of suspended sediment for use in the C&D Effluent Limitation Guideline (ELG) as the pollutant to sample for at C&D sites. EPA defined turbidity as "an expression of the optical property that causes light to be scattered and absorbed rather than transmitted with no change in direction of flux level through the sample … caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter, and plankton and other microscopic organisms." One unit of measure of turbidity is the NTU. The NTU is based on the use of nephelometer, an instrument that measures the amount of light scattered by a water sample at 90º to the path of incident light. This measurement is calibrated against the scattering of light in a standard suspension of formazin polymer and is reported in NTU.

Turbidity in Alaska's streams and rivers ranges from extremely low values of less than 1 NTU in clear-water drainages to intermediate levels of 50 NTU to naturally high levels of 50-4,000 NTU in several major rivers (Lloyd, 1986). Sampling at 46 sites in wadable streams in the Tanana River basin found a range in turbidity from 0.1 to 716 NTU, with a median value of 1.7 NTU. (Rinella, et.al., 2009)

3.3.3 Impaired Waters

The primary receiving waters within the urbanized area are Beaver Springs, Chena River, Chena Slough, and Noyes Slough. Although any water body impacted by storm water from a new development or redevelopment project must be considered in the design and implementation of BMPs; these primary receiving waters (with the exception of Beaver Springs) are identified as impaired on the DEC's CWA §303(d) list and require added attention. The State of Alaska's *Final 2010 Integrated Water Quality Monitoring and Assessment Report* identifies the pollutants of concern for Noyes Slough as petroleum products, sediment, and residues (debris) from urban runoff, and for the Chena River and Chena Slough as sediment from urban runoff.

Any water body which does not, or is not expected to, meet applicable WQS is described as impaired or as a water quality-limited segment. Section §303(d) of the CWA requires states to develop Total Maximum Daily Load (TMDL) management plans for water bodies which are determined to be impaired. Developers must ensure the project design and construction site controls adhere to all approved TMDLs, as well as identify other potential pollutants of concern for the design so appropriate BMPs are selected to address those pollutants.

Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report (DEC, 2010) lists Chena River, Chena Slough, and Noyes Slough as not meeting WQS for sediment. Noyes Slough is also listed for not meeting the water quality standard for petroleum hydrocarbons, oil and grease because of persistent observations of petroleum sheens. A TMDL for residue has been in place since 2008 for Noyes Slough. Since the 2010 report, DEC developed and EPA approved TMDL for the sheen component of the petroleum hydrocarbons, oil and grease standard for Noyes Slough. The TMDL documentation is available at http://dec.alaska.gov/water/water-quality/impaired-waters.aspx. In each of these waters, urban runoff is indicated as a potential source of these pollutants.

The Chena River and Chena Slough were previously listed in 1994 for non-attainment of the petroleum hydrocarbons, oils and grease WQS with the primary pollutant source identified as urban runoff. Sampling in 2005, 2007, and 2009 for hydrocarbons has shown the Chena River and Chena Slough met WQS, and the impairment status for petroleum hydrocarbons, oils and grease was subsequently removed per the *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report (DEC, 2010).*

4.0 PERMIT CONDITIONS

This section is intended to help the regulated community and members of the public understand the intent and basis of the actual permit language. If any confusion or conflicts exist between this summary and the actual permit language, the co-permittee must comply with the permit as

written. The number in parentheses following the fact sheet section headers refers to the Part of the permit.

The conditions established by the permit are based on Section 402(p)(3)(B) of the CWA, 33 U.S.C. §1342(p)(3)(B). This section requires that a permit for an MS4 must effectively prohibit non-storm water discharges from entering the MS4 and requires controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the permitting authority determines appropriate for the control of such pollutants.

The permit proposes the use of BMPs as the primary means to control the sources of pollution in storm water discharges. DEC has determined that BMPs implemented and enforced through a comprehensive local SWMP are the most effective mechanism for reducing the discharge of pollutants to the maximum extent practicable and for complying with the water quality provisions of the CWA. EPA considers maximum extent practicable to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new BMPs are developed or new information becomes available concerning the effectiveness of existing BMPs.[3] DEC agrees with EPA's iterative process approach for MS4 improvement. The NPDES regulations at 40 CFR §122.44(k) allow for use of BMPs when numeric limits are infeasible. EPA's *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits Policy* (August 1996) addresses the use of BMPs in storm water permits to provide for attainment of WQS. This policy is available on-line at http://www.epa.gov/npdes/pubs/swpol.pdf.

The NPDES application requirements for MS4 operators at 40 CFR §122.33 describe in detail the information that must be submitted to DEC to obtain permit coverage. MS4 operators are required to develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from their MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. 40 CFR §122.34 outlines six minimum control measures the SWMP must include. DEC then determines the specific permit conditions necessary to reduce the discharge of pollutants to the maximum extent practicable. DEC carefully considered the program information submitted by the co-permittees in their APDES application to develop the SWMP requirements in the permit, as well as information contained in Annual Reports from the previous permit term to develop the required permit conditions. The permit application and associated amendment are included in the administrative record supporting this permitting decision.

4.1 APPLICABILITY

4.1.1 Discharges Authorized Under this Permit

The permit authorizes all existing storm water discharges to waters of the United States from the portions of the MS4s owned or operated by the co-permittees within the co-permittees' boundaries and the Fairbanks Urbanized Area.

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[3] 64 FR 68754 (December 8, 1999)

The permit limits the authorization to discharge municipal storm water in a variety of ways:

1. Storm runoff that is commingled with flows from process wastewater, non-process wastewater, and storm water associated with industrial or construction activity (as defined in 40 CFR §122.26(b)(14) and (15)), or other discharge flows are allowed provided the commingled flows are already authorized by a separate APDES individual or general permit.
2. Certain types of non-precipitation related run off (referred to as non-storm water) listed in 40 CFR §122.26(d)(2)(iv)(B)(1) are also allowed to enter the MS4s as long as the discharges are not considered to be sources of pollution to the waters of the United States in the Fairbanks area. However, the co-permittees are responsible for the quality of the combined discharge and therefore have an interest in locating any uncontrolled or un-permitted discharges to the storm drain system. In Part 3.3, the permit requires the co-permittees to prohibit, through ordinance or other enforceable means, all other types of non-storm water discharges into the MS4s.
3. Discharges from the MS4s must not cause violations of state WQS.

4.1.2 Limitations on Permit Coverage

4.1.2.1 Non-Storm Water Discharges

The permit authorizes the discharge of non-storm water if it meets one of three conditions: 1) the discharge is in compliance with a separate APDES permit, 2) the discharge is the result of a spill due to unforeseen weather event or consists of an emergency discharge, or 3) consists of uncontaminated water from a list of approved sources.

4.1.2.2 Discharges Threatening Water Quality

The permit does not authorize the discharge of storm water that the Department determines will cause, have the reasonable potential to cause, or contribute to violations of WQS.

4.1.2.3 Snow Disposal to Receiving Waters

Disposal of snow directly into waters of the United States, or directly to the MS4s, is prohibited, due to concerns that the accumulated snow and melt water may contain elevated levels of chloride and other salts, suspended sediment, turbidity, and metals associated with sediment and turbidity. Discharges of snow melt resulting from or associated with the co-permittees' snow management practices (such as street plowing, and application of traction material) are conditionally authorized, provided such activities are conducted in accordance with BMPs and a manner that minimizes adverse water quality impacts. DEC recognizes the co-permittee's use of the snow management practice of using ditches for snow storage as an acceptable management practice. The primary function of using the ditches during the winter months is for snow storage and as is part of the co-permittee's snow disposal and management practices. The ditches are maintained by the co-permittees and are lined with gravel, soil, and vegetation that allows melting of snow and rainwater to infiltrate into the ground to help filter pollutants from directly entering surface receiving waters. As stated in the Permit, discharges from the co-permittee's snow disposal and snow management practices are authorized under this permit when such

practices are operated using appropriate best management practices (BMPs) required in Part 3.6 Pollution Prevention and Good Housekeeping. BMPs may include detention basins, dikes, berms, and vegetative buffers. BMPs shall be designed, operated, and maintained to prevent and reduce pollutants in the discharges to the maximum extent practicable so as to avoid excursions above WQS.

4.1.2.4 Discharges to Water Quality-Impaired Receiving Waters

The CWA mandates that states monitor and report on the quality of their waters. Section §305(b) requires that the quality of all water bodies be characterized and Section §303(d) requires that states list any water bodies that do not meet WQS. DEC develops and publishes an integrated water quality assessment report as required by the CWA. The most recent final report is the *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report* (DEC, 2010).

Waters that do not meet the numeric/narrative criteria for their use designation(s) are listed as impaired, in compliance with the CWA and state rules. DEC currently lists approximately 65 waters as impaired, with about 30 listed as candidates for development of a TMDL (DEC, 2010). TMDLs typically define both waste load allocations (WLAs) and load allocations (LAs) that specify how much of a particular pollutant can be discharged from both regulated and unregulated sources, respectively, such that the water body will again meet WQS. In a water body with an approved TMDL, any APDES permit conditions must be consistent with the assumptions and requirements of available WLAs. See 40 CFR §122.44(d)(1)(vii)(B). Table 1 summarizes the water bodies in the Fairbanks Urbanized Area listed as impaired.

Table 1: Impaired Water Bodies in Fairbanks – 2010

Pollutant Source	Water body	Pollutant	Category
Urban Runoff	Noyes Slough	Residues (debris)	4a
Urban Runoff	Noyes Slough	Petroleum Hydrocarbons, Oil and Grease (sheens)	5*
Urban Runoff	Noyes Slough	Sediment	5
Urban Runoff	Chena Slough	Sediment	5
Urban Runoff	Chena River	Sediment	5

Source: Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report (July 2010)
Note: Category 4a – Impaired water with a final/approved TMDL
Category 5 – Impaired water, Section 303(d) list, require TMDL
*A TMDL for the sheen component of the petroleum hydrocarbons, oil and grease WQS was developed for Noyes Slough and approved by EPA in 2011; it will be moved to category 4a in DEC's next Integrated Report.

Pollutant Allocations in the Noyes Slough TMDLs

TMDLs should define waste load allocations (WLAs) for point source discharges, and load allocations (LAs) for nonpoint source discharges. In a guidance memo issued in 2002, EPA set forth options for addressing NPDES regulated storm water discharges in TMDLs. See "*Establishing Total Maximum Daily Load Wasteload Allocations for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*" (2002 TMDL Guidance Memo). The 2002 TMDL Guidance memo also explained how to establish effluent limits for APDES regulated storm water discharges from applicable WLAs.

EPA has approved the TMDLs for the Noyes Slough for Residues (Debris) and Petroleum Hydrocarbons, Oil and Grease (Sheens). DEC is currently collecting data to evaluate the sediment impairment for the Chena River, Chena Slough, and Noyes Slough.

Residues (Debris) in Noyes Slough. The TMDL for the Noyes Slough for Residues (Debris) refers only to human-caused residues, and should not be confused with naturally occurring woody debris. The major sources of debris in the watershed include urban runoff and direct dumping. The debris has typically consisted of appliances, scrap building materials, concrete, and asphalt, as well as shopping carts, tires, litter, paper products, and cans. The debris enters Noyes Slough directly from littering or indirectly from storm water runoff and snow melt. Since the WQS for debris does not allow for any unpermitted, human-caused inputs to the system, the TMDL for debris in Noyes Slough is set to zero. Similarly, the loading capacity and waste load allocation are also set to zero. Due to the nature of debris impairment, the main focus of the TMDL is centered on development of strategies for reducing the presence of debris in Noyes Slough, which includes clean-up activities and the prevention of debris entering the water body.

Debris that enters the slough from storm water runoff likely includes smaller forms of debris such as bottles, cans, and paper products; however, it is not possible to determine which portion of the debris content is delivered from the MS4 and non-MS4 areas. A number of actions by the co-permittees have increased public awareness of the importance of Noyes Slough as a resource, there is increased use of garbage receptacles by private land owners adjacent to the Slough and increased enforcement of local ordinances that have reduce the amount of debris input into the water body. However, as it is not practical to expect that all debris will be controlled even with the best preventative measures, cleanup activities are still an integral, ongoing part of the solution to the debris in Noyes Slough. Many of the activities aimed at reducing the debris are already ongoing through the work of the MS4 co-permittees, the MS4 (Fairbanks North Star Borough, FNSB), and the Tanana Valley Watershed Association (TVWA) in the Fairbanks Urbanized Area.

Petroleum Hydrocarbons, Oils and Grease in Noyes Slough. The petroleum hydrocarbons, oils and grease loads potentially enter Noyes Slough from urban runoff and snowmelt. Sheens can indicate the presence of petroleum hydrocarbons, which can cause a wide range of impairments to aquatic life and habitat. Since the narrative water quality criterion for petroleum hydrocarbons, oils and grease does not allow for any visible sheens on surface waters, the TMDL for sheens in Noyes Slough is set to no visible sheens. Load and wasteload allocations for petroleum hydrocarbons, oils and grease for Noyes Slough are accordingly also set to no visible sheens. The goal of the TMDL is to reduce inputs of petroleum hydrocarbons, oils, and grease to the slough so that visible sheen occurrence is no longer persistent and chronic (DEC, 2011).

Noyes Slough has been designated as a Brownfield, which is an area that typically has hazardous substances and is redeveloped and reused under the Brownfields program. In data reviewed in development of the TMDL, data indicates that Noyes Slough meets the portions of the water quality criteria related to concentrations of petroleum hydrocarbons in surface water or sediments. However, petroleum and oil related sheens have been observed on slough water and

sediments. Therefore, the petroleum hydrocarbons, oils and grease TMDL was written to address the sheens observed in Noyes Slough.

Sheens may also occur naturally as well as from petroleum products. Sheens that occur naturally from bacteria or decomposing material will break apart when disturbed with a stick as opposed to sheens from petroleum products which will swirl back together. The sheens in Noyes Slough are likely the result of any of the following sources: natural organics, groundwater, garbage and debris, or urban runoff delivery of petroleum hydrocarbons, oils and grease; however, similar to the residue discussion, it not possible to determine whether the sheens are delivered from the MS4 or non-MS4 area. The MS4 permit only regulates the indirect inputs brought into the slough through the storm water conveyance system.

The objective of the TMDL and the control measures of the MS4 permit will be to reduce contributions of petroleum hydrocarbons, oils, and grease to the slough so that visible sheen occurrence is no longer persistent and chronic (DEC, 2011).

Permit Requirements for TMDL Implementation

As previously noted, all APDES permit conditions must be consistent with the assumptions and requirements of available WLAs. EPA's 2002 TMDL Guidance Memo further defines how APDES permit conditions for regulated storm water discharges can be consistent with the assumptions and requirements of available WLAs through the use of narrative BMPs. Where BMPs are used as permit limitations to implement WLAs, the permit must require monitoring activities as necessary to assure compliance with the WLAs.

The 2002 TMDL Guidance Memo recommends the use of BMPs in a APDES permit to implement WLAs and load reduction targets addressing storm water discharges. The MS4 permit includes the following six minimum control measures: (1) Public education and outreach; (2) Public involvement/participation; (3) Illicit discharge detection and elimination; (4) Construction site storm water runoff control; (5) Post-construction storm water management in new development and redevelopment; and (6) Pollution prevention and good housekeeping for municipal operations. The minimum measures that are most relevant to controlling residues (debris) in Noyes Slough are public education/outreach, public involvement/participation, and pollution prevention and good housekeeping from municipal operations. The minimum measures that are most relevant to controlling sheens in Noyes Slough are public education/outreach, public involvement/participation, illicit discharge detection and elimination, and pollution prevention and good housekeeping from municipal operations.

In the permit, DEC has refined the narrative describing certain activities, or has incorporated additional SWMP actions and activities, to ensure that discharges from the co-permittees' MS4s are controlled to the maximum extent practicable. Certain requirements specifically address the WLAs set forth in the TMDL plans for the Noyes Slough. The co-permittees' SWMP also provides opportunities to collectively target actions to achieve pollutant reductions in areas for which TMDLs have not yet been approved (sediment for the Chena River, Chena Slough, and Noyes Slough).

4.1.3 Co-Permittee Responsibilities

Regulations at 40 CFR §122.33(b)(2)(iii) allow regulated entities to jointly develop a SWMP and apply to be co-permittees to obtain discharge authorization under an individual permit. Once the permit is issued, each applicant is responsible for compliance with the terms and conditions of the SWMP and permit.

Regulations at 40 CFR §122.35(a) recognize that one or more of the minimum measures may be implemented by an entity other than the co-permittees (for example, a county or borough may implement a street sweeping program for a given city within the county/borough). Part 2.2.7 of the permit allows a co-permittee to rely on another entity to implement some of the required minimum measures if: 1) the entity in fact accomplishes the control measure; 2) the particular control measure is at least as stringent as the corresponding permit requirement; and 3) the entity agrees to implement the control measure on the co-permittte's behalf.

If the co-permittees choose to share responsibility to implement the minimum control measures with other entities, the partners must enter into legally binding agreements to minimize any uncertainty about compliance with the permit. (See 40 CFR §122.35.)

The permit requires the co-permittees to create such a binding intergovernmental agreement among themselves and submit the final document to DEC. If the co-permittees choose to share responsibility for program tasks with organizations not subject to the permit, a binding written agreement is also required (Part 2.2.7.3 of the permit). The co-permittees remain responsible for compliance with the permit obligations in the event the other entity fails to implement the control measure (or component thereof).

4.2 STORM WATER MANAGEMENT PROGRAM REQUIREMENTS

4.2.1 Storm Water Management Program Document

The permit requires the co-permittees to implement and enforce a SWMP designed to reduce pollutants to the maximum extent practicable and to protect water quality. Regulations at 40 CFR §122.34 set forth six minimum pollution control measures to be included in a SWMP. For each measure, the regulations specify certain required elements and also provide guidance concerning what an adequate program should include. See Part 4.3 of this Fact Sheet for detailed description of the six minimum measures. The co-permittees shall revise their joint SWMP document that reflects each co-permittee's unique program implementation.

4.2.2 General Requirements

The co-permittees are required to continue their SWMP activities designed to limit, to the maximum extent practicable, the discharge of pollutants from the MS4s in order to protect water quality and to satisfy the appropriate water quality requirements of the CWA. DEC has refined or incorporated additional SWMP actions and activities to ensure that storm water discharges from the co-permittees' MS4s are controlled to the maximum extent practicable.

Monitoring, evaluation, reporting, and recordkeeping requirements are specified in Part 4.0 of the permit. The permit requires the permittees to monitor water quality and BMP effectiveness in

a variety of ways. A quality assurance project plan (QAPP) must be used in conjunction with all analytical sampling and monitoring activities; the Annual Report will provide narrative documentation of program implementation and accomplishments.

4.2.3 Reviewing and Updating the Storm Water Management Program

The SWMP is intended to be a functioning mechanism for the co-permittees' use. Therefore, minor changes and adjustments to the various SWMP elements are expected and may be necessary to more successfully adhere to the goals of the permit. DEC determined that minor changes to the SWMP shall not constitute the need for permit modifications as defined in the regulations at 40 CFR §122.6. Part 2.3 of the permit describes procedures to be used to perform additions and minor changes to the SWMP. The permit does not allow the co-permittees to remove elements in the SWMP that are required through permit conditions or regulatory requirements. Any changes requested by the co-permittees will be reviewed and approved by DEC.

4.2.4 Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation

DEC does not intend to mandate a permit modification should the co-permittees annex additional lands or accept the transfer of operational authority over portions of the MS4s. Implementation of appropriate SWMP elements for these additions (annexed land or transferred authority) is required. The co-permittees must notify DEC of any such additions or transfers in the Annual Report. DEC may require a modification to the permit based on evaluation of the new information.

4.2.5 Storm Water Management Program Resources

Part 2.5 of the permit requires co-permittees to provide adequate support to implement their activities under the SWMP. Compliance with Part 2.5 will be demonstrated by the co-permittees' ability to fully implement the SWMP and other permit requirements as scheduled. The permit does not require specific funding or staffing levels, thus providing the co-permittees the ability and incentive to adopt the most efficient and cost effective methods to comply with permit requirements. DEC encourages the co-permittees to establish stable funding sources to support ongoing SWMP implementation.

4.3 MINIMUM CONTROL MEASURES

The Phase II Rule defines a SWMP for a small MS4 as a program composed of six elements that, when implemented together, are expected to reduce pollutants discharged into receiving waterbodies to the maximum extent practicable. These six program elements, or minimum control measures, are

- Public Education and Outreach on Storm Water Impacts,
- Public Involvement/Participation,
- Illicit Discharge Detection and Elimination,
- Construction Site Runoff Control,

- Post-Construction Storm Water Management in New Development and Redevelopment, and
- Pollution Prevention/Good Housekeeping.

The permit requires the co-permittee to comply with non-numeric technology-based standards (Part 2.2 of the permit) by implementing minimum control measures. The achievement of these non-numeric standards will result in the reduction or elimination of pollutants from the co-permittees' storm water discharge.

The permit requires the co-permittees to have legal authority to implement and enforce the SWMP. Traditional MS4s (City of Fairbanks and City of North Pole) have established "ordinances" for Illicit Discharge Detection & Elimination, Construction Site Storm Water Runoff, and Post-construction Storm Water Management. Non-traditional MS4 (DOT&PF and Universities) permittees cannot pass "ordinances" and do not have typical enforcement authority like a typical municipality, so legal authority may consist of policies, standards, or specific contract language.

4.3.1 Public Education and Outreach

The co-permittees must continue to implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and steps the public can take to reduce pollutants in storm water runoff.

An informed and knowledgeable community is crucial to the success of a SWMP. There is greater support for the program as the public gains a better understanding of the reasons why the program is necessary and important. Public support is particularly beneficial when operators of small MS4s attempt to institute new funding initiatives for the program or seek volunteers to help implement aspects of the program. Education can lead to greater compliance with the program, as the public becomes aware of the personal responsibilities expected of them and others in the community, including individual actions they can take to protect or improve the quality of area waters.

The co-permittees successfully met all requirements of the previous permit term. The co-permittees have proposed to implement the following measures for this permit term:

- Continue preparation and distribution of storm water educational material to target audiences through local print and broadcast media each year.
- Expand public education and outreach program to target new audiences.
- Continue maintaining and promoting a publicly-accessible and jointly-sponsored storm water website.

During the permit term, the co-permittees must:

- Continue to implement a public education program to educate the community about the impacts of storm water discharges on water bodies and identify the steps that citizens and businesses can take to reduce pollutants in storm water runoff to the maximum extent practical.

- At least annually provide education to target audiences that encourages citizens to improve water quality.
- At least annually prepare and distribute appropriate information to local media outlets that encourages citizens to improve water quality.
- Document selected information in the Annual Report that describes the implementation of this control measure.

4.3.2 Public Involvement and Participation

This measure complements the public education control measure. If given the opportunity to participate, members of the public generally will become more supportive of a program. The permit requires that the public participation efforts comply with the public notice requirements of the state and local law. DEC encourages the co-permittees to provide more opportunities for public participation and to attempt to engage all groups serviced by the storm sewer system.

DEC believes that the public can provide valuable input and assistance to the development of a municipal SWMP. The public should be given opportunities to play an active role in both the development and implementation of the program. Broad public support is crucial to the success of a SWMP; citizens who participate in the development and decision making process are partially responsible for the program and are more likely to take an active role in its implementation. In addition, the community is a valuable, and free, intellectual resource providing a broader base of expertise and economic benefit. Citizens involved in the SWMP development process provide important cross-connections and relationships with other community and government programs, which can be particularly valuable when trying to implement a SWMP on a watershed basis, as encouraged by the co-permittees.

The co-permittees successfully met all requirements of the previous permit term. During the previous permit term, the co-permittees implemented the following measures:

- Continue organizing and hosting an Annual Stream Cleanup Event.
- Continue coordinating and implementing an Adopt-A-Stream and Volunteer Water Quality Monitoring Program.
- Develop and distribute a new Community Storm Water Survey to local residents to gauge the effectiveness of past public education and outreach efforts.
- Continue conducting a Storm Drain Stenciling Program each year.
- Continue convening monthly Storm Water Advisory Committee meetings.

During this permit term, the co-permittees must:

- Continue to implement a public involvement program to involve the community in the following ways:
    - Make Annual Reports available to the public,
    - Host an annual community Stream Clean Up Day,
    - Conduct an Adopt-A-Stream and volunteer monitoring program,
    - Maintain a storm drain stenciling program, and
    - Continue the storm water advisory committee.

- Document selected information in the Annual Report that describes the implementation of this control measure.

4.3.3 Illicit Discharge Detection and Elimination

An illicit discharge, typically, is any discharge to an MS4 that is not storm water. There are some exceptions, such as fire fighting activities and otherwise permitted discharges. Part 1.4.1 of the permit lists the types of non-storm water which can be discharged, provided they are not significant contributors of pollutants to the system. This minimum measure requires the co-permittees to detect and eliminate illicit discharges from their system.

Discharges into MS4s often include wastes and wastewater from non-storm water sources. Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint or used oil dumped directly into a drain). Examples of other sources include, but are not limited to: sanitary wastewater from septic tanks, car wash wastewaters, radiator flushing disposal, laundry wastewaters, and improper disposal of auto and household toxic waste. The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving water bodies. EPA studies conclude that pollutant levels from these illicit discharges can significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

The co-permittees successfully met all requirements of the previous permit term. During the previous permit term, the co-permittees implemented the following measures:

- Continue maintaining an Illicit Discharge Log of all illicit discharges detected, as well as their follow-up investigations and resolutions.
- Continue and document enforcement of municipal Illicit Discharge Detection & Elimination ordinances.
- Conduct a new dry-weather outfall screening effort for non-storm water flows from 100-percent of all outfalls.
- Update Comprehensive MS4 Map to include all industrial facilities with known discharges within the Urbanized Area.
- Establish a written protocol/plan for updates to the Comprehensive MS4 Map for capital improvement projects affecting the MS4.
- Train all road maintenance staff for detection of illicit discharges.
- Update Quality Assurance Project Plan (dated February 2006) for all future analytical storm water monitoring activities.
- Continue conducting a Storm Water Outfall Monitoring Program.

During this permit term, the co-permittees must:

- Continue to implement an illicit discharge detection and elimination program in the following ways:
    - Review the effectiveness of the illicit discharge ordinances;

  - Review and update the inventory of industrial facilities covered by the Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity (AKR060000);
  - Continue to conduct industry education about prohibiting illicit discharges;
  - Update as necessary the comprehensive storm sewer system map; and
  - Continue dry weather screening.

- Document selected information in the Annual Report that describes the implementation of this control measure.

4.3.4 Construction Site Storm Water Runoff Control

Polluted storm water runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. Sediment is usually the main pollutant of concern, as it has been demonstrated that sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation and the contribution of other pollutants from construction sites can cause physical, chemical, and biological harm to our nation's waters. For example, excess sediment can quickly fill rivers and lakes, requiring dredging and destroying aquatic habitats.[4]

Even though discharges from all Alaskan construction sites disturbing more than one acre are independently required to be authorized by an APDES storm water discharge permit (specifically, the APDES General Permit for Storm Water Discharges from Construction Activity, AKR100000), this minimum control measure is necessary to enable the co-permittees to effectively and directly control construction site discharges into their storm sewer systems. During the 2005 permit term, the co-permittees incorporated the following elements into their local programs:

- An ordinance or other regulatory mechanism requiring proper sediment and erosion control and proper waste management controls at construction sites;
- Procedures for site plan review of construction plans;
- Procedures for site inspection and enforcement; and
- Procedures for the receipt and consideration of public comments.

Co-permittees can and should review what existing procedures are already in place in their jurisdictions for these activities. Co-permittees must work to optimize coordination between different municipal offices.

The permit allows co-permittees to exempt from local regulation those sites which qualify for DEC's low rainfall erosivity waiver from the APDES General Permit for Storm Water Discharges from Construction Activity (AKR100000). This waiver, allowed by EPA regulation at 40 CFR §122.26(b)(15)(i)(A), is based on the R factor from the Revised Universal Soil Loss

[4] 64 FR 68728 - 68731 (December 8, 1999)

Equation (RUSLE) and applies to projects when (and where) negligible rainfall/runoff is expected.

The co-permittees successfully met all requirements of the previous permit term. During the previous permit term, the co-permittees implemented the following measures:

- Continue and document implementation and enforcement of all plan review and inspection activities under the municipal Construction Site Storm Water Runoff Control ordinances.
- Update and expand the jurisdictional boundary for plan reviews and inspection activities to match the new Urbanized Area boundary for the Fairbanks and North Pole areas from the 2010 Census.
- Conduct at least one training session per year for the local developer, engineering, and construction audience on the ordinance requirements and appropriate selection of BMPs for construction site storm water runoff control.
- Continue implementation of SWPPP review process; enforcement of erosion, sediment, and pollution control requirements (through contract compliance); and site inspection program for DOT&PF and UAF construction projects.
- Continue certification and training requirements for SWPPP preparers and construction supervision on DOT&PF projects.

During this permit term, the co-permittees must:

- Continue to implement a construction site storm water runoff control program to involve the regulated community in the following ways:
    - Review implementation and enforcement of the existing program;
    - Revise the construction ordinance as needed;
    - Revise BMPs tailored to local conditions;
    - Review and implement procedures for reviewing site plans; and
    - Host training sessions for the regulated public.
- Document selected information in the Annual Report that describes the implementation of this control measure.

4.3.5 Post-Construction Storm Water Management in New and Redevelopment

This control measure applies in areas undergoing new development or redevelopment. Post-construction controls are necessary because runoff from such areas has been shown to significantly affect receiving water bodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction storm water discharges is the most cost-effective approach to storm water quality management.[5]

Post-construction runoff can cause an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it can pick up harmful sediment

[5] 64 FR 68725-68728 and 68759 (December 8, 1999)

and chemicals, such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Post-construction runoff also increases the quantity of water delivered to the water body during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces, such as asphalt and concrete, and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

This minimum measure requires co-permittees to develop, implement, and enforce a program to reduce pollutants in post-construction runoff from areas of new development and redevelopment. This measure applies at minimum to projects, which are greater than or equal to one acre in size. In order to maintain compliance this control measure, the co-permittees must:

- Continue to implement locally appropriate strategies, which include a combination of structural and/or nonstructural BMPs requirements. Non-structural requirements can include planning, zoning, and other local requirements, such as buffer zones. Structural controls include the use of storage, infiltration basins, or vegetative practices, such as rain gardens or artificial wetlands;
- Maintain the existing ordinance and/or other regulatory mechanism to address post-construction discharges; and
- Ensure adequate long-term operation and maintenance of BMPs.

During the previous permit cycle, the co-permittees successfully met all requirements of the previous permit term by implementing the following measures:

- Continue to document implementation and enforcement of all plan review activities under the municipal Post-construction Storm Water Management Ordinances.
- Update the jurisdictional boundary for plan reviews activities to match the Urbanized Area boundary for the Fairbanks and North Pole areas from the 2020 Census.
- Conduct at least one training session per year for the local developer/engineering audience on the ordinance requirements and appropriate selection of BMPs for postconstruction storm water management.
- Update the Fairbanks & North Pole Storm Water Management Program Guide (dated April 2017) to include discussion of green infrastructure / low impact development strategies for the sub-arctic climate.
- Continue to develop and implement post-construction storm water program, including cooperating with the Fairbanks North Star Borough’s development of a green infrastructure / low impact development strategy, utilizing existing DOT&PF and UAF manuals and guidance where appropriate.

During this permit term the co-permittees must:

- Continue to implement a construction site storm water runoff control program to involve the regulated community in the following ways:
    - Review the implementation and enforcement of the existing program,
    - Revise the post-construction ordinance as needed,
    - Review Low Impact Development (LID)/Green Infrastructure projects,
    - Revise BMPs tailored to local conditions as needed,
    - Review and implement procedures for reviewing site plans, and
    - Host training sessions for the regulated public.
- Document selected information in the Annual Report that describes the implementation of this control measure.

4.3.5.1 Green Infrastructure and Low Impact Development (LID)

Green infrastructure applications and approaches can reduce, capture, and treat storm water runoff at its source before it can reach the sewer system. Site-specific practices, such as green roofs, downspout disconnections, rain harvesting/gardens, planter boxes, and permeable pavement are designed to mimic natural hydrologic functions and decrease the amount of impervious area and storm water runoff from individual sites. The applications and design approaches described below can also be applied in neighborhood settings (i.e., green streets) or at larger regional scale (i.e., riparian buffers and urban forestry) to manage storm water. These applications and approaches can keep storm water out of the sewer system to reduce overflows and to reduce the amount of untreated storm water discharging to surface waters.

In addition, Brownfields redevelopment may be warranted. Brownfields are real property where the expansion, redevelopment, or reuse of the property may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment and takes development pressures off greenspaces and working lands.

4.3.5.2 Snow Disposal Sites

DEC added a new requirement for co-permittees to begin evaluating snow disposal sites. The first step in evaluating snow disposal sites involves a thorough inventory with mapping of all permittee-owned and privately owned snow disposal sites that discharge directly to the MS4 or to receiving waters. Co-permittees are expected to complete an inventory and mapping activities during the first year of the permit cycle and update each activity on an annual basis. Secondly, co-permittees must evaluate the need to regulate the operation of private snow disposal sites within the boundaries of the MS4 through an ordinance or other regulatory mechanism. Within two years of the effective date of this permit, the co-permittees are expected to document the evaluation process in a report and submit the report to DEC with the corresponding Annual Report. Third, the co-permittees must revise all applicable requirements as necessary in accordance with the recommendations contained in the evaluation report within three years of the effective date of this permit.

4.3.6 Pollution Prevention and Good Housekeeping

This measure requires co-permittees to continue implementation of an operation and maintenance program to prevent or reduce pollutant runoff from activities conducted by the municipality. The co-permittees must examine and subsequently alter their own actions to reduce the amount and type of pollution that: 1) collects on streets, parking lots, open spaces, storage and vehicle maintenance areas, which may be discharged into local waterways; and 2) results from actions, such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems. Activities associated with maintenance of parks and open spaces, as well as fleet and building maintenance, must also be considered for possible water quality impacts. While this measure is meant primarily to improve or protect receiving water quality by improving municipal or facility operations, it also can result in a cost savings for the co-permittee, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

The co-permittees must examine their maintenance activities and schedules and inspection procedures for controls to reduce floating debris and other pollutants. By evaluating existing practices, co-permittees can improve operations to reduce or eliminate discharges from roads, municipal parking lots, maintenance and storage yards, waste transfer stations, salt/sand storage locations, and snow storage/disposal areas.

The permit does not specify particular BMPs, nor does it specify a frequency for any BMPs, as it is expected that each co-permittee will determine the appropriate good housekeeping BMPs for their community as necessary to protect water quality and will train their employees on proper techniques to ensure such activities are accomplished.

The co-permittees successfully met all requirements of the previous permit term. During the previous permit cycle, the co-permittees implemented the following measures:

- Continued development and implementation of standard operating procedures for pollution prevention / good housekeeping activities at all permittee-owned facilities.
- Continued documentation and evaluation of existing snow removal, street sanding, street sweeping, and storm drain cleaning operations.
- Evaluated all permittee-owned snow disposal sites for siting, maintenance, and use of BMPs to eliminate discharge of pollutants to the MS4 and/or nearby surface waters.
- Trained all appropriate staff on standard operating procedures for pollution prevention / good housekeeping activities at all co-permittee owned facilities.

During this permit term, the co-permittees must:

- Continue to implement a pollution prevention and good housekeeping control measure to involve the regulated community in the following ways:
    - Review the development and implementation of the existing Operations and Maintenance Program,
    - Conduct annual training of municipal personnel.

- Document selected information in the Annual Report that describes the implementation of this control measure.

4.4 Monitoring, Evaluation, Reporting, and Record Keeping Requirements

4.4.1 Monitoring and Evaluation of Overall Program Effectiveness

The Phase II storm water regulations at 40 CFR §122.34(g) require that MS4 operators evaluate program compliance, the appropriateness of BMPs in their SWMPs, and progress towards meeting their measurable goals. These requirements are included in Part 4.0 of the permit.

The nature of the monitoring activities to be implemented by co-permittees largely depends on the measurable goals selected by the group. Measurable goals are primarily measures of the level of effort given to implementing a particular BMP (such as frequency of street sweeping), but may also encompass actual measures of water quality improvement. DEC encourages a mix of physical, chemical, biological, and programmatic indicators to evaluate the appropriateness of BMPs and progress towards achieving their measurable goals. The purpose of this evaluation is to determine whether or not the MS4 is meeting the requirements of the minimum control measures of the permit.[6]

The co-permittees are required to update and implement procedures to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The co-permittees are required to update the Monitoring Program Plan and the Quality Assurance Project Plan (QAPP) within 180 days of the effective date of the permit. The QAPP shall consist of standard operating procedures the co-permittees must follow for collecting, handling, storing and shipping samples; laboratory analysis; and data reporting. The Plan must be submitted to the Department and be available upon request.

4.4.2 Annual Reports

In general, the annual report must document and summarize implementation of the SWMP during the previous year and evaluate program results and describe planned changes towards continuous improvement. The annual report serves as a snapshot of the current status of the SWMP for the general public or other stakeholders in the community. While records are to be kept and made available to the public, the annual report is an excellent summary document to provide as well.

DEC requires the co-permittees to use the Summary Annual Report Template in this permit to obtain summary information about the status of the MS4(s). In addition to the summary annual report, co-permittees must also submit a more detailed annual report. Requirements for the minimum control measures in Part 3.0 of the permit detail specific information to be reported for each control measure. The detailed annual report should clearly illustrate three key items for each SWMP area:

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[6] 64 FR 68769, December 8, 1999

- **Summary of the Year's Activities**. The summary should describe and quantify program activities for each SWMP component. Responsible persons, agencies, departments or co-permittees should be included. Each activity should be described in relation to achievement of established goals or performance standards.
- **Description of SWMP Effectiveness**. The annual report should not only describe the previous year's activities, but should also highlight the SWMP's effectiveness (*Part 4.2 of the permit*) using indicators required in Part 4.1 of the permit.
- **Planned Activities and Changes**. The annual report should describe activities planned for the next year highlighting any changes made to improve control measures or program effectiveness.

The Annual Report(s) may be submitted to DEC in electronic format (preferred) on CD-ROM(s) using universally available document formats, such as Adobe Acrobat PDF or other available means. However, while the Annual Report text can be submitted in electronic format, the required certification statement must be signed and dated in hard copy by all co-permittees as directed in Appendix A, Part 1.12.2 of this permit. DEC encourages the co-permittees to prepare the Annual Report(s) as a joint effort, with each party providing activity updates for their particular responsibilities under the permit.

4.4.3 Record Keeping

Part 4.4 of the permit requires co-permittees to keep all records required by the permit for a period of at least five years. Records need to be submitted only when requested by DEC. The co-permittees' SWMP must be available to the public. Co-permittees may charge a reasonable fee for copies and may require a member of the public to provide advance notice of their request. DEC encourages the co-permittees to make their program materials available to the public electronically via a website or other viable means.

4.4.4 Address

Submittals required by the permit must be made to the following address:

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization – Storm Water Program
555 Cordova Street
Anchorage, AK 99501
Telephone (907) 269-6285

4.5 Termination of Coverage for a Single Co-permittee

Permit coverage may be terminated, in accordance with the provisions of 18 AAC 83.130, for a single co-permittee without terminating coverage for other co-permittees.

5.0 ANTIBACKSLIDING

18 AAC 83.480 requires that "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 18 AAC 83.480(c) also states that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued." The effluent limitations in this permit reissuance are consistent with 18 AAC 83.430. The permit effluent limitations, standards, and conditions are as stringent as in the previous permit.

6.0 ANTIDEGRADATION

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, Water Quality-Based Effluent Limits (WQBELs) may be revised as long as the revision is consistent with the State's antidegradation policy. The Antidegradation Policy of the WQS (18 AAC 70.015) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected. This section analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the Antidegradation Policy.

The Department's approach to implementing the Antidegradation Policy, found in 18 AAC 70.015, is currently based on the requirements in 18 AAC 70 and the Department's *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods*, dated July 14, 2010. Note that the Lieutenant Governor signed and filed Antidegradation Implementation Methods regulations on March 7, 2018 with an effective date of April 6, 2018. The regulations were subsequently submitted to EPA on March 9, 2018 for review and approval. The new regulations may not be used for CWA purposes (e.g., APDES permits) until EPA approves the regulations for use in such purposes. As such, until the new regulations are approved by EPA for use in APDES permitting, the existing Interim Methods will be used in conjunction with the application of the Antidegradation Policy. Using these requirements and policies, the Department determines whether a water body, or portion of a water body, is classified as Tier 1, Tier 2, or Tier 3, where a higher numbered tier indicates a greater level of water quality protection. At this time, no Tier 3 waters have been designated in Alaska.

The permit authorizes discharges to water bodies that have been impaired as a result of urban runoff (see Fact Sheet Section 4.1.2.4 for a listing of the impaired water bodies); however, permit conditions (e.g., BMPs) have been developed to ensure existing uses are maintained and protected. For the purpose of this analysis, the Department classifies the impaired water bodies as Tier 1 for the parameters causing the impairment. Compliance with permit conditions will limit storm water discharges to those water bodies listed as impaired. As a result, water quality in those water bodies is expected to improve subject to compliance with permit conditions. Accordingly, DEC finds that the existing uses in those water bodies designated as Tier 1 for the parameters they are impaired for will be maintained and protected. The remainder of this

antidegradation analysis conservatively assumes that all other waters are Tier 2 waters, which provides for the next highest level of protection. The Tier 2 analysis for these waters follows.

The State's Antidegradation Policy in 18 AAC 70.015(a)(2) states that if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (i.e., Tier 2 waters), that quality must be maintained and protected. The Department may allow a reduction of water quality only after making five specific regulatory findings (18 AAC 70.015(a)(2)(A-E)). The Department's findings are as follows:

1. *18 AAC 70.015(a)(2)(A) Lowering water quality is necessary to accommodate important economic or social development in the area where the water is located.*

In order to conduct their important ongoing civic functions, all of the co-permittees require that infrastructure be constructed and maintained to accommodate important economic and social development in the area. Without road construction and maintenance as well as storm water collection systems with discharge points, successful operations of the co-permittees important functions (and the citizens they serve) would be severely hampered. Storm water discharges associated with the co-permittees activities will be controlled via the requirements of applicable SWMPs and SWPPPs, which implement the most effective and reasonable practices. Accordingly, in order to provide important services and employment opportunities to the resident and visiting population, the lowering of water quality is necessary.

Fairbanks North Star Borough contains Alaska's second largest city, Fairbanks. The City of Fairbanks is an important trading, transportation, military, educational (the University of Alaska – Fairbanks, a co-permittee, is located here) and regional service and supply center. Essential city, borough, state and federal government services are located in the Fairbanks Urbanized Area. The government services sector, including the military, employs more than one-third of the region's workers. The Fairbanks International Airport serves villages in the region, is a supply point for North Slope oil fields, and is a center for the transport of cargo by international carriers.

In addition, The City of Fairbanks is proximal to the City of North Pole, which is a northern hub for important industrial activity in Alaska including important oil and gas infrastructure and businesses. The permit also provides coverage for ADOT&PF's northern operations, which provides important economic (e.g., payroll associated with local jobs) and social (e.g., road systems maintained and expanded to allow for mass transportation, the sustainability of jobs and the creation of new ones, etc.) development.

The Department has determined that the lowering of water quality is necessary to accommodate important economic and social development in the area where the waters are located and that the finding is satisfied.

2. *18 AAC 70.015(a)(2)(B) Reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030.*

The adaptive management approach (from permit cycle to permit cycle) is used in MS4 permits (unlike other types of NPDES permits) because there is not a need to require strict compliance with WQS if discharges are controlled to the maximum extent practicable and comply with such other provisions as the NPDES authority determines to be appropriate. (See *Defenders of*

Wildlife v. Browner, 191 F3d 1159 (9th Cir., 1999)). The maximum extent practicable provision of the CWA allows the NPDES authority the broad discretion whether to require strict compliance with state WQS.

A key requirement in the storm water Phase II rule[7] is a report (40 CFR 122.34(g)(3)) that includes "the status of compliance with permit conditions, an assessment of the appropriateness of identified [control measures] and progress towards achieving identified measurable goals for each of the minimum control measures." This assessment is critical to the storm water program framework which uses an adaptive management approach of implementing controls, conducting assessments, and designating refocused controls leading toward attainment of water quality standards. The permittee is required to conduct an annual effectiveness assessment to assess the effectiveness of significant control measures, SWMP components, and the SWMP as a whole. The permittee is to assess and modify, as necessary, any or all existing SWMP components and adopt new or revised SWMP components to optimize reductions in storm water pollutants through an iterative process. This iterative process includes routine assessment of the need to further improve water quality and protect beneficial uses, review of available technologies and practices to accomplish the needed improvement, and evaluate resources available to implement the technologies and practices. Through this type of analysis, the applicable criteria found in 18 AAC 70.020 will be maintained and protected.

With respect to 18 AAC 70.235 and 18 AAC 70.030, no site-specific criteria has been designated for any of the subject water bodies and permit conditions are designed to control potentially toxic discharges.

The Department has determined that reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030 and that the finding is satisfied.

3. *18 AAC 70.015 (a)(2)(C) The resulting water quality will be adequate to fully protect existing uses of the water.*

As previously discussed and listed in Fact Sheet Section 4.1.2.4, the permit authorizes discharges to impaired water bodies; however, permit conditions (e.g., BMPs) have been developed to ensure existing uses are maintained and protected. Further, compliance with permit conditions will result in a reduction of pollutant loading to those water bodies listed as impaired. As a result, water quality in those water bodies as well as applicable Tier 2 water bodies should improve subject to compliance with permit conditions.

The Department has determined that the resulting water quality will be adequate to fully protect existing uses of the water and that the finding is satisfied.

4. *18 AAC 70.015(a)(2)(D) The methods of pollution prevention, control, and treatment found by the Department to be the most effective and reasonable will be applied to all wastes and other substances to be discharged.*

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[7] Stormwater Phase II Final Rule (64 FR 68722).

DEC generally implements permit conditions that specify that a municipality implement controls, BMPs or control measures, and other activities to reduce pollutants as identified in a SWMP. The SWMP may address control measures such as: public education and outreach, public participation/involvement, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, and pollution prevention/good housekeeping. The SWMP must also include measureable goals to evaluate the effectiveness of individual control measures and the SWMP as a whole, requirements for industrial storm water discharges to the MS4, and reporting requirements.

The site-specific, activity-specific process of developing, implementing, and adjusting the pollution control practices contained in the Storm Water Pollution Prevention Plan (SWPPP) constitutes the type of alternatives analysis and use of "the most effective and reasonable" . . . "methods of pollution, prevention, control, and treatment" cited as requirements under Alaska's antidegradation policy for activities that would degrade water quality.

Control measures that prevent or minimize water quality impacts from municipal activities and construction activities are described in Part 3.0 of the proposed MS4 permit and in Chapters 4 and 5 of the *Alaska Storm Water Guide* (DEC, 2009). The *Alaska Storm Water Guide* provides detailed information on temporary storm water controls for active construction sites. The storm water management process outlined in that chapter consists of the development of a SWMP which provides the basis for all pollutant discharge prevention/minimization activities. As noted below, development of the SWMP requires a comprehensive evaluation of the community, the proposed construction activities, and possible pollutant discharges. This information is used to create the SWMP, which contains structural and non-structural management practices; specifications for selecting, sizing, siting, operating, and maintaining them; and procedures for inspecting the management practices and repairing or replacing them as needed.

A co-permittee is required to implement erosion, sediment, and other storm water management practices to avoid or minimize pollutant discharges, as detailed in Part 3.0 of the permit. Alternative control measures that may provide equal or better water quality protection are also allowable, and encouraged, especially where those alternatives would provide better water quality and environmental protection at a lesser cost.

The Department uses an integrated approach in the permit for developing and implementing "methods of pollution, prevention, control, and treatment" required by Alaska's antidegradation policy. This integrated approach includes requirements for:

- Erosion and sediment control, pollution prevention measures and prohibiting certain discharges (Part 3.4),
- Revised and expanded training requirements for the construction and post-construction (Part 3.4 and 3.5), and
- Monitoring of storm water discharges for illicit discharges (Part 3.3).

Most pollution controls at construction sites are not installed in isolation, but instead are part of a suite of control measures that are all designed to work together. Designers use the treatment train approach to design a series of practices that minimize storm water pollution and achieve

compliance with APDES construction general permit requirements. For example, a designer may use as a series of control measures to prevent sediment discharges from a site – a diversion ditch at the top of a disturbed slope (to minimize storm water flowing down the slope), mulching on the slope (to minimize erosion), and silt fence at the bottom of the slope (to capture sediment). This treatment train would help protect the slope better than relying on a single control measure, such as silt fence.

The site-specific nature of the SWMP, the requirement that it be implemented in a manner that addresses storm water impacts to the maximum extent practicable, and provisions that the approach be adjusted to ensure ongoing storm water management effectiveness provide the implementation methods needed to appropriately support the antidegradation policy.

The Department has determined the methods of pollution prevention, control, and treatment in the permit to be the most effective and reasonable, which will be applied to all wastes and other substances to be discharged, and the finding is satisfied.

5. *18 AAC 70.015(a)(2)(E) All wastes and other substances discharged will be treated and controlled to achieve*
   - *(i) for new and existing point sources, the highest statutory and regulatory requirements; and*
   - *(ii) for nonpoint sources, all cost-effective and reasonable best management practices.*

The *MS4 Permit Improvement Guide* (EPA, 2010), in conjunction with the six minimum control measures, constitutes the highest regulatory requirements for municipal storm water management. This permit, as part of the iterative process of improvement of MS4 permits, includes incremental changes in the permit requirements.

Green infrastructure is an approach that communities can choose to maintain healthy waters, provide multiple environmental benefits and support sustainable communities. Green infrastructure can treat storm water that is not retained.[8] Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to storm water management systems that mimic nature by soaking up and storing water.

Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. By preserving and recreating natural landscape features, LID minimizes effective imperviousness, creating functional and appealing site drainage that treats storm water as a resource rather than a waste product. Bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements are some of the LID practices used to adhere to these principles. By implementing

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[8] Center for Watershed Protection, September 2007. *National Pollutant Removal Performance Database*, Version 3 (http://www.stormwaterok.net/CWP Documents/CWP-07 Natl Pollutant Removal Perform Database.pdf)

LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions.

The requirements contained in the Alaska Construction General Permit (CGP, AKR100000) , the SWPPP development process (Part 5 of the CGP permit), development and implementation of the SWMP to include construction site storm water runoff control and post-construction storm water management control measures and good housekeeping measures (Part 3 of this permit), and BMP's provided in the *Alaska Storm Water Guide* (Chapter 4) comprise a comprehensive, integrated approach for developing and implementing "methods of pollution, prevention, control, and treatment" required by Alaska's antidegradation policy.

The Department has determined that the permit complies with the highest statutory and regulatory requirements for the industry and types of pollutants expected from this industry. The department concludes that this finding is satisfied.

7.0 OTHER REQUIREMENTS

7.1 Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions; however, DEC voluntarily contacted the agencies to notify them of the development of the permit and to obtain listings of threatened and endangered species near the proposed discharges. There are no listed species or designated critical habitat in the Fairbanks North Star Borough. The agencies will be provided the draft permit and fact sheet during the public review period. Any comments received from the agencies regarding the listing of threatened or endangered species will be considered prior to reissuance of this permit.

7.2 Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially-fished species to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires federal agencies to consult with NMFS when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. As a state agency, DEC is not required to consult with federal agencies regarding permitting actions; however, DEC will contact NMFS and USFWS to notify them of the development of the permit and to obtain listings of EFH near the proposed discharges.

DEC identified the following species present in the general area of the permitted discharges:

- Chinook salmon – Eggs and larvae, Juveniles, Adults

- Chum salmon – Eggs and larvae, Juveniles, Adults
- Coho salmon – Eggs and larvae, Juveniles, Adults

DEC determined that reissuance of the permit will have no adverse effect on EFH. As previously described, the storm water management controls required by the permit are intended to protect water quality to the maximum extent practicable and will result in an overall improvement over current conditions. Discharges of municipal storm water from the MS4s in the greater Fairbanks area have occurred for many years prior to the promulgation of EPA regulations to permit such discharges, and as with the first issuance of this permit in 2005, this permit restricts the discharge of pollutants through source control. NMFS and USFWS will be provided with a draft permit and fact sheet during the public review period. Any comments received from NMFS and USFWS regarding EFH will be considered prior to reissuance of the permit.

7.3 Permit Expiration

The permit will expire five years from the effective date of the permit.

8.0 REFERENCES

AAC, 2009. Alaska Administrative Code, Revised 2009. State of Alaska, Juneau, AK.

DEC, 2008. *Total Maximum Daily Load (TMDL) for Residue in the Waters of Noyes Slough in Fairbanks, Alaska*. Alaska Department of Environmental Conservation, Division of Water. Fairbanks, AK. http://dec.alaska.gov/water/tmdl/pdfs/NoyesSloughTMDL_May%202008_FINAL.pdf

DEC, 2009. *Alaska Pollutant Discharge Elimination System Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems. Permit number AKS-053406*. Alaska Department of Environmental Conservation, Wastewater Discharge Authorization Program, Anchorage, AK.

DEC, 2010. *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report*, July 15, 2010. Department of Environmental Conservation, Division of Water, Juneau, AK. http://dec.alaska.gov/water/wqsar/waterbody/2010integratedreport.htm

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NMFS, 2005. *Appendix G: Non-fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures*. Prepared by the National Marine Fisheries Service. http://alaskafisheries.noaa.gov/habitat/seis/final/Volume_II/Appendix_G.pdf

Tetra Tech, 2008. *Evaluation of Options for Antidegradation Implementation Guidance*. Prepared for the Alaska Department of Environmental Conservation, Juneau, AK. http://dec.alaska.gov/water/wqsar/wqs/pdfs/Antidegradation_tetratech_final.pdf

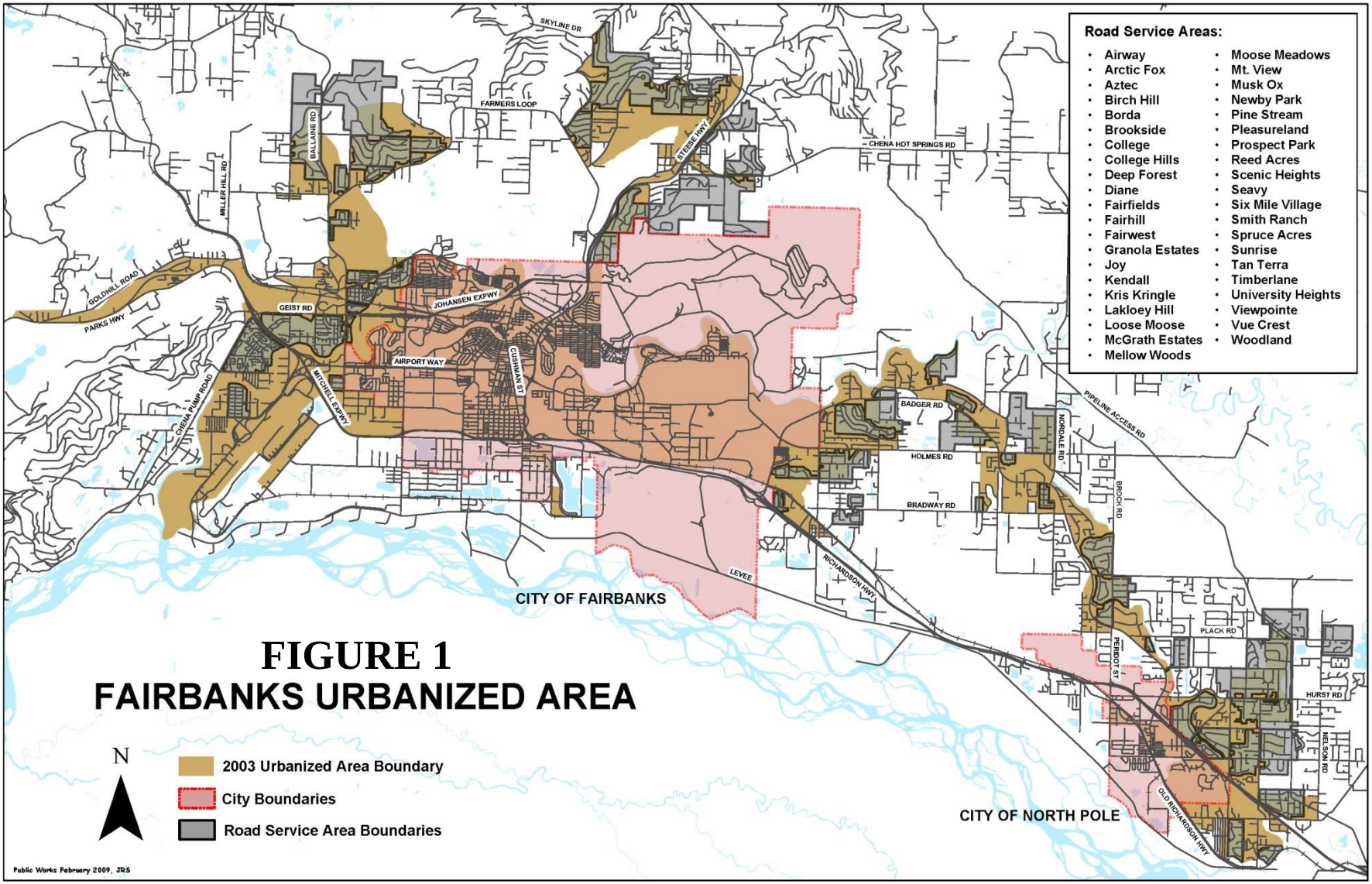
US EPA, 2002. *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs* (Memo). http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/final-wwtmdl.pdf

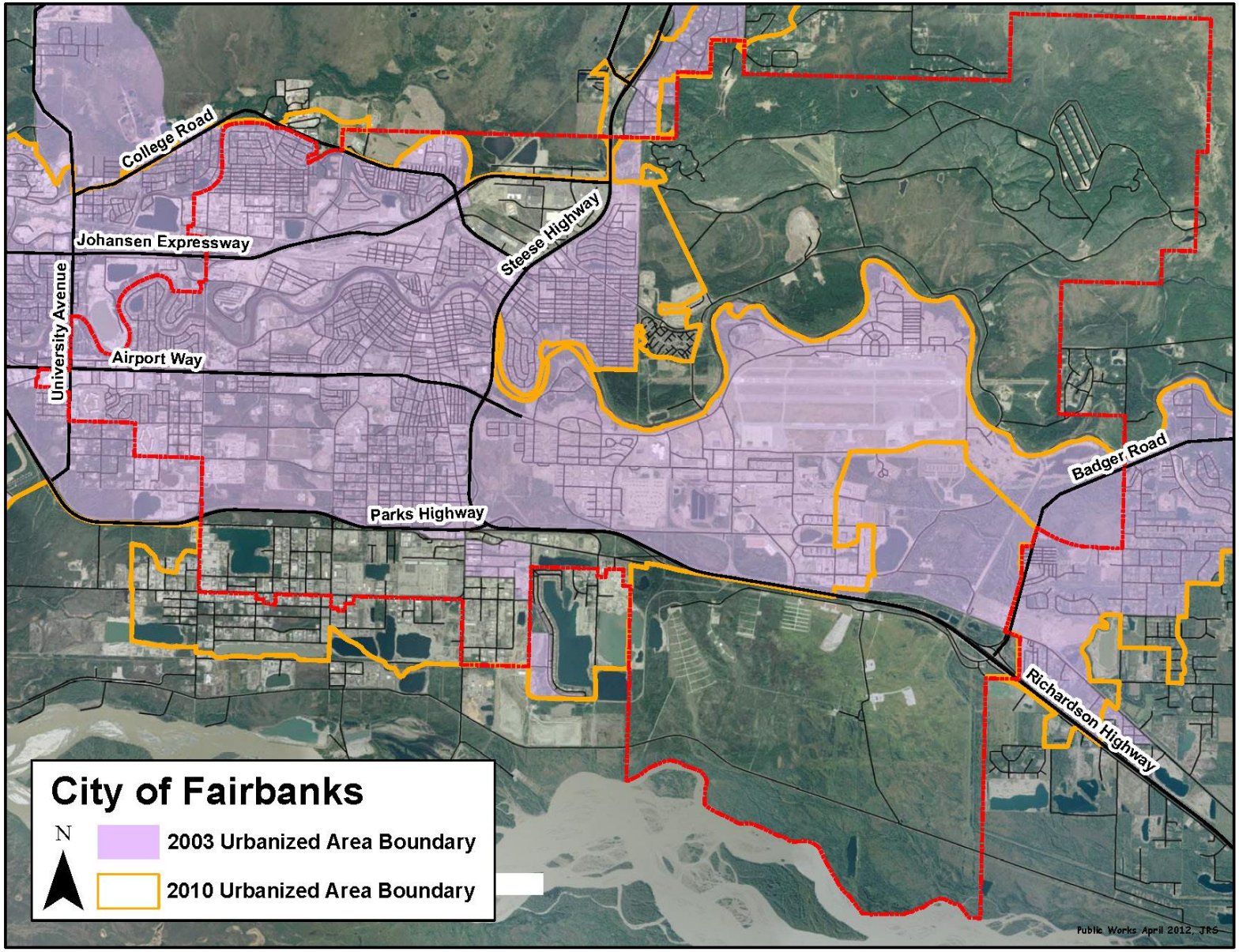
US EPA, 2010. *MS4 Permit Improvement Guide*. Report Number EPA 833-R-10-001. U.S. Environmental Protection Agency, Office of Water. Washington D.C. http://www.epa.gov/npdes/pubs/ms4permit_improvement_guide.pdf

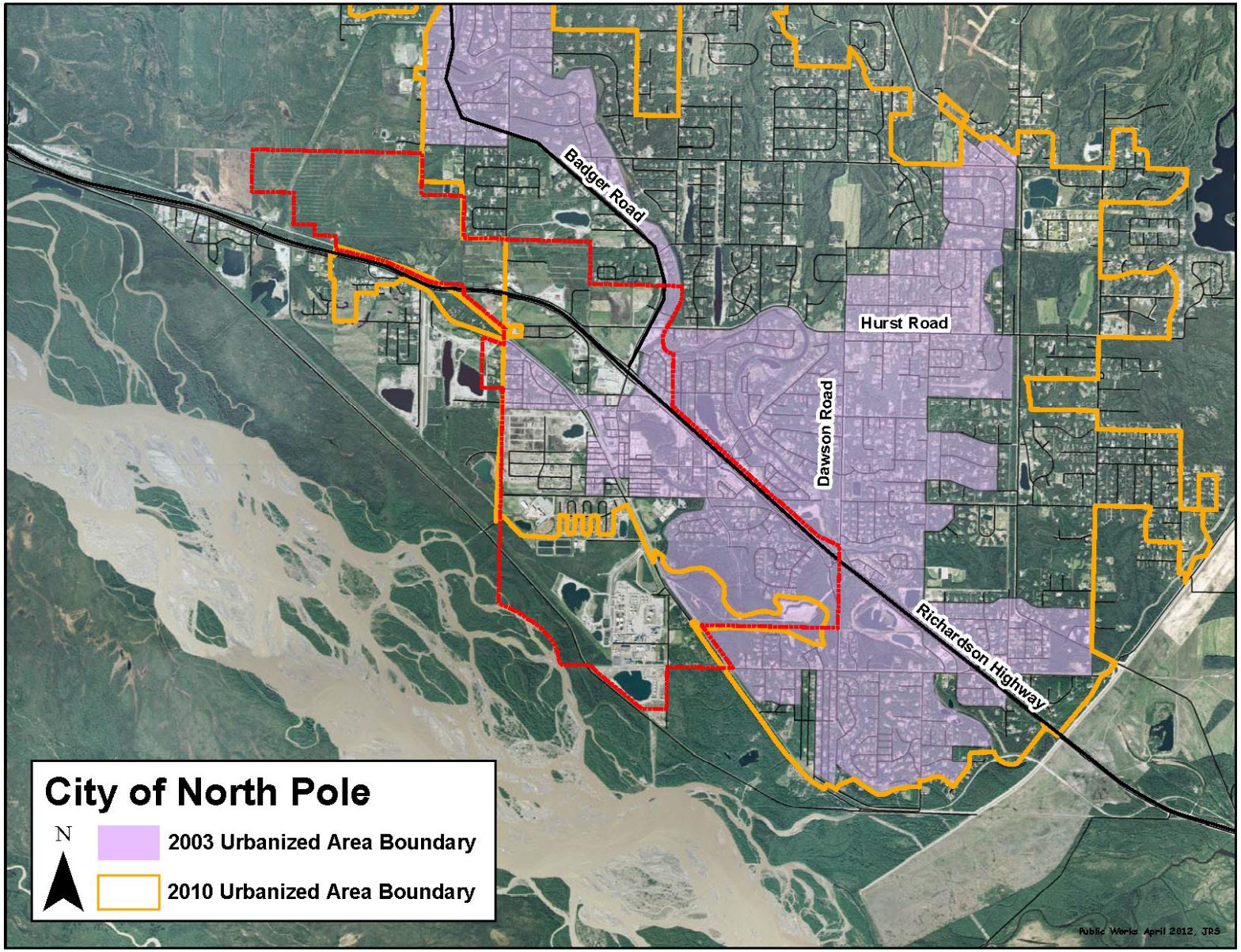
9.0 APPENDICES

Appendix A – Fairbanks Urbanized Area Maps

APPENDIX A.
Fairbanks Urbanized Area Maps


Road Service Areas:
Airway
Arctic Fox
Aztec
Birch Hill
Borda
Brookside
College
College Hills
Deep Forest
Diane
Fairfields
Fairhill
Fairwest
Granola Estates
Joy
Kendall
Kris Kringle
Lakloey Hill
Loose Moose
McGrath Estates
Mellow Woods
Moose Meadows
Mt. View
Musk Ox
Newby Park
Pine Stream
Pleasureland
Prospect Park
Reed Acres
Scenic Heights
Seavy
Six Mile Village
Smith Ranch
Spruce Acres
Sunrise
Tan Terra
Timberlane
University Heights
Viewpointe
Vue Crest
Woodland
SKYLINE DR
FARMERS LOOP
BALLAINE RD
MILLER HILL RD
STEESE HWY
CHENA HOT SPRINGS RD
GOLDHILL ROAD
PARKS HWY
GEIST RD
JOHANSEN EXPWY
AIRPORT WAY
CUSHMAN ST
MITCHELL EXPWY
CHENA PUMP ROAD
BADGER RD
HOLMES RD
BRADWAY RD
NORDALE RD
BROCK RD
PIPELINE ACCESS RD
LEVEE
RICHARDSON HWY
CITY OF FAIRBANKS
PLACK RD
PERIDOT ST
HURST RD
NELSON RD
OLD RICHARDSON HWY
CITY OF NORTH POLE
FIGURE 1
FAIRBANKS URBANIZED AREA
N
2003 Urbanized Area Boundary
City Boundaries
Road Service Area Boundaries
Public Works February 2009, JRS


College Road
Johansen Expressway
University Avenue
Airport Way
Steese Highway
Parks Highway
Badger Road
Richardson Highway
City of Fairbanks
N
2003 Urbanized Area Boundary
2010 Urbanized Area Boundary
Public Works April 2012, JRS


Badger Road
Hurst Road
Dawson Road
Richardson Highway
City of North Pole
N
2003 Urbanized Area Boundary
2010 Urbanized Area Boundary
Public Works April 2012, JRS