ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

FACT SHEET – FINAL

Permit Number: AKS053651

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

Public Comment Period Start Date: 5/23/2019
Public Comment Expiration Date: 6/24/2019
Alaska Online Public Notice System

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Issuance of the Alaska Pollutant Discharge Elimination System (APDES) Permit for Storm Water Discharges from the Municipal Separate Storm Sewer System (MS4) within the

JOINT BASE ELMENDORF-RICHARDSON (JBER)
(hereafter "permittee")

The Alaska Department of Environmental Conservation (the Department or DEC) is issuing a MS4 Permit (permit) for discharges from a small MS4. 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 permittee.

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
- proposed inspection, monitoring, and reporting requirements in the permit

Appeal Process

The Department has both an informal review process and a formal administrative appeals process for final APDES permit decisions. An informal review request must be delivered within 20 days after receiving the Departments 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 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
P.O. Box 111800
Juneau, AK 99811-1800

Location: 410 Willoughby Street, Suite 303

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

Documents are Available

The permit, fact sheet, and related documents can be obtained by visiting or contacting the Department between 8:00 a.m. and 4:30 p.m., Monday through Friday at the address 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/.

Dept of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

(907) 269-6285

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INTRODUCTION

The Alaska Department of Environmental Conservation (the Department or DEC) is issuing an Alaska Pollutant Discharge Elimination System (APDES) Program permit that authorizes the discharge of pollutants in storm water discharges associated with Municipal Separate Storm Sewer Systems (MS4s).

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 incorporated 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. If any discrepancy exists between the fact sheet and the actual permit language, the permittee must comply with the permit as written.

1.0 BACKGROUND

1.1 Permit Area and Applicants

In accordance with Section 402(p) of the Clean Water Act (CWA) and federal regulations at 40 CFR §122.32, the permit coverage area (see green shaded area of Figure 3 in Appendix A) is on a system-wide basis for the following MS4 operator:

Joint Base Elmendorf-Richardson
673 CEG/CC, 6346 Arctic Warrior Drive
JBER, AK 99506-2200

The storm sewer system owned and operated by the permittee is located within the boundaries of the Joint Base Elmendorf-Richardson (JBER).

1.2 Description of the Permittee

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 permittee's surface runoff within its jurisdiction 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 the core area of the Elmendorf and Richardson regions of JBER.

1.3 Permit History

This is the second MS4 permit for JBER. The first permit was issued June 1, 2014 and expired May 31, 2019.

2.0 DESCRIPTION OF MUNICIPALITY AND RECEIVING WATERS

2.1 Municipal Activity

2.1.1 Municipal Summary

On July 30, 2010, the 673d Air Base Wing (ABW) activated as the host wing combining installation management functions of Elmendorf Air Force Base's 3rd Wing and U.S. Army Garrison Fort Richardson. The 673 ABW comprises of 5,500 joint military and civilian personnel, supporting America's Arctic Warriors and their families. The wing supports and enables three Air Force total-force wings, two Army brigades, and 75 associate and tenant units.

In 1939, the U.S. Government set aside 45,000 acres of public land on the northern border of Anchorage to create Fort Richardson. The air field was constructed in 1940 and named Elmendorf Army Air Base in 1942. JBER is bounded on the south by the Municipality of Anchorage, on the west and north by Knik Arm and on the east by the Chugach Mountains. Ship Creek is the main drainage feature on the southern boundary of the base and is a popular fishing location. Developed areas of JBER are located in the southern area of the base. The south central area is mostly industrial areas including runways, maintenance buildings, and site support operations. Housing and recreational facilities are scattered throughout the southern area, but are generally outside the main industrial areas. The northern and eastern portions of the base are rural undeveloped land, wetlands and lakes.

2.1.2 Precipitation and Temperature

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 precipitation at the airport in Anchorage is approximately 15.9 water equivalent inches per year (see Figure 1 and Figure 2). Snow is the predominant precipitation during the winter months.

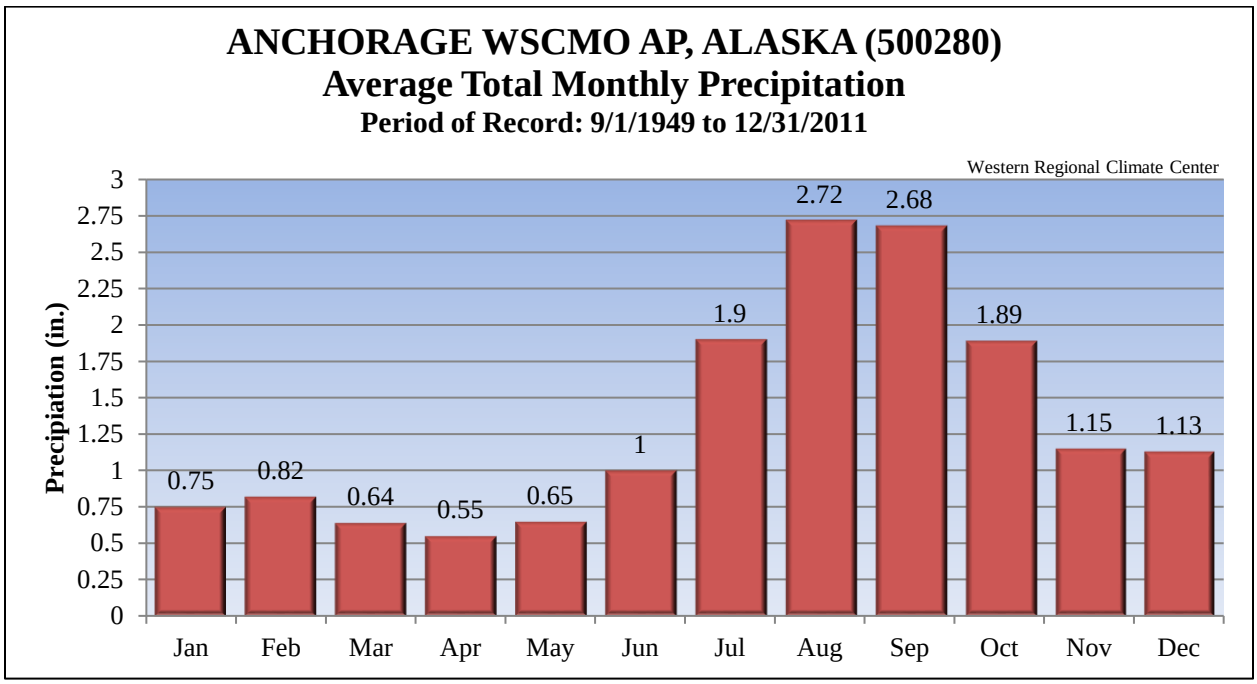

Figure 1. Average Total Monthly Precipitation (water equivalent) in Anchorage, Alaska

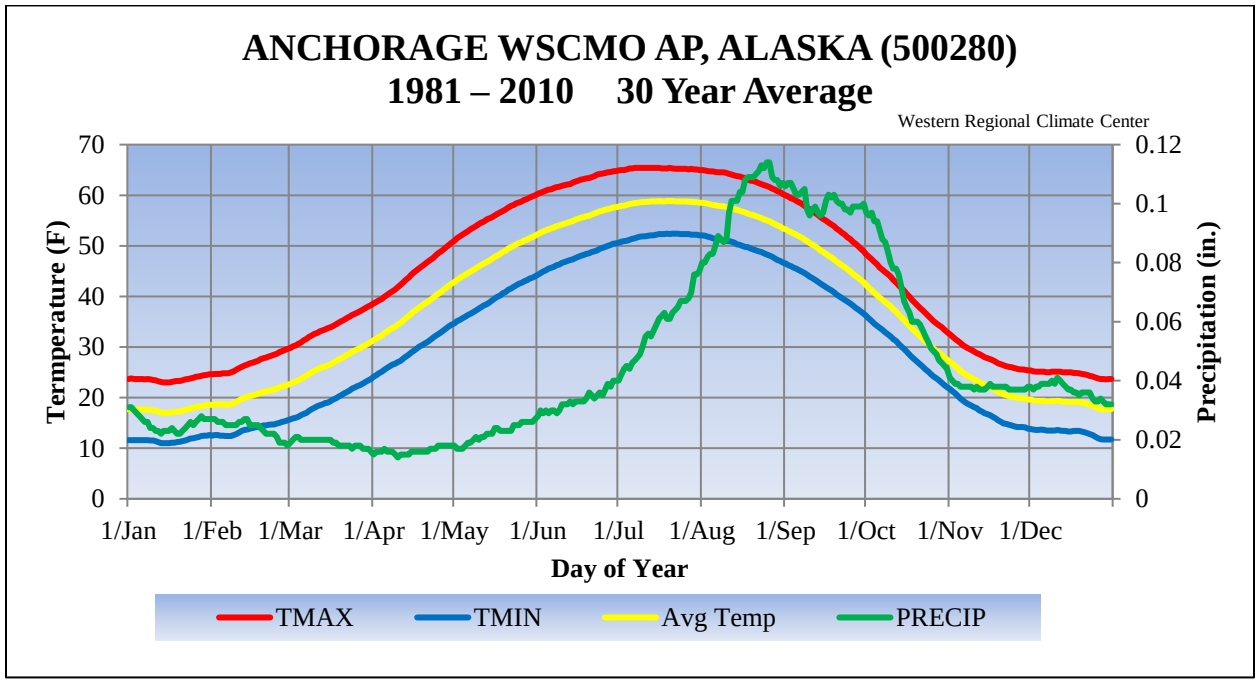

Figure 2. Temperature record for Anchorage

The average rainfall depth in the Anchorage area, based on 45 years of 24-hour precipitation data obtained from NOAA and collected at Ted Stevens Anchorage International Airport, demonstrates that approximately 90% of all storms in the Anchorage area result in a rainfall volume of 0.63 inches or less (ADEC, 2011).

2.2 Receiving Waters

2.2.1 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, which are codified in 18 AAC 70, 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. Waters within JBER have been classified by DEC in 18 AAC 70.020 as fresh water with the designated uses described above. Designated uses for Ship Creek from the confluence with Knik Arm to the eastern border of the base also include those described above.

For marine waters Alaska WQS designate seven uses (A) water supply: (i) aquaculture; (ii) seafood processing; (iii) industrial; (B) water recreation: (i) contact recreation; (ii) secondary recreation; (C) growth and propagation of fish, shellfish, other aquatic life, and wildlife; and (D) harvesting for consumption of raw mollusks or other raw aquatic life. Waters adjacent to JBER's western boundary (Knik Arm) have been classified by DEC in 18 AAC 70.020 as marine water with the designated uses described above.

2.2.2 Potential Municipal Impact on Water Quality

Storm water is the surface runoff that results from precipitation events and snow melt. Storm water flowing across land surfaces has the potential to contain or mobilize high levels of contaminants. Under most natural conditions, storm water runoff is slowed and filtered as it flows through vegetation and wetlands. These flows soak into the ground, gradually recharging groundwater, and eventually seep into surface receiving waters.

Urban development has significantly altered the natural infiltration capability of the land, and often generates a host of pollutants that are associated with the activities of dense populations. This developed area in turn causes an increase in storm water runoff volumes and pollutant loadings in the storm water discharged to receiving waters. Urban development increases the amount of impervious surface in a watershed, as naturally vegetated areas are replaced with parking lots, roadways, and commercial, industrial, and residential structures. These surfaces inhibit rainfall infiltration into the soil and reduce evaporation and transpiration, thereby increasing the amount of precipitation which is converted to runoff. Storm water and snow melt runoff washes over impervious surfaces, picking up pollutants while gaining speed and volume because of the inability to disperse and filter into the ground.[1]

Uncontrolled storm water discharges from areas of urban development can negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. The

[1] 64 FR 68725-27 (December 8, 1999)

Nationwide Urban Runoff Program (NURP), conducted by EPA between 1978 through 1983, demonstrated that storm water runoff is a significant source of pollutants. The study indicated that discharges from separate storm sewer systems draining from residential, commercial, and light industrial areas carried more than 10 times the annual loadings of total suspended solids (TSS) than discharges from municipal sewage treatment plants providing secondary treatment. The study also identified a variety of other contaminants, such as oil and grease, copper, lead, and zinc that were detected frequently at levels of concern. Numerous other studies and reports have confirmed the average pollutant concentration data collected in the NURP study (USEPA, 1983).

2.2.3 Impaired Waters

Discharges to Ship Creek are subject to additional constraints as Ship Creek is designated as "impaired" on DEC's CWA §303(d) list due to increased levels of fecal coliform bacteria and petroleum, oil, and grease. 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. A TMDL is the amount or loading capacity of a specific pollutant that a water body can receive and still comply with applicable WQS, such as those mandated by the CWA.

The segment of Ship Creek from the mouth to the Glenn Highway bridge was originally Section §303(d) listed because fecal coliform bacteria and petroleum hydrocarbons, oil and grease exceeded the respective water quality standards for these parameters. An approximate two-mile stretch within this segment of Ship Creek (Glenn Highway bridge to mouth of Ship Creek) traverses JBER, and the Fort Richardson storm sewer system outfall discharges to Ship Creek 1.3 miles downstream from the upper boundary of the impaired segment.

The basis for this listing is summarized in the EPA-approved Alaska 2014-2016 Integrated Water Quality Monitoring and Assessment Report (ADEC, 2018) as follows:

Ship Creek was placed on the Section 303(d) list in 1990 for non-attainment of the petroleum hydrocarbons and oils and grease criteria. Petroleum products floating on the groundwater were believed to be moving toward ship Creek and threating the waterbody. In addition, Fecal Coliform (FC) bacteria monitoring data from 1989 to 1994, provided by the Municipality of Anchorage, exceeded the criteria. In 1992, FC bacteria was added to the Section §303(d) listing for Ship Creek as an impairing pollutant. The final FC bacteria TMDL was approved by EPA in May 2004. An EPA consent decree with the Alaska Railroad Corporation (ARRC) required groundwater monitoring. The monitoring has shown that petroleum product constituents do not pose a threat to the creek.In addition, the DEC conducted monitoring to determine if a persistent sheen existed. This monitoing demonstrated that there was not a persistent sheen, nor were the analytical indicators for petroleum hydrocarbons present in sufficient concentrations to exceed the criteria. Therefore, the petroleum hydrocarbons, oils, grease impairment for Ship Creek was removed from the Section 303(d)/Category 5 list and placed in Category 2 in the 2012 Integrated Report. Ship Creek remains impaired for FC bacteria.

2.2.3.1 Petroleum Hydrocarbons, Oil, and Grease

Ship Creek was placed on the Section 303(d) list in 1990 for non-attainment of the petroleum hydrocarbons, oils and grease criteria. Petroleum products floating on groundwater were believed to be moving toward Ship Creek and threating the waterbody. An EPA consent decree wwith the Alaska Railroad Corporation (ARRC) required groundwater monitoring. The monitoring has shown that petroleum product constituents do not pose a threat to the creek. In addition, the DEC conducted monitoring to determine if a persistent sheen existed. This monitoring demonstrated that there was not a persistent sheen, nor were the analytical indicators for petroleum hydrocarbons preent in sufficient concentrations to exceed the water quality criteria. The petroleum hydrocarbons, oils and grease impairment for Ship Creek was removed from the Section 303(d)/Category 5 list and placed in Category 2 in the 2012 Integrated Report. .

2.2.3.2 Fecal Coliform Bacteria

The State of Alaska listed Ship Creek on its 1990 CWA section §303(d) list of impaired waterbodies for excessively high levels of fecal coliform bacteria. Ship Creek is still on the list but has a TMDL (ADEC, 2004). This means that Ship Creek is a Category 4a water body with respect to fecal coliform bacteria impairment. Category 4a water bodies are impaired, but TMDLs have been established for them.

The fecal coliform bacteria levels found in Ship Creek regularly exceed State of Alaska thresholds for contact recreation such as wading and boating.

Throughout the Anchorage area, there are eleven waterways, including Ship Creek, listed as impaired due to the presence of fecal coliform bacteria. Potential sources of fecal coliform bacteria include the waste of all warm blooded animals including human sewage. Sewer system leaks are not considered to be a notable source in the Anchorage area. Domestic and wild animals are the greatest sources of the bacteria. Wild animals with the greatest contribution are likely waterfowl such as ducks and geese. Mammals such as moose and bears are also potential sources. Many wild animals use corridors along streams for forage and movement through populated areas. One of the largest sources of fecal coliform bacteria in Anchorage is domestic animals, mostly dogs. There are about 65,000 dogs in Anchorage, which produce 48,000 pounds of waste each day. Parks and paths near waterways as well as street runoff into storm drains are both conduits for fecal coliform bacteria to enter steams. JBER contributes both of the above discussed sources for potential fecal coliform bacteria pollution into Ship Creek.

Due to levels of fecal coliform bacteria, which exceed the State standards for drinking and contact recreation, TMDL thresholds have been created for Ship Creek as required by the CWA.

High levels of fecal coliform bacteria can occur any time of year, though generally the coldest months of winter have lower levels. Spring snowmelt and periods of high rainfall during the summer often result in spikes of the bacteria in Ship Creek. Sediment influx is also a factor in the timing of fecal coliform bacteria spikes. Early spring generally has the highest spikes of fecal coliform bacteria due to the massive influx of sediment washed into streams from winter road sanding. The bacteria attach to grains of sand and can also sink to the bottom and are re-

suspended later due to a high flow event. Street sweeping early in the spring greatly helps mitigate this problem by cleaning up a large portion of the grit and preventing it from washing down storm drains.

3.0 PERMIT CONDITIONS

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

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 permits 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 other provisions as the Department determines appropriate for the control of such pollutants.

The permit proposes the use of Best Management Practices (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 storm water management program (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.[2] DEC agrees to implement EPA's iterative process approach for MS4 improvement. The National Pollutant Discharge Elimination System (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 permittee's at 40 CFR §122.33 describe in detail the information that must be submitted to DEC to obtain permit coverage. The MS4 permittee is required to develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from its 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 permittee in its APDES application to develop the SWMP requirements in the permit to develop the required permit conditions.

[2] 64 FR 68754 (December 8, 1999)

3.1 Applicability

3.1.1 Discharges Authorized Under this Permit

This permit covers storm water discharges to waters of the United States located in the State of Alaska from all portions of the MS4 which are owned and operated by the permittee within JBER.

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

- Storm water 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 individual or general APDES permit.
- 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 MS4 as long as the discharges are not considered to be sources of pollution to the waters of the United States. However, the permittee is 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 permittee to prohibit, through ordinance or other enforceable means, all other types of non-storm water discharges into the MS4s.
- Discharges from the MS4s must not cause violations of state WQS.

3.1.2 Limitations on Permit Coverage

3.1.2.1 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.

3.1.2.2 Discharges Threatening Water Quality

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

3.1.2.3 Snow Disposal to Receiving Waters

Disposal of snow directly into waters of the United States, or directly to the MS4, 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 permittee's 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 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 permittee's snow disposal and management practices. The ditches are maintained by the permittee 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 permittee's snow disposal and snow management practices are authorized under this permit when such practices are operated using appropriate BMPs required in Permit Part 3.6 Pollution Prevention and Good Housekeeping. BMPs may include detention basins, dikes, berms, ditches, 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.

3.1.2.4 Discharges to Water Quality-Impaired Receiving Waters

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 59 waters as impaired, with about 14 listed as candidates for development of a TMDL (ADEC, 2018). 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 a 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 3-1 summarizes the water bodies in the JBER area.

Table 3-1: JBER Water Bodies

Pollutant Source	Waterbody	Pollutant	Area of Concern	Category
Urban Runoff	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Fecal Coliform Bacteria	Glenn Hwy. Bridge. Down to Mouth	4a
Urban Runoff	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Petroleum Products	11 miles, Glenn Hwy. Bridge. Down to Mouth	2

Source: Alaska's Final 2014/2016 Integrated Water Quality Monitoring and Assessment Report (November 2018)
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 Ship Creek TMDLs

TMDLs should define WLAs for point source discharges, and 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 TMDL for the Ship Creek - Fecal Coliform Bacteria. DEC is currently collecting data to evaluate the petroleum product impairment for Ship Creek.

Fecal Coliform Bacteria in Ship Creek

Applicable WQS for fecal coliform bacteria in Ship Creek establish water quality criterion for the protection of designated uses for water supply, water recreation, and growth and propagation of fish, shellfish, other aquatic life, and wildlife. The TMDL is developed for the most stringent of these—the fecal coliform bacteria criteria for drinking, culinary, and food processing water supply that states that in a 30-day period, the geometric mean may not exceed 20 FC/100 mL, and not more than 10% of the samples may exceed 40 FC/100 mL. (18 AAC 70.020(b)(2)(A)(i)).

Fecal coliform data indicate that Ship Creek does not meet the applicable water quality standards. The largest and most frequent exceedances of the water quality criteria occur during summer months, likely due to increased storm water runoff and source activity (e.g., pets and wildlife). Fecal coliform concentrations are lower during colder winter months that experience less stormwater runoff. Concentrations steadily increase during spring months, with increased surface runoff during spring thaw and breakup. Because of the substantial seasonal variation in fecal coliform levels, the Ship Creek TMDL is developed on a seasonal basis to isolate times of similar weather, runoff and instream conditions.

The following table summarizes the results of the TMDL analysis. The Margin of Safety (MOS) was included explicitly as 10 percent of the loading capacity. Because stormwater discharges in the Municipality of Anchorage are regulated by a APDES stormwater permit for MS4, watershed loads delivered to Ship Creek are addressed through the wasteload allocation component of this TMDL. Therefore, the load allocation for the Ship Creek fecal coliform TMDL is zero. The fecal coliform wasteload allocations for Ship Creek are provided as seasonal allocations for the entire watershed and are equal to the loading capacity minus the MOS.

Table 3-2: TMDL Summary - Ship Creek

Season	Loading Capacity (FC/season)	MOS (FC/season)	Wasteload Allocation (FC/season)	Percent Reduction (for Wasteload Allocation)
Winter	3.20E+11	3.20E+10	2.88E+11	43%
Spring	7.58E+11	7.58E+10	6.82E+11	N/A
Summer	1.31E+12	1.31E+11	1.18E+12	4%
Total (FC/yr)	2.39E+12	2.39E+11	2.15E+12	2%

Implementation of the Ship Creek TMDL will be achieved through actions associated with the relevant MS4 permit. EPA recommends that for NPDES-regulated municipal and small construction stormwater discharges effluent limits should be expressed as best management practices (BMPs) or other similar requirements, rather than as numeric effluent limits. The policy recognizes the need for an iterative approach to control pollutants in storm water discharges and

anticipates that a suite of BMPs will be used in the initial rounds of permits and that these BMPs will be tailored in subsequent rounds. Follow-up monitoring will likely be conducted cooperatively by ADEC and Municipality of Anchorage to track the progress of TMDL implementation and subsequent water quality response, track BMP effectiveness, and track the water quality of Ship Creek to evaluate future attainment of WQS.

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 fecal coliform and petroleum sheens 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 permittee's MS4 is controlled to the maximum extent practicable. Certain requirements specifically address the WLAs set forth in the TMDL plans for Ship Creek. The permittee's SWMP also provides opportunities to collectively target actions to achieve pollutant reductions in areas for which TMDLs have not yet been approved (petroleum products in Ship Creek).

3.2 Storm Water Management Program Requirements

3.2.1 General Requirements

The permittee is required to develop, implement, and enforce a SWMP designed to reduce pollutants to the maximum extent practicable, to control the discharge of pollutants from the MS4 in order to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. 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. EPA has also developed separate guidance documents to assist permittees to develop their SWMP.[3]

The APDES permit application submitted by the applicant in November 2018 contains the various elements of the permittees initial SWMP and identifies at least three specific BMPs and accompanying measurable goals to accomplish each of the six required program elements. The proposed permit incorporates those BMPs, and includes the specific activities put forth by the permittee. Milestones and compliance dates are also contained in Table 1: Schedule of Submissions of the permit. Annual reports are required to document program accomplishments. DEC may review and approve any plans or plan modifications required by the permit.

3.2.1 Reviewing and Updating the Storm Water Management Program

The SWMP is intended to be a functioning mechanism for the permittee to 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 has determined that minor changes to the SWMP shall not constitute the need for permit modifications as defined in the regulations at 18 AAC 83.135. 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 permittee to remove elements in the SWMP that are required through permit conditions or regulatory requirements. Any changes requested by the permittee will be reviewed by DEC.

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

DEC does not intend to mandate a permit modification should the permittee annex additional lands or accept the transfer of operational authority over portions of the MS4. Implementation of appropriate SWMP elements for these additions (annexed land or transferred authority) is required. The permittee must notify DEC of any such additions or transfers in the Annual Report. DEC may require a modification to the permit based on such new information.

3.2.3 Storm Water Management Program Resources

Part 2.5 of the permit requires the permittee to provide adequate support to implement their activities under the SWMP. Compliance with Part 2.5 will be demonstrated by the permittee's ability to fully implement the SWMP and other permit requirements as scheduled. The permit does not require specific funding or staffing levels, which provides the permittee the ability and incentive to adopt the most efficient and cost effective methods to comply with permit requirements.

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[3] EPA's National Menu of BMPs for Storm Water Phase II (October 2000) (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm); Measurable Goals Guidance for Phase II Small MS4s (October 2001) (http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm)

3.3 Minimum Control Measures

The Phase II Rule[4] 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 water bodies to the maximum extent practicable. These six program elements, or minimum control measures, are

- Public Education and Outreach,
- Public Involvement and 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 for Base Operations.

The permit requires the permittee to comply with non-numeric technology-based standards (Part 3 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 permittee's storm water discharge.

3.3.1 Public Education and Outreach

The permittee must 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 the 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, since 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 permittees 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.

During the previous permit term the permittee implemented the following measures:

- Developed, implemented, and evaluated an on-going public education program.
- Published articles in a local newspaper or base website regarding storm water pollution prevention.
- Created or purchased and distributed brochures on storm water pollution prevention.

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

- Developed materials for and updated storm water related materials for military housing tenants.
- Developed and installed signs describing storm water pollution prevention and pet waste management.
- Created or purchased and distributed brochures on the proper use of lawn chemicals and household hazardous products.
- Devloped and make available to baase personnel a website with information about storm water management.

During this permit term, the permittee must:

- Distribute storm water educational materials to target audiences that encourages base tenants to improve water quality.
- Prepare and distribute appropriate information that encourages the base tenants to improve water quality to local media outlets.

3.3.2 Public Involvement and Participation

This control 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 permittee to provide more opportunities for public participation, and to attempt to engage all groups serviced by the storm water system.

DEC believes that the base personnel can provide valuable input and assistance to the development of a base SWMP. The base personnel should be given opportunities to play an active role in both the development and implementation of the program. Broad base-wide 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, therefore 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 storm water program on a watershed basis, as encouraged by DEC.

During the previous permit term the permittee implemented the following measures:

- Complied with applicable state and local public notice requirements when implementing a public involvement/participation program.
- Continued to make the Storm Water Management Program and all Annual Reports available to the public through the permittee-maintained website.

- Continued to host a community Stream Cleanup Day.
- Developed and conducted public knowledge and attitude survey work related to storm water management.
- Developed and implemented a storm drain stenciling program.
- Convened a Storm Water Advisory Committee that met quarterly.

During this permit term, the permittee must:

- Comply with applicable state and local public notice requirements when implementing a public involvement/participation program.
- Continue to make the Storm Water Management Program and all Annual Reports available to the public through the permittee-maintained website.
- Continue to host a community Stream Cleanup Day.
- Institute a storm drain labeling program.
- Continue hosting a Storm Water Advisory Committee that meets quarterly

3.3.3 Illicit Discharge Detection and Elimination

An illicit discharge, typically, is any discharge to a MS4 that is not storm water. There are some exceptions, such as fire fighting activities and otherwise permitted discharges (Part 1.4.1.3.1. 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 permittee to detect and eliminate illicit discharges from their system.

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 effluent 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. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

There are required components that this measure includes:

- Develop or update a map of the storm sewer system which shows outfalls and names of the receiving waters.
- Prohibit discharges of non-storm water to the storm sewer system through the use of an ordinance or other regulatory mechanism, and provide for enforcement procedures and actions. DEC recognizes that the permittee may not have the legal authority to pass an

ordinance; such organizations must evaluate existing policies and procedures and use those in the development of a regulatory mechanism.

- Develop and implement a plan to detect and address non-storm water discharges. DEC recommends that this plan contain procedures to identify the problem areas in the community, determine the source of the problem(s), remove the source if one is identified, and document the actions taken.
- Conduct or revise an existing hydrologic study to delineate area catchment boundaries for the outfalls and identify storm water flow paths to waters of the U.S., this may include updating existing mapping.
- Inform base residents, public employees, and businesses of the hazards associated with illegal discharges.

Guidance, including model ordinances, is available from EPA and others to assist in the implementation of an illicit discharge detection and elimination program.[5]

During the previous permit term the permittee implemented the following measures:

- Inventoried and mapped the locations of industrial facilities to include in a storm sewer system map plan.
- Developed and implemented a plan to detect and eliminate illicit discharges.
- Conducted wet weather outfall inspections to identify and investigate any illicit non-storm water discharge to the storm sewer system.
- Conducted dry weather outfall inspections to identify and investigate any illicit non-storm water discharge to the storm sewer system.
- Surveyed and inspected oil water separators to ensure proper connection to sanitary sewer system.
- Conducted or revised an existing hydrological study of all roadway drainage structures within the MS4.
- Developed and implemented a program to detect and eliminate illicit discharges.
- Effectively prohibited non-storm water discharges into the MS4 through ordinance or a base Command Policy letter.
- Prohibited any of the non-storm water flows listed in Part 1,4,1,3,1 through ordinance or a base Command Policy letter, if such flows are identified by the permittee as a source of pollutants to the MS4.
- Informed users of the system and the general public of hazards associated with illegal discharges and improper disposal of waste and provide outreach materials.

[5] http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm

- Developed a comprehensive storm sewer system map.
- Began dry weather field screening for non-storm flows from all outfalls.

During this permit term, the permittee must:

- Update the inventory and map of the locations of industrial facilities to include in the storm sewer system map.
- Detect and eliminate illicit discharges to the MS4 and maintain an information management system to track illicit discharges.
- Conduct wet weather outfall inspections to identify and investigate any illicit non-storm water discharge to the storm sewer system.
- Conduct dry weather outfall inspections to identify and investigate any illicit non-storm water discharge to the storm sewer system.
- Review the effectiveness and revise ordinces or procedures that effectively prohibit non-storm water discharges into the MS4 through ordinance or a base Command Policy letter.
- Prohibit any of the non-storm water flows listed in Part 1,4,1,3,1 through ordinance or a base Command Policy letter, if such flows are identified by the permittee as a source of pollutants to the MS4.
- Inform users of the system and the general public of hazards associated with illegal discharges and improper disposal of waste and provide outreach materials.
- Review and revise a comprehensive storm sewer system map.
- Continue dry weather field screening for non-storm flows from all outfalls.

3.3.4 Construction Site Storm Water Runoff Control

The permittee is required to develop, implement, and enforce a program to reduce pollutants in storm water runoff from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee's program must also address storm water discharges from construction activity disturbing less than one acre, if that construction activity is part of a larger common plan of development or sale that would disturb one or more acres.

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.

Construction activities at JBER must comply with APDES construction storm water permitting requirements. When a construction storm water permit is needed, DEC's Construction General Permit[6] (CGP) is the typical permitting route (as opposed to applying for an individual permit). As construction activities occur within the MS4 boundaries of JBER, the installation is required to ensure that construction site and post-construction Control Measures for erosion and sediment control are met. Since military installations, including JBER, are not municipalities, they cannot issue an ordinance to ensure compliance with these requirements. This presents a challenge to installations in enforcing a SWMP in cases where they do not have direct management control over a project. To address this issue, JBER developed and implemented a Command Policy letter specifically addressing storm water management. The purpose of the Command Policy is to enforce the Installation's SWMP that is used to reduce the discharge of pollutants from its MS4 to the maximum extent practicable and to identify enforcement actions the installation will apply against violator(s).

Even though discharges from all Alaskan construction sites disturbing more than one acre in Alaska are independently required to be authorized by an APDES storm water discharge permit, this additional minimum program measure is necessary to enable the permittee to effectively and directly control construction site discharges into their storm sewer systems. The permittee must incorporate the following elements into their local program:

- 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.

The permittee can and should review what existing procedures are already in place in their jurisdiction for these activities. For example, plans are often reviewed by the Base staff. The permittee must work to optimize coordination between different Base offices.

The permit allows the permittee to exempt from local regulation those sites which qualify for the low rainfall erosivity waiver from the APDES CGP. 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 Equation (RUSLE) and applies to projects when (and where) negligible rainfall/runoff is expected.

During the previous permit term the permittee implemented the following measures:

- Developed, implemented, and enforced a program to reduce pollutants in storm water runoff to the MS4 from construction activities disturbing one or more acres.
- Adopted an ordinance or a base Command Policy letter which requires construction site operators to practice appropriate erosion, sedimaent, and waste control.

[6] APDES General Permit for Storm Water Discharges from Construction Activity, AKR10-0000

- Published and distributed requirements for construction site operators to implement erosion and sediment control BMPs at the construction site that may cause adverse impacts to water quality.
- Developed procedures for reviewing site plans for potential water quality impacts.
- Developed standard language for inclusion in JBER construction contracts defining contractor role and responsibilities for erosion and sediment control.
- Developed and implemented procedures for site inspection and enforcement of control measures.
- Developed and conducted at least one training session for the local construction, design, and engineering audiences related to the construction ordinance and BMP requirements.

During this permit term, the permittee must:

- Review and revise a program to reduce pollutants in storm water runoff to the MS4 from construction activities disturbing one or more acres.
- Maintain an ordinance or a base Command Policy letter which requires construction site operators to practice appropriate erosion, sedimaent, and waste control.
- Continue to publish and distribute requirements for construction site operators to implement erosion and sediment control BMPs at the construction site that may cause adverse impacts to water quality.
- Develop procedures for reviewing site plans for potential water quality impacts.
- Review and revise standard language for inclusion in JBER construction contracts defining contractor role and responsibilities for erosion and sediment control.
- Review and implement procedures for site inspection and enforcement of control measures.
- Conduct at least biennially a training session for the local construction, design, and engineering audiences related to the construction ordinance and BMP requirements

3.3.5 Post-Construction Storm Water Management in New Development 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.[7]

[7] 64 FR 68725-68728 and 68759 (December 8, 1999)

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 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 the permittee 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 implement this measure, the permittee must:

- Develop and 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, low impact development, infiltration basins, or vegetative practices such as rain gardens or artificial wetlands;
- Adopt an ordinance or other regulatory mechanism to address post- construction discharges; and
- Ensure adequate long-term operation and maintenance of BMPs.

Green infrastructure applications and approaches can reduce, capture, and treat storm water runoff at its source before it can reach the storm 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 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 storm sewer system to reduce overflows and to reduce the amount of untreated storm water discharging to surface waters.

During the previous permit term the permittee implemented the following measures:

- Developed, implemented, and enforced a program to address post-construction storm water runoff from new development and redevelopment projects.
- Adopted an ordinance or a base Command Policy letter to address post-construction runoff from new development and redevelopment projects.
- Adopted and then distributed a BMP design manual for post-construction storm water management.

- Developed and conducted at least one training for base developers, engineers, tenants and the public regarding the requirements of the base Command Policy letter.
-

During this permit term, the permittee must:

- Develop a written strategy for planning, constructing, and evaluating Green Infrastucture/Low Impact Development projects within JBER.
- Continue the implementation, and enforcement of a program to address post-construction storm water runoff from new development and redevelopment projects.
- Review the effectiveness and revise an ordinance or a base Command Policy letter to address post-construction runoff from new development and redevelopment projects.
- Implement a Green Infrastructure/Low Impact Development strategy.
- Develop and conduct at least one training for base developers, engineers, tenants and the public regarding the requirements of the base Command Policy letter.

3.3.6 Pollution Prevention/Good Housekeeping for Base Operations

This measure requires the permittee to implement an operation and maintenance program to prevent or reduce pollutant runoff from activities conducted by the permittee. The permittee 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 permittee, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

The permittee must examine its maintenance activities and schedules, and inspection procedures for controls to reduce floating debris and other pollutants. By evaluating existing practices, the permittee 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. Industrial APDES storm water permit requirements under the Multi-Sector General Permit (MSGP) (AKR060000) apply to several facilities within the MS4. These facilities are considered part of the MS4.

Snow storage and disposal practices are specifically identified in the permit as deserving particular attention by the permittee, given the annual accumulation of snow in the Anchorage area and the increased potential for accumulated pollutants to be discharged from snowmelt during the spring season. Snow plowed from urban streets and parking lots often contains the

variety of materials which have accumulated on the snowpack and other cleared surfaces. Studies of urban snow disposal sites in northern climates demonstrate that snow meltwater can be a potential source of significant pollutant loadings to surface water, and commonly contains pollutants such as debris, sediment, chlorides, and oil and grease. Part 3.6 of the permit requires the permittee to implement controls at snow disposal sites to reduce the discharge of pollutants in meltwater. Snow disposal site design criteria created by the Municipality of Anchorage, and/or snow management practices already developed by Alaska Department of Transportation and Public Facilities, may assist the permittee to collectively address conditions for appropriate snow disposal practices in the arctic environment. DEC encourages the permittee to work with the Municipality of Anchorage and Port of Anchorage storm water system permittees in the area to identify appropriate management measures.

During the previous permit term the permittee implemented the following measures:

- Conducted storm water pollution prevention inspections.
- Developed and implemented an operation and maintenance program intended to prevent or reduce pollutant runoff from base operations.
- Completed a study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other base activities with potential for storm water impacts.
- Developed and conducted appropriate training for base personnel related to optimum maintenance practices for the protection of water quality.
- Ensured that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices.

During this permit term, the permittee must:

- Conduct storm water pollution prevention inspections.
- Maintain and implement an operation and maintenance program intended to prevent or reduce pollutant runoff from base operations.
- Review and implement the study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other base activities with potential for storm water impacts.
- Review, revise, and conduct appropriate training for base personnel related to optimum maintenance practices for the protection of water quality.
- Continue to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices.

3.4 Monitoring, Evaluation, Reporting, and Record Keeping Requirements

3.4.1 Monitoring and Evaluation of Overall Program Effectiveness

The Phase II storm water regulations at 40 CFR §122.34(g) require that the permittee evaluate program compliance, the appropriateness of BMPs in their SWMPs, and progress towards meeting their measurable goals. These requirements have been included in Part 4 of the permit.

The Monitoring Program Plan must be designed to meet the following objectives:

- Assess compliance with this permit;
- Measure the effectiveness of the permittee's SWMP;
- Measure the chemical, physical, and biological impacts to the receiving waters resulting from storm water discharges;
- Characterize storm water discharges;
- Identify sources of specific pollutants; and
- Detect and eliminate illicit discharges and illegal connections to the MS4.

The nature of the monitoring activities to be implemented by the permittee largely depends on the measurable goals selected by the permittee. 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.

During the initial five year term of the permit, the permittee opted for measurable goals which defined and reported on a level of effort for implementation of BMPs. This information was submitted to DEC in the Annual Reports. For the second five year term of the permit the chemical, biological, or physical storm water monitoring conducted by the permittee, Part 4.1.2 of the permit includes requirements related to representative monitoring, test procedures, and recording results. All chemical, physical, or analytical monitoring must be conducted according to a Quality Assurance Plan (QAP). The permit requires a revised QAP to be submitted to DEC.

3.4.2 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. DEC requires the permittee to use the Summary Annual Report Template in this permit to obtain summary information about the status of the MS4. In addition to the summary annual report, the permittee 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:

- **Summary of the Year's Activities.** The summary should describe and quantify program activities for each SWMP component. Responsible persons, agencies, or departments should be included in the summary. Each activity should be described in relation to achievement of established goals or performance standards. Include documentation that the permit condition was completed (such as training agenda and sign up list or copy of storm water information handed out to tenants).
- **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 the permittee as directed in Appendix A, Part 1.12.2 of this permit.

3.4.3 Recordkeeping

Part 4.4 of the permit requires the permittee to keep all records required by this permit for a period of at least five years. Records need to be submitted only when requested by DEC. The permittee's SWMP must be available to the public; the permittee 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 permittee to make their program materials available to the public electronically via a website or other viable means.

3.4.4 Addresses

Submittals required by the permit must be made to the address specified in the permit, Appendix A, Part 1.1.2.

3.5 Appendices

3.5.1 Standard Conditions (Appendix A)

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements; compliance responsibilities; and other general requirements.

3.5.2 Acronyms (Appendix B)

Appendix B is a list of acronyms found in the permit and fact sheet which aids in the understanding of the permit and its requirements.

3.5.3 Definitions (Appendix C)

Appendix C contains definitions of statutory, regulatory, and other terms important for understanding the permit and its requirements.

3.5.4 Annual Report Form (Appendix D)

Appendix D contains an annual report form for summarizing the annual results of storm water activities.

4.0 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."

5.0 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, WQBELs may be revised as long as the revision is consistent with the State's Antidegradation policy. The State's Antidegradation policy is found in the 18 AAC 70 Water Quality Standards (WQS) regulations at 18 AAC 70.015. The Department's approach to implementing the Antidegradation policy is found in 18 AAC 70.016 *Antidegradation implementation methods for discharges authorized under the federal Clean Water Act*. Both the Antidegradation policy and the implementation methods are consistent with 40 CFR 131.12 and approved by EPA. This section analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the Antidegradation policy and implementation methods.

Using the policy and corresponding implementation methods, the Department determines a Tier 1 or Tier 2 classification and protection level on a parameter by parameter basis. A Tier 3 protection level applies to a designated water. At this time, no Tier 3 waters have been designated in Alaska.

18 AAC 70.015(a)(1) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected (Tier 1 protection level).

The permit authorizes discharges to water bodies that have been impaired as a result of urban runoff (see Fact Sheet Section 3.1.2.4 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, this antidegradation analysis conservatively assumes that the Tier 2 protection level applies to all parameters, consistent with 18 AAC 70.016(c)(1).

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, that quality must be maintained and protected, unless the Department authorizes a reduction in water quality (Tier 2 protection level).

The Department may allow a reduction of water quality only after the specific analysis and requirements under 18 AAC 70.016(b)(5)(A-C), 18 AAC 70.016(c)(7)(A-F), and 18 AAC 70.016(d) are met. The Department's findings are as follows:

18 AAC 70.016(b)(5)

(A) existing uses and the water quality necessary for protection of existing uses have been identified based on available evidence, including water quality and use related data, information submitted by the applicant, and water quality and use related data and information received during public comment;

(B) existing uses will be maintained and protected; and

(C) the discharge will not cause water quality to be lowered further where the department finds that the parameter already exceeds applicable criteria in 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b).

Per 18 AAC 70.020 and 18 AAC 70.050 all fresh waters are protected for all uses; therefore, the most stringent water quality criteria found in 18 AAC 70.020 and in the Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (DEC 2008) apply and were evaluated. This will ensure existing uses and the water quality necessary for protection of existing uses of the receiving waterbody are fully maintained and protected.

The permit places limits and conditions on the discharge of pollutants. The limits and conditions are established after comparing TBELs and WQBELs and applying the more restrictive of these limits. The WQ criteria, upon which the permit effluent limits are based, serve the specific purpose of protecting the existing and designated uses of the receiving water. WQBELs are set equal to the most stringent water quality criteria available for any of the protected water use classes. The permit also requires ambient water quality monitoring to evaluate possible impacts to the receiving waters and existing uses.

Pollutants of concern from JBER include, petroleum leaks and spills, aircraft deicing fluid, and sediment from sanding.

The permit includes numeric or narrative effluent limits and best management practices addressing each of these pollutants of concern. The permit requires facilities to implement BMP Plans to minimize the production of waste and the discharge of pollutants to waters of the U.S., to ensure that MS4 facilities provide for the protection or attainment of existing and designated uses

The permit requires that the discharge shall not cause or contribute to a violation of the WQS at 18 AAC 70. There is fresh water covered under the permit that is listed as impaired; therefore, parameters were identified as already exceeding the applicable criteria in 18 AAC 70.020(b). No waters covered under the permit are listed under 18 AAC 70.236(b) as subject to site specific criteria and therefore does not apply.

The Department concludes the terms and conditions of the permit will be adequate to fully protect and maintain the existing uses of the water and that the findings under 18 AAC 70.016(b)(5) are met.

18 AAC 70.016(c)(7)(A –F) *if, after review of available evidence, the department finds that the proposed discharge will lower water quality in the receiving water, the department will not authorize a discharge unless the department finds that*

18 AAC 70.016(c)(7)(A) *the reduction of water quality meets the applicable criteria of 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b), unless allowed under 18 AAC 70.200, 18 AAC 70.210, or 18 AAC 70.240;*

As previously stated, the permit requires that the discharge shall not cause or contribute to a violation of the WQS at 18 AAC 70. WQBELs are set equal to the most stringent water quality criteria available under 18 AAC 70.020(b) for any of the protected water use classes. Because of the nature of the permitted discharges, other pollutants are not expected to be present in the discharges at levels that would cause, have the reasonable potential to cause, or contribute to an exceedance of any Alaska WQS, including the whole effluent toxicity limit at 18 AAC 70.030. The Department will not authorize a discharge under the permit to waters that have established or adopted site-specific criteria in the vicinity of the discharge. Currently, no fresh water covered under the permit are listed under 18 AAC 70.236(b) as subject to site specific criteria and therefore does not apply.

The permit does not authorize short term variance or zones of deposit under 18 AAC 70.200 or 18 AAC 70.210; therefore they do not apply. The permit does not include a mixing zone under 18 AAC 70.240.

The Department has determined the reduction of water quality meets the applicable criteria of 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b), and that the finding is met.

18 AAC 70.016(c)(7)(B) *each requirement under (b)(5) of this section for a discharge to a Tier 1 water is met;*

See 18 AAC 70.016(b)(5) analysis and findings above.

18 AAC 70.016(c)(7)(C) *point source and state-regulated nonpoint source discharges to the receiving water will meet requirements under 18 AAC 70.015(a)(2)(D); to make this finding the department will (i) identify point sources and state-regulated nonpoint sources that discharge to, or otherwise impact, the receiving water; and (ii) consider whether there are outstanding*

noncompliance issues with point source permits or required state-regulated nonpoint source best management practices, consider whether receiving water quality has improved or degraded over time, and, if necessary and appropriate, take actions that will achieve the requirements of 18 AAC 70.015(a)(2)(D); and (iii) coordinate with other state or federal agencies as necessary to comply with (i) and (ii) of this subparagraph;

The requirements under 18 AAC 70.015(a)(2)(D) state:

> *(D) 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 highest statutory and regulatory requirements are defined at 18 AAC 70.015(d):

> *(d) For purposes of (a) of this section, the highest statutory and regulatory requirements are*
>
> *(1) any federal technology-based effluent limitation identified in 40 C.F.R. 122.29 and 125.3, revised as of July 1, 2017 and adopted by reference;*
>
> *(2) any minimum treatment standards identified in 18 AAC 72.050;*
>
> *(3) any treatment requirements imposed under another state law that is more stringent than a requirement of this chapter; and*
>
> *(4) any water quality-based effluent limitations established in accordance with 33 U.S.C. 1311(b)(1)(C) (Clean Water Act, sec. 301(b)(1)(C)).*

The first part of the definition includes all federal technology-based ELGs, there are no ELGs for MS4s.

The second part of the definition references the minimum treatment standards found at 18 AAC 72.050, which refers to domestic wastewater discharges only. The permit does not authorize the discharge of domestic wastewater (Section 1.3). Therefore, a finding under this section is not applicable.

The third part of the definition refers to treatment requirements imposed under another state law that are more stringent than 18 AAC 70. Other regulations beyond 18 AAC 70 that apply to this permitting action include 18 AAC 15 and 18 AAC 72. Neither the regulations in 18 AAC 15 and 18 AAC 72, nor another state law that the Department is aware of impose more stringent requirements than those found in 18 AAC 70.

The fourth part of the definition refers to water quality-based effluent limitations (WQBELS). A WQBEL is designed to ensure that the Water Quality Standards (WQS) of a waterbody are met and may be more stringent than TBELs. Section 301(b)(1)(C) of the CWA requires the development of limits in permits necessary to meet WQS by July 1, 1977. WQBELs included in APDES permits are derived from EPA-approved 18 AAC 70 WQS. APDES regulation 18 AAC 83.435(a)(1) requires that permits include WQBELs that can "achieve water quality standard

established under CWA §303, including state narrative criteria for water quality." The permit requires compliance with the 18 AAC 70 WQS, includes effluent limits for pH and temperature, and monitoring for other applicable WQS pollutants.

The Department reviewed available information on known point source discharges to receiving waters covered under the permit, and found no outstanding noncompliance issues. There are no state regulated nonpoint sources that discharge to, or otherwise impact, the receiving waters covered under the permit.

After review of the methods of treatment and control and the applicable statutory and regulatory requirements, including 18 AAC 70, 18 AAC 72, and 18 AAC 83, the Department finds that the discharge authorized under this general permit meets the highest applicable statutory and regulatory requirements; therefore, 18 AAC 70.016(c)(7)(C) finding is met.

18 AAC 70.016(c)(7)(D)*(i-ii) the alternatives analysis provided under (4)(C-F) of this subsection demonstrates that*

(i) a lowering of water quality under 18 AAC 70.015(a)(2)(A) is necessary; when one or more practicable alternatives that would prevent or lessen the degradation associated with the proposed discharge are identified, the department will select one of the alternatives for implementation; and

(ii) the methods of pollution prevention, control, and treatment applied to all waste and other substances to be discharged are found by the department to be the most effective and practicable;

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 SWMP 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, sitting, operating, and maintaining them; and procedures for inspecting the management practices and repairing or replacing them as needed.

The 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.

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 Alaska Construction General Permit (CGP, AKR100000) 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 recent *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, forms the basis from which incremental changes will be made in the future through 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 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 CGP, 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 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 therefore 18 AAC 70.016(c)(7)(D)(ii) finding is met.

18 AAC 70.016(c)(7)(E) *except if not required under (4)(F) of this subsection, the social or economic importance analysis provided under (4)(G) and (5) of this subsection demonstrates that a lowering of water quality accommodates important social or economic development under 18 AAC 70.015(a)(2)(A); and*

In order to conduct their important ongoing military and civic functions, the permittee requires that infrastructure be constructed and maintained to accommodate important military, 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 permittee important functions (and the citizens they serve) would be severely hampered. Storm water discharges associated with the permittee activities will be controlled via the requirements of applicable SWMPs and SWPPPs, which implement the most effective and reasonable practices.

[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)

JBER was formed in 2010 by the joining of Elmendorf Air Force Base and Fort Richardson. The base began in 1939 when the U.S. Government set aside 45,000 acres of public land on the northern border of Anchorage to create Fort Richardson. The air field was constructed in 1940 and named Elmendorf Army Air Base in 1942. Developed areas of JBER are located in the southern area of the base. The south central area is mostly industrial areas including runways, maintenance buildings, and site-support operations. Housing and recreational facilities are scattered throughout the southern area but are generally outside the main industrial areas. The northern and eastern portion of the base is rural undeveloped land, wetlands and lakes.

The 2005 Defense Base Closure and Realignment Commission (BRAC) Report to the President directed the relocation of installation management functions from both the Air Force and Army to a new joint base unit, and established Joint Base Elmendorf-Richardson. The decision listed the Air Force as the supporting agency, implementing and providing the funding vehicle for support to the entire joint base. On July 30, 2010, the 673d Air Base Wing (ABW) activated as the host wing combining installation management functions of Elmendorf Air Force Base's 3rd Wing and U.S. Army Garrison Fort Richardson and consists of four groups that operate and maintain the Joint Base for air sovereignty, combat training, force staging and through output operations in support of worldwide contingencies. The installation hosts the headquarters for the United States Alaskan Command, 11th Air Force, U.S. Army Alaska, and the Alaskan North American Aerospace Defense Command Region. The 673 ABW is comprised of 5,500 joint military and civilian personnel, supporting America's Arctic Warriors and their families. The wing supports and enables three Air Force total-force wings, two Army brigades and 75 associate and tenant units.

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 18 AAC 70.016 (c) (7)(E) finding is met.

18 AAC 70.016(c)(7)(F) *18 AAC 70.015 and this section have been applied consistent with 33 U.S.C. 1326 (Clean Water Act, sec. 316) with regard to potential thermal discharge impairments.*

Discharges authorized under the permit are not associated with a potential thermal discharge impairment; therefore, the finding is not applicable.

6.0 OTHER REQUIREMENTS

6.1 Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with National Oceanic and Atmospheric Administration (NOAA) 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. The Cook Inlet beluga whale has designated critical habitat in the greater Cook Inlet an Knik Arm. However the Port of Anchorage (and the area where Outfall 1 discharges) is excluded from critical habitat designation for national security reasons.[9]

6.2 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 NOAA when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. DEC initiated discussions with NFMS on this permit.

This permit includes non-fishing activities that may have the potential to adversely affect the quantity or quality of EFH in upland and riverine systems. DEC addressed EFH considerations in its Antidegradation Analysis. DEC believes with the addition of the non-numeric effluent limits (the control measures detailed in Part 3.0 of the permit) that all the non-fisheries impacts expected by this industry are being addressed in the permit.

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. Because the permit encourages the treatment train approach, DEC believes the permit addresses EFH considerations.

Most of the species with EFH in the area of the outfall 1 are transient species, using the area as a seasonal foraging, nursery, or migratory corridor. Relatively few species are expected to be year-round residents of Knik Arm (HDR 2006).

6.3 Permit Expiration

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

[9] Endangered and Threatened Species: Designation of Critical Habitat for Cook Inlet Beluga Whale (Federal Register Vol.76, No 69 pp 20180)

7.0 REFERENCES

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APPENDIX A. FACILITY INFORMATION

Figure 3: JBER Area Map