

# **2018 ANNUAL REPORT**

## **APDES Permit No. AKS-052558**

**Submitted by:**  
Municipality of Anchorage



Alaska Department of Transportation and Public Facilities



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February 15, 2019

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### Acronyms

AK-CESL	Certified Erosion and Sediment Control Lead
ADEC	Alaska Department of Environmental Conservation
AMC	Anchorage Municipal Code
APDES	Alaska Pollutant Discharge Elimination System
ADOT&PF/DOT	Alaska Department of Transportation and Public Facilities
ARDSA	Anchorage Road and Drainage Service Area
AWC	Anchorage Waterways Council
BMP	Best Management Practice
CBERRRSA	Chugiak Birchwood Eagle River Rural Road Service Area
CGP	Construction General Permit
CO	Certificate of Occupancy
DCM	Design Criteria Manual
EPA	Environmental Protection Agency
ESCP	Erosion Sediment Control Plan
FHWA	Federal Highway Administration
GIS	Geographic Information System
GPS	Global Positioning System
HMCP	Hazardous Material Control Plan
HGDB	Hydrogeodatabase
LID	Low Impact Development
M&O	ADOT&PF Central Region Division Maintenance and Operation
MASS	Municipality of Anchorage Standard Specifications
MEP	Maximum Extent Practicable
MOA	Municipality of Anchorage
MS4	Municipal Separate Storm Sewer System
MS4GDB	MS4 Geodatabase
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OGS	Oil and Grit or Oil and Grease Separator
ROW	Municipal Rights of Way
SOP	Standard Operating Procedures

SWPPP	Storm Water Pollution Prevention Plan
SWTPRGM	Storm Water Treatment Plan Review Guidance Manual
WMS	Watershed Management Services

## Introduction

The Municipality of Anchorage (MOA) and the State of Alaska, Department of Transportation and Public Facilities (ADOT&PF), submit this Report in fulfillment of the annual reporting requirements of Alaska Pollutant Discharge Elimination System (APDES) Permit No. AKS 05255-8, *“Authorization to Discharge Under the National Pollutant Discharge Elimination System”* (Permit), effective date August 1, 2015. This report satisfies the criteria set forth in Permit Section 4.4 and is organized by program to demonstrate compliance with the *“Storm Water Management Plan”* developed to meet the requirements laid out in Permit Section 2. Documents produced in compliance with this Report are included in associated Appendices A through H.

The permittees responsibilities are both joint and individual; they are laid out in their Inter-jurisdictional Agreement describing their respective roles and responsibilities related to this Permit. Coordination between groups within the permittees organizations are laid out in their Program Coordination Plans.

Responsibilities for certain requirements have been shared with the Anchorage Waterways Council (AWC). The delegated activities are in the areas of Public Education for General Audiences located in Permit Part 3.6, Watershed Planning located in Permit Part 2.7, and program evaluation of Animal Facilities, located in Part 3.3.3.

## 1. Program Organization

### 1.1 Storm Water Management Plan

The actions and activities of the Anchorage MS4 program have been documented in its Storm Water Management Plan (SWMP). The SWMP is intended to reduce the discharge of pollutants from the MS4 into receiving waters to the maximum extent practicable (MEP). The permittees have identified the prescribed best management practices (BMP) including control measures, system design, engineering methods, and other provisions appropriate to the control and minimization of pollutants and addressed the Permit requirements as described in Sections 3 and 4 of the Permit.

The annual reports document the compliance measures taken during the year in fulfillment of the SWMP. Both documents are laid out consistent with Sections 3 and 4 of the Permit. Activities are identified in their appropriate program summaries along with results of information collected, summaries of activities, and appendix references and web-links to associated supporting materials. Also, in each program section are self-assessments of performance and summaries of planned activities for future reporting cycles.

The SWMP was updated in 2017, and provided in the annual report. There are no changes for 2018.

### Program Effectiveness

The reporting date for the 2018 Annual Report fell in the fifth month of the fourth year of the permit. The Permittees accomplished the work required for submittal with the fourth annual report and some of the activities required by the end of the fourth year which ends in July 2019. The remaining activities due the fourth year will be reported in the 2019 annual report.

Each of the monitoring program reports presented with this submittal provides a detailed presentation of results from the current monitoring year. These reports indicate what follow-up actions need to be taken as a result of the program findings.

The Quality Assurance Plan (QAP) has been updated to reflect changes in key participants. It is provided in Section 7.



Pollutant load allocations, in the form of total maximum daily loads (TMDL), are assigned by the State to a number of creeks and lakes in Anchorage based on the State's *Primary Use* designation as drinking water sources. Dry and wet weather screening provide indicators of bacterial impacts from storm water to identified receiving systems. Dry and wet weather screening provide indicators of bacterial impacts from storm water to identified receiving systems. Wet weather bacteria continues to be occasionally high at some outfalls. Field investigations that began in 2017 were continued in 2018. In effort to address the sources of most bacteria, the permittees are continuing to provide public education about pet waste management with the Scoop the Poop message. They are also continuing to participate in efforts to manage waterfowl populations and resulting water quality impacts.

Street sweeping assessment activities were continued in 2018 to assist with improving sweeping operations. Real-time assessment provided qualitative feedback to help operators adjust practices for development of a visually clean standard.

The operations of the storm sewer system were implemented by primary coordinating groups. Coordination is managed through agreements between Municipal Watershed Management Services (WMS) and each of the participating MS4 operators; these were updated in the nine-month submittal. The M&O operators have provided 2018 MS4 Summaries for their areas of permit compliance. They are provided in Appendix A1.

### Program Resources

The permittees have broken their program costs into two functional categories: Operations & Maintenance (O&M) and Program Management/Project Administration. The maintenance costs are summarized from the program breakdowns contained in the MS4 Summaries. The 2018 costs are presented in Table 1.1

1: Table 1.1 – 2018 SWMP Program Costs

	ADOT&PF	Municipality	CBERRSA	GRSA	Total
Maintenance & Operations	\$2.6M	\$2.2M	\$0.53M	\$0.40M	\$5.7M
Program Management/ Administration	\$0.40M	1.0M	-	-	\$1.4M
	\$3.0M	\$3.2M	\$0.53M	\$.40M	\$7.1M

### 1.2 Watershed Planning

The permittees evaluated two existing watershed plans and submitted them with the third annual report. The *Little Campbell Creek Watershed Plan* and the *Chester Creek Watershed Plan* were developed under the guidance of working groups composed of diverse agency interests and supported by staff from Watershed Management Services (WMS), U.S. Fish and Wildlife Service, and the Anchorage Waterways Council. The reports are available on the WMS website at <http://anchoragestormwater.com/watershedplanning.html>.

The permittees are also required to complete a scoping document for one individual watershed plan for a permittee-chosen water body prior to the expiration of the permit. The scoping document must identify whether activities carried out in the watershed are beneficial in accomplishing site-based LID practices and recommend future actions to obtain identified goals. The scoping document will be used to determine if a watershed plan will be developed in the next permit cycle. In 2017, Campbell Creek was chosen for the next watershed plan. The culverts were mapped and their condition assessed for fish passage and any needed corrections. Additionally, areas were field checked where bank stabilization was previously performed to address known issues. In 2018, a scoping document for Campbell Creek was developed. It is presented in Appendix G1.

## **2 Construction Site Management**

### **2.1 Regulatory Mechanism and Standards**

#### **Ordinance and/or Regulatory Mechanism**

*ADOT&PF Projects.* The ADOT&PF Statewide Design & Engineering Services' (DES) mission is to provide technical services to ADOT&PF, and other state and federal agencies and governments. They develop, publish, and manage standard construction contract specifications, standard modifications for highways and statewide special provisions for highways and airports, as well as coordinate with and advise others in development and use of specifications for buildings, marine highways, and harbors. The ADOT&PF DES Chief Engineer issues directives informing ADOT&PF staff of new specifications, manuals and other standards to administer ADOT&PF projects. In 2018, the DES Chief Engineer issued one stormwater related directive outlining the how the ADOT&PF Statewide Environmental Office (SEO) will be conducting Quality Assurance reviews on ADOT&PF projects.

ADOT&PF regulates stormwater management of their highway and aviation construction projects through its Statewide and Regional Standard Specifications: Section 641 Erosion, Sediment and Pollution Control for Highway Construction; and Item P-156 (previously P-157) Erosion, Sediment and Pollution Control for Airport Construction. These Specifications were updated in their entirety in 2016 to remove textual references to the EPA / ADOT&PF Consent Decree requirements, and to reflect the regulatory changes introduced by the issuance of the ADEC 2016 Alaska Construction General Permit. The revised Standard Specification Section 641 and Item P-156 were made a contract requirement.

In 2018, Aviation Standard Specification Item P-156 Erosion, Sediment, and Pollution Control reconciled the State of Alaska Aviation Standard Specifications with the Federal Aviation Administration (FAA) Standard Specifications. Item P-156 Erosion, Sediment, and Pollution Control was finalized in July 2018. Regional special modifications will be developed on a project specific basis.

Minor changes to Specification 641 and Item P-156 are expected during 2019. They will be part of the biennial statewide standard specification re-publication.

The SWPPP construction forms provided by the ADOT&PF, contractually required to be used to document permit compliance, were modified and made available for use in 2016 and 2017.

These stormwater specifications are contractually enforced. ADOT&PF Central Region Construction provides guidance on contract stormwater administration to its project staff through three mechanisms, the Alaska Construction Manual, Chapter 3.11 & 9.9, ADOT&PF Chief Engineer's directives and by having two stormwater specialists dedicated solely to stormwater guidance and education. Modifications to the Alaska Construction Manual were made in 2017 to reflect the new requirements in the 2016 ACGP and eliminate

language associated with the terminated EPA Consent Decree were completed in 2016. After obtaining the necessary final approvals from federal regulatory agencies, the Alaska Construction Manual was updated on May 1, 2017. It is required to be used on all ADOT&PF highway and airport construction projects, and outlines procedures for implementing and monitoring construction SWPPPs.

Highway Standard Modification for Section 641 (see Highway 2017 Edition Standard Modifications) and Item P-156 for Airports, Erosion, Sedimentation and Pollution Control link.

<http://www.dot.state.ak.us/stwddes/dcsspecs/index.shtml>

ADOT&PF Construction Forms link:

[http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml)

Alaska Construction Manual link:

<http://www.dot.state.ak.us/stwddes/dcsconst/constructionmanual.shtml>

ADOT&PF Chief Engineer's Directives link:

<http://www.dot.alaska.gov/stwddes/dcspubs/directives.shtml>

*Private Development.* The Municipality regulates stormwater management at private construction sites through Anchorage Municipal Code (AMC) Title 21. The Municipal ordinance 2010-81, first adopted in 2010, amended Title 21 to require a permit, entailing plan review and approval, for ground disturbing activities. This ordinance added a new section, AMC 21.67.09, to municipal code. The re-write of Title 21, effective January 1, 2014, carried this permit language forward. It can be found in AMC 21.07.04.E. This code is available at:

[https://www.municode.com/library/ak/anchorage/codes/code\\_of\\_ordinances?nodet=TIT21LAUSPLNECOFFJA12014\\_CH21.07DEDESTNECOFFJA12014\\_21.07.04DRSTWATRERCOPRDI](https://www.municode.com/library/ak/anchorage/codes/code_of_ordinances?nodet=TIT21LAUSPLNECOFFJA12014_CH21.07DEDESTNECOFFJA12014_21.07.04DRSTWATRERCOPRDI)

*Municipal Projects.* The Municipality regulates stormwater management during construction of its own (public) projects through Municipality of Anchorage Standard Specifications (MASS), Division 20 (MASS Section 20.02). These standard specifications are contractually enforced. In 2012, MASS Section 20.02 was updated to incorporate requirements of Alaska's 2011 Construction General Permit. A link to the MASS is found at [http://www.muni.org/Departments/works/project\\_management/Pages/MASS.aspx](http://www.muni.org/Departments/works/project_management/Pages/MASS.aspx)

## Construction Storm Water Manual

*ADOT&PF Projects.* Use of the Alaska Storm Water Pollution Prevention Plan (SWPPP) Guide and other related materials is directed by the ADOT&PF Chief Engineer. These materials are available for download on a dedicated Stormwater/Water Quality webpage managed and maintained by the ADOT&PF Statewide Design and Engineering Services Statewide Environmental Office.

ADOT&PF revised its Alaska SWPPP Guide in December 2015, and again in March 2017. Separately, ADOT&PF updated and made available for immediate use a revised Appendix B, BMP Guide to reflect emerging technologies and practices for 53 new BMP details and descriptions, and six M&O and Good Housekeeping descriptions. The Alaska Storm Water Pollution Prevention Plan Guide, 2017 Edition was made an official reference document and authorized for use on March 31, 2017 after receiving approval from the Federal Highway Administration (FHWA) and FAA. The main body of the Alaska SWPPP Guide was modified to incorporate the changes to the 2016 ACGP.

ADOT&PF Statewide Design & Engineering Services Statewide Environmental Office Stormwater/Water Quality Website link:

<http://www.dot.state.ak.us/stwddes/desenviron/resources/stormwater.shtml>

Alaska SWPPP Guide, 2017 Edition (Body only) link:

[http://dot.alaska.gov/stwddes/desenviron/assets/pdf/swppp/english/2017/swppp\\_guide\\_2017.pdf](http://dot.alaska.gov/stwddes/desenviron/assets/pdf/swppp/english/2017/swppp_guide_2017.pdf)

Alaska SWPPP Guide, 2017 Edition (entire guide with appendices) link:

[http://dot.alaska.gov/stwddes/desenviron/assets/pdf/swppp/english/2017/swppp\\_guide\\_2017\\_w\\_apdx.pdf](http://dot.alaska.gov/stwddes/desenviron/assets/pdf/swppp/english/2017/swppp_guide_2017_w_apdx.pdf)

*Private and Municipal Projects.* The Municipality has updated its Storm Water Plan Review and Treatment Guidance Manual (SWTPRGM) to reflect the regulatory program based on the Term III APDES permit and the 2016 Alaska Construction General Permit. It is incorporated as Volume 2 of the Anchorage Stormwater Manual recently adopted by the Anchorage Assembly. It is available at [www.anchoragestormwater.com](http://www.anchoragestormwater.com)

## 2.2 Plan Review and Approval

*ADOT&PF Projects.* Sometimes, ADOT&PF takes two or more projects and combines them into a single Construction Contract. ADOT&PF normally files one Notice of Intent (NOI) per Construction Contract unless the projects are disconnected from each other and have vastly different site conditions/SWPPP requirements. ADOT&PF will report on the number of active or carry over Construction Contracts or NOIs filed with ADEC. These ADOT&PF contracts/NOIs are hereafter known as projects in this report.

During 2018, ADOT&PF reviewed and approved SWPPPs for eleven (11) projects (i.e., Construction Contracts) eligible to discharge construction stormwater under the requirements of the 2016 ACGP within the Municipality of Anchorage MS4 permit area. All eleven projects filed for and received an NOI. An additional nine (9) projects were carried over from the 2017 construction season. All 20 projects were contracted and administered by ADOT&PF. A list of these 20 projects is provided in Appendix B1.

Here is a list of ADOT&PF Construction Contracts/NOIs reported above that have multiple projects:

New 2018 Construction Contracts:

1. Project No. Z583770000 -- C Street, 40th Avenue to Minnesota Paving Preservation and Project No. CFHWY00304 -- C Street Pathway
2. Project No. Z584640000 -- AMATS: Anchorage Area Trails Rehabilitation Fish Creek Trail and Project No. CFHWY00290 -- AMATS: Fish Creek Trail Rehabilitation, Turnagain Blvd to Kona Lane

ADOT&PF 2017 Carry Over Construction Contracts:

1. Project No. Z581970000 -- HSIP: Anchorage Area Safety Improvement and Project No. Z566440000 -- HSIP: Lake Otis and 68<sup>th</sup> Avenue Channelization
2. Project No. ANCPAV2016:
  - Project No. Z581540000 -- C St., Port Access to 40<sup>th</sup> Ave. Pavement Preservation
  - Project No. CFHWY00019 -- AMATS: Bicycle Plan Implementation C St.: 10<sup>th</sup> Ave to 40<sup>th</sup> Ave.
  - Project No. CFHWY00009 -- 5<sup>th</sup> and 6<sup>th</sup> Avenue Curb Ramps, L Street to Ingra Street, Phase II
  - Project No. CFHWY00008 -- AMATS: A Street Resurfacing: 9<sup>th</sup> Ave to 6<sup>th</sup> Ave.
  - Project No. CFHWY00010 -- Ingra and Gambell Curb Ramps, 5<sup>th</sup> Ave to 36<sup>th</sup> Ave
  - Project No. CFHWY00090 -- L & I Couplet Pavement Preservation, Phase II

Since 2011, ADOT&PF Central Region (CR) has maintained a renewable term contract with STANTEC, Inc., to perform Quality Assurance (QA) document review for all required Specification Section 641 and Item P-156 documentation, prior to project certification and field implementation. In 2016, ADOT&PF Statewide Public Facilities began using the services provided by STANTEC. QA review is performed by the Water and Wastewater group within STANTEC for all projects requesting the service. On average between 45 and 50 ADOT&PF Central Region Construction and Statewide Public Facilities projects with an NOI take advantage of this service.

Before projects apply for an NOI, STANTEC reviews the initial SWPPP and provides comments for the project to incorporate, taking into account all pertinent environmental permits. During construction, STANTEC reviews the project-site inspection reports prior to certification, including all other documentation generated by the inspection, and provides comments to edit and correct documentation with the intent of preventing any permit non-compliance caused by paperwork errors. ADOT&PF Central Region Construction and Statewide Public Facilities will continue using this QA contract for the foreseeable future and has no plans to terminate the service.

The ADOT&PF Pre-Construction Manual requires Erosion and Sediment Control Plans (ESCP) to be developed for each project owned, designed or administered by the ADOT&PF. The ADOT&PF assigns design and environmental staff, the Central Region Hydrologist and an ADOT&PF Central Region Stormwater Specialist to review the ESCP.

The review process for Highway projects is:

- The ESCP writer creates a project-specific ESCP at the Pre-PS&E phase
- Individuals submit their written comments to the Design Project Manager or give the ESCP writer red-lined edits of the ESCP
- ESCP writer can discuss comments or the red-lined edits with the individual who wrote the comments. ADOT&PF enters a response to all comments
- The Design Project Manager checks and verifies the ESCP review comments are incorporated at the time bid documents receive FHWA project certification. The FHWA requires ADOT&PF certification stating that the PS&E is complete and has been developed in accordance with applicable design standards and the Title 23 USC responsibilities assumed by ADOT&PF in the Stewardship and Oversight Agreement dated December 21, 2012.
- The Design Project Manager files the ESCP comments after certification

The review process for Airport projects is:

- The ESCP writer creates a project-specific ESCP at the Plans-in-Hand phase
- Individuals enter their review comments into the Design Review Comment web page or give the ESCP writer red-lined edits of the ESCP
- ESCP writer can discuss comments or the red-lined edits with the individual who wrote the comments. ADOT&PF enters all comment responses in the comment web page
- Individuals review the Revised ESCP at the Pre-PS&E phase
- Individuals review the Pre-PS&E ESCP and follow the same process as the Plans-in-Hand ESCP
- The ADOT&PF Design Project Manager checks and verifies the ESCP review comments are incorporated at the time bid documents receive FAA project certification. The FAA requires

ADOT&PF Certifications stating that they will comply/have complied with statutory and FAA-imposed administrative requirements.

- The Design Project Manager files the ESCP comments after certification

In addition, on larger projects, a separate ESCP-focused meeting occurs after the Pre-PS&E review. This meeting discusses the ESCP comments from above and project-specific stormwater issues. The Design Project Manager follows the same process as described above to check and verify ESCP review comments and then files the comments after certification.

ADOT&PF is a co-operator on projects with the Construction Contractor performing the work. After construction activities begin, most ADOT&PF active projects are subject to a documentation review performed by a Central Region Stormwater Specialist. This review is based on the EPA Appendix R NPDES Industrial Storm Water Investigation and Case Development Worksheet.

*Private and Municipal Projects.* The WMS continues to review construction SWPPPs for projects conducting ground disturbance greater than 10,000 square feet. The types of projects reviewed include any work requiring a building permit, utility work, new subdivisions and road projects. In 2011, WMS began regulatory review of all Municipal projects 1 acre and greater. The reviews encompass construction erosion control measures and permanent stormwater management practices.

In 2018, WMS reviewed and approved approximately 313 Residential permits and 99 commercial buildings, and a number of commercial and government building additions. WMS also conducted Storm Water Pollution Prevention Plan reviews of 5 Municipal Projects. The Municipal Development Services Division computer-based building permit administration system continues to track and document plan reviews and approvals in 2018. It also handles documentation for Construction Site Inspections and Enforcement.

### **2.2.1 Inspection and Enforcement Tracking**

*ADOT&PF Projects.* A summary of inspection activities shows the ADOT&PF conducted 409 site inspections on 20 projects within the Municipality of Anchorage. ADOT&PF performed:

- 301 site inspections on 13 highway projects ranging from major highway realignment to repaving arterial roads
- 108 site inspections on seven (7) airport projects for the Ted Stevens Anchorage International Airport and Lake Hood Seaplane Base including major taxiway reconstruction, drainage projects, and facility support projects

For each of these inspections, ADOT&PF reviewed the SWPPP or other site documentation and performed a physical inspection of the site to confirm there were no illicit discharges or incidents of permit noncompliance. At the conclusion of the visit, ADOT&PF prepared an inspection report and included the report in the SWPPP. Any required corrections were given to the site representative. In 2018, no stop work orders were given on any ADOT&PF construction project within the Municipality of Anchorage. The records for site inspections along with associated compliance follow-up are available for review at individual project offices.

*Private and Municipal Projects:* A summary of inspection activities reveals that 319 commercial site inspections and 418 residential site inspections were conducted during 2018 including 8 construction related inspections from the illicit discharge reporting website located at:

<http://www.muni.org/Departments/OCPD/development/BSD/Pages/CodeEnforcement.aspx>

For each of these inspections the SWPPP or other site documentation was reviewed and a physical inspection of the site was performed to confirm there were no illicit discharges. At the conclusion of the visit an inspection report of findings and any required corrections were given to the site representative. Where corrections were indicated a re-inspection was scheduled to confirm compliance. When compliance isn't achieved within the specified period of time a stop work order is issued until compliance is achieved. In 2018 no stop work orders were given. The records for site inspections along with associated compliance follow-up are available for review at WMS.

### **2.2.2 Enforcement Response Policy**

*ADOT&PF Projects:* ADOT&PF's Enforcement Response Policy is contained in the following documents:

- Alaska Construction Manual, 2017 Edition, Chapter 9.9 SWPPP & HMCP Implementation and Monitoring, most current edition is dated May 1, 2017
- Standard Specification Item 641 Erosion, Sediment and Pollution Control for Highway Construction, most current edition is dated April 30, 2017
- Item P-156 for Erosion, Sediment and Pollution Control Airport Construction, most current edition is dated June 22, 2018.

The Alaska Construction Manual spells out the inspector qualifications and duties, non-compliance reporting and monitoring paperwork. The standard specifications provide project and administration requirements relating to control of erosion, sedimentation, and discharge of pollutants. The work must follow applicable local, state, and federal requirements, including the CGP and the MS4 Permit. The standard specifications are contractually enforced.

The Alaska Construction Manual spells out the inspector qualifications and duties, non-compliance reporting and monitoring paperwork. The standard specifications provide project and administration requirements relating to control of erosion, sedimentation, and discharge of pollutants. The work must follow applicable local, state, and federal requirements, including the CGP and the MS4 Permit. The standard specifications are contractually enforced.

These specifications authorize ADOT&PF personnel to verbally warn and provide written notices to the construction project after each inspection. The SWPPP Construction Inspection Report and the Corrective Action Log document the timely maintenance or corrective actions required.

ADOT&PF revised the Section 641 and Item P-156 (Item P-157 prior to 2018) Statewide and Regional Specifications in 2016 because of:

- EPA terminated the ADOT&PF Consent Decree; ADOT&PF removed Consent Decree language references from the specifications and modified the attendant requirements
- ADEC issued a new 2016 ACGP; ADOT&PF updated the specifications to reflect changes from the 2011 ACGP

Escalation enforcement measures include:

- Orally suspending the work if the suspension is to protect workers, the public or the environment from imminent harm
- Written suspension of work explaining the defects, reasons, corrective actions and time allowed to complete the corrective actions



- Withhold monies from the construction contractor until corrective action is completed
- Assess damages or equitable adjustments against the contract amount
- Employ others to perform the corrective action and deduct the costs from the contract amount
- Alaska Construction Manual link:  
<http://www.dot.state.ak.us/stwddes/dcsconst/constructionmanual.shtml>
- Highway Standard Modification for Section 641 and Item P-156 for Airports, Erosion, Sedimentation and Pollution Control link:  
<http://www.dot.state.ak.us/stwddes/dcsspecs/index.shtml>

*Private and Municipal Projects.* The Municipality updated its escalating enforcement policy and provided it with the 2015 annual report.

### **2.2.3 Construction General Permit Violation Referrals**

*ADOT&PF Projects:* ADOT&PF Erosion and Sediment Control Advisors provide guidance to its project staff on reporting noncompliance in the Alaska Construction Manual, Chapter 9.9. In 2018, ADOT&PF filed one (1) non-compliant stormwater discharge report to the ADEC on their projects within the Municipality of Anchorage. Project No. CFAPT00174 Lake Hood Seaplane Base LHD Taxiway V Reconstruction had a non-allowable discharge on September 28, 2018, see Appendix B2 for a copy of the discharge report.

There were no instances of ACGP non-compliance within the Municipality of Anchorage MS4 permit area by ADOT&PF projects in 2018. Project No. CFHWY00162, Seward Highway: Dimond Boulevard to Dowling Road Reconstruction, Phase I was visited by the Alaska Department of Environmental Conservation (ADEC) for a compliance inspection on December 14, 2017. ADEC sent ADOT&PF a Notice of Violation on January 24, 2018, see Appendix B3. ADOT&PF submitted an official response to ADEC's notice of violation on June 22, 2018.

*Private and Municipal Projects.* The Permit requires the Municipality to report to ADEC when they find projects which failed to comply with the Construction General Permit prior to breaking ground. In 2018, MOA did not file any reports of non-compliance to the ADEC.

### **2.3 Construction Program Education and Training**

During the Permit's second term, agreement was reached by agencies and interest groups for a standardized training course targeted for construction site owners and operators and their key personnel. In 2012, the Memorandum of Understanding to establish Certified Erosion and Sediment Control Leads in Alaska (AK-CESCL) was updated by eight governing members comprised of the Alaska Department of Environmental Conservation, the Alaska Department of Natural Resources, ADOT&PF, the Alaska Railroad Corporation, the Associated General Contractors, the Municipality, the US Army Corp of Engineers, and the Associated Builders and Contractors Alaska. The original agreement, training requirements, and course elements for the AK-CESCL program were provided in the 2010 Annual Report. The updated agreement, provided in the 2013 Annual Report, made some minor revisions to clarify the procedures of the training program. In 2015, the Alaska Storm Water Steering Committee approved a one-day eight-hour Refresher Course to satisfy the Alaska Certified Erosion Sediment Control Lead (AK-CESCL) renewal requirements. In 2017 the agreement was updated to continue the program as laid out in the 2012 amendment. It was provided in the corresponding annual report.



The refresher course is a summary of the two-day initial AK-CESCL class. To be eligible to take this training, you must have an active AK-CESCL number and taken the two-day (16-hour) class or Refresher class within the last three years. It thoroughly examines erosion and sediment pollution control concepts and design procedures as they apply to construction projects. The Refresher Course is a training and certification program to comply with the Alaska CGP and the Municipality's SWTPRGM. The Refresher Course will stress risk management, review proper best management practices, and provide guidance. Upon passing the 8-hour refresher course, the applicant will be granted an AK-CESCL certificate. Applicants not passing the (8-hour) refresher course will be required to retake the two-day (16-hour) class.

*For ADOT&PF:* ADOT&PF participated in the following training:

- AK CESCL Course: Alaska Certified Erosion and Sediment Control Lead is a two day, 16 hour course. This program requires recertification every 3 years. Twenty participants were enrolled in the course held on May 9-10, 2018.
- AK CESCL Refresher Course: Alaska Certified Erosion and Sediment Control Lead Refresher Course is a 1 day, eight hour course. This program requires recertification every 3 years. Twenty participants were enrolled in the course held on April 19, 2018. Six participants were enrolled in the course held on May 23, 2018.
- AK CESCL: The Central Region ADOT&PF sponsored AK CESCL classes are taught by Mary Cunningham and Joshua James, ADOT&PF Central Region Stormwater Specialists.
- International Erosion Control Association 2018 Annual Conference and Expo (IECA 2018 AC&E): ADOT&PF sent Mary Cunningham and Joshua James to the IECA 2018 AC&E in Long Beach, CA to further their knowledge and training as Stormwater Specialists and AK-CESCL Instructors. The event took place February 11-14, 2018. The event is the largest stormwater event and exposition in the world, and attracts participants from around the world. The four day event has over 220 technical and training sessions taught by industry experts. The Expo hall gathers hundreds of vendors giving product demonstrations and providing independent education sessions.

*For the Municipality:* The Municipality conducted or participated in the following training:

- 2018 Watershed Update/APDES Annual Meeting: March 8, 2018. This half-day meeting reviewed the findings of monitoring, assessments, mapping, and new programs associated with the permit. It was attended by members of MOA, ADOT, and the private sector.
- Storm Water Solutions, Storm Water Expo provided a variety of courses covering stormwater issues in April and October of 2018. WMS staff participated in both events. Topics covered:
  - A Way forward: Turbidity, Construction Stormwater, and Passive Treatment
  - Using Field Observations to Assess Long-term Sustainability of Urban Green Infrastructure
  - Reduce Stormwater Infrastructure with Vegetated and Aggregate Porous Pavements
  - Important Role of Vegetation in Stormwater Management
  - Industrial Stormwater Litigation Trends and BMP Case Studies
- WMS and ADOT program leads attended Forester University's, March 29, 2018, Taming the Documentation Dragon, which covered MS4 management strategies.

- WMS staff was joined by Anchorage Waterways council for Forester University's Public Outreach, Crafting Messages that Work, April 26, 2018.
- WMS meets for bi-weekly staff meetings where members rotate responsibility for selection of videos covering relevant topics related to stormwater management. They range from regulatory practice to updated technical practice and current events. A list of the videos is available on the MOA Stormwater YouTube Channel:  
[https://www.youtube.com/channel/UCdr0yQY12\\_mDVHTMaRVBFVw](https://www.youtube.com/channel/UCdr0yQY12_mDVHTMaRVBFVw).  
Playlists are available for various training topics including Stormwater Construction Practices.
- 2018 Anchorage Transportation Fair, 02-08-18, is an evening event to reach out to a wide audience. WMS presented information included permanent controls requirements and examples and construction practices for erosion and sediment control.

### **3 Storm Water Management for Areas of New and Redevelopment**

#### **3.1 Regulatory Mechanisms and Standards**

##### **3.1.1 Ordinance and/or Regulatory Mechanism**

*ADOT&PF Projects:* ADOT&PF regulates project development through the Alaska Highway Preconstruction Manual and Alaska Aviation Preconstruction Manual. Both manuals require ADOT&PF to comply with local ordinances. Therefore, all projects within the Municipality of Anchorage follow the Municipal Design Criteria Manual (DCM).

Alaska Highway Preconstruction Manual link:

<http://www.dot.state.ak.us/stwddes/dcsprecon/preconmanual.shtml>

Alaska Aviation Preconstruction Manual link:

[http://www.dot.state.ak.us/stwddes/dcsprecon/pop\\_aviation\\_preconstman.shtml](http://www.dot.state.ak.us/stwddes/dcsprecon/pop_aviation_preconstman.shtml)

*Municipal Projects:* The Municipality regulates permanent stormwater controls on its own projects through the Municipal Design Criteria Manual (DCM). The DCM has been updated by a committee of local of community experts to guide better drainage management and to reflect the goals of Permit, as discussed in Section 3.1.2. The 5-year Implementation Plan created for this term will guide the Municipality through the transition to their new design criteria.

*Private Projects:* The Municipality regulates permanent stormwater controls through the Anchorage Municipal Code Title 21, which refers to the DCM for policy and technical details. The DCM is discussed in the following section.

##### **3.1.2 Storm Water Design Criteria Manual**

*ADOT&PF Projects:* Effective August 1, 2016, it is the policy of DOT&PF Central Region to apply the guidance contained within the latest approved version of the Municipality of Anchorage, Anchorage Stormwater Manual to projects located within the boundaries of the Municipality of Anchorage. This policy was revised May 9, 2018 to include relevant information specific to DOT&PF Central Region. The latest version of this policy, effective August 28, 2018, applies the guidance contained within version 1.0 of the Municipality of Anchorage, Anchorage Stormwater Manual Volume 1 dated December 2017 to projects

located within the boundaries of the Municipality of Anchorage with several exceptions. The latest version of the policy memorandum can be found in appendix C1.

*Private and Municipal Projects:* The Municipality establishes design criteria for permanent stormwater controls through Chapter 2 of its Design Criteria Manual (DCM), which is referenced from AMC Title 21. *Volume I, Management and Design Criteria*, of the recently updated manual provides guidance for new development. This manual has been updated to reflect current regulations and stormwater management practices; it may be found on the WMS website, [www.anchoragestormwater.com](http://www.anchoragestormwater.com).

The DCM has been revised through a process that incorporates Permit requirements and community input. The Municipality referred the new draft DCM to the Anchorage Planning and Zoning Commission for review and recommendation for adoption by the Assembly. It was subsequently adopted, and given an adoption period incorporating a choice between the old and new DCM to give the development community time to adjust to the new requirements consistent with the *Low Impact Development Implementation Plan*. The manual is now in full force for all development.

*The Low Impact Development Implementation Plan Update*, provided in 2015, for the new design criteria and stormwater manual lays out a schedule and strategy for moving forward with demonstration projects and new criteria for incorporating LID into linear and vertical projects throughout Anchorage. It moves the Permittees from struggles experienced with the retention requirement in the previous permit term toward solutions in the form of detention and water quality treatment through LID/Green Infrastructure in this permit term. With the implementation of the new DCM low impact development projects will increase in number and provide more information to apply to low impact development strategies.

## **3.2 Green Infrastructure/LID Strategy and Demonstration Projects**

### **3.2.1 LID Incentives Strategy**

The Municipality continues to sponsor an incentive program for rain gardens and Low Impact Development (LID) projects. This program continued to support all types of vegetated Low Impact Development (LID) techniques, however in 2017, there was no financial cost sharing available for projects. Subsequently, there were no projects completed this year. Incentive support includes, but is not limited to, technical guidance, manuals, brochures, websites, tours, hands-on workshops, private consultations, ongoing classroom support for school projects, and ongoing maintenance for public rain gardens.

However, new incentives became available with the implementation of the DCM and Stormwater Manuals. They include:

- **20% Area Allowance:** This provision allows runoff from up to 20% of a site to be untreated as long as an equivalent volume of water is treated from somewhere else on the site using Green Infrastructure techniques. This provision is helpful for areas with unique grading challenging or roadway projects with super-elevated curves.
- **Utilizing Landscape:** Provisions and design criteria are provided for incorporating stormwater treatment facilities into site landscaping and grading. This helps maximize utilization of space on a site.
- **Detention and Downstream Analysis Modification:** The detention and downstream analysis requirements have been modified to allow more flexibility in designing on-site stormwater controls. Designers can now choose from two options to meet these requirements. The first option remains the same as what was in the old criteria, where designers provide on-site detention and ensure that

there is adequate capacity in the receiving system. The second option offers a pathway for increased on-site detention with no analysis of downstream capacity.

- **Local Criteria for Stormwater Controls:** The new DCM offers detailed design criteria for a menu of stormwater “tools” that have been tailored to Anchorage’s site development challenges. These criteria demonstrate how to incorporate green infrastructure efficiently, even on challenging sites.
- **Streamlined Reporting Requirements:** The new DCM has streamlined and simplified drainage reporting requirements. For small and mid-size projects, full drainage reports have been replaced with drainage certification forms to help guide the designer through necessary considerations. For large projects, the report format has been updated and simplified.
- **Alternative Compliance:** The new DCM offers a pathway forward for projects that may have a difficult time incorporating Green Infrastructure based on other conflicting municipal requirements. The Alternative Compliance route may waive conflicting requirements to encourage the use of Green Infrastructure at the discretion of the MOA.

### **3.2.2 Demonstration projects**

The ADOT&PF and the Municipality have constructed five projects as required by Part 3.2.3 of the Permit for incorporation of LID. The new projects will be evaluated for hydrologic performance and information will be used to update LID design criteria.

*ADOT&PF Projects:* ADOT&PF Central Region Design Section has identified the following three LID demonstration projects: 1) West Dowling Road Extension Phase II, C Street to Minnesota Drive; 2) AMATS: O’Malley Road Reconstruction Phase 1, Seward Highway to Livingston Street; 3) Glenn Highway Capacity Improvement. These projects have been selected for hydrologic performance evaluation based on project construction schedules and readiness for monitoring.

*Municipal Projects:* The Municipality of Anchorage has completed a number of qualifying LID demonstration projects during the third term of the Permit. The permit requirement for LID demonstration improvements were completed in 2016. LID Projects were completed at Fire Station #9, the Kings Landing improvement project at Ship Creek, downhill of 3rd Avenue and the Saturday Market parking lot, and as part of the West Dimond Improvement Project. Additional MOA LID projects were completed in 2017 as discussed in section 3.2.5 of this report.

During 2018, the Fire Station 9 project as well as the parking lot retrofit project discussed below were evaluated as required for the fourth-year deliverables for the permit. Evaluation for these existing LID projects is presented in Appendix C2.

### **3.2.3 Rain Gardens**

The Permittees are required to quantitatively evaluate the effectiveness of select raingardens by the fourth year of the Permit. This requirement will be met through revisiting projects constructed in the second term of the permit. There were two rain gardens, both located within TMDL watersheds. One is located in Taku Park, part of the Campbell Creek watershed, capturing the parking lot runoff and adjacent road runoff from the bordering commercial neighborhood. The other is located at the Fisherman’s Bank on Spenard Road,

constructed through public-private partnership, in the Fish Creek watershed. These will be quantitatively re-evaluated with the results to be included in the LID Monitoring Report discussed in Section 3.2.2.

### **3.2.4 Riparian Zone Management**

During the current permit term, the permittees are required to disconnect at least one MS4 outfall from discharging to receiving waters. During the fall of 2015, the MOA completed work on disconnecting one stormwater outfall in the Campbell Creek Watershed. The outfall drains Subbasin 1221 and is categorized as a major outfall as it receives stormwater flows from an area larger than 50 acres that is comprised entirely of industrial areas. Formerly, this subbasin drained to a single outfall located near the intersection of the Old Seward Highway and International Airport Road. As part of the project, subbasin flows were split, resulting into two new subbasins. One basin drains to the location of the original outfall and a second outfall was added in the 56th Avenue Right of Way, west of the Old Seward Highway. Both new outfalls convey stormwater to Campbell Creek via a swale after it has been treated in two, new oil and grit separators.

### **3.2.5 Street and Parking Lot Repair**

*ADOT&PF:* In general the Department has few opportunities to repair or reconstruct parking areas. However, the ADOT&PF is implementing LID measures where possible in their projects. The Design sections are including LID practices into projects currently in design and are also working to establish direction and guidelines on using LID on all projects where it is feasible.

These LID measures include:

- a. Soil Amendments - Spreading a layer of topsoil, compost or mulch on disturbed areas and then placing seed or sod.
- b. Bioretention – Planting soil and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes.
- c. Reverse Sidewalk Slopes – Sloping sidewalks to drain away from the road and into adjacent vegetated areas.
- d. Dispersion – Channelizing (collecting and re-dispersing) stormwater into areas with either native vegetation or cleared land in areas outside of urban growth areas that do not have a natural or man-made drainage systems.

For example, in support of the MS4 Permit and the Green Roads initiative the AMATS: O'Malley Road Reconstruction Phase I project proposed a linear landscape drainage design that will aid in the infiltration, evaporation, and decontamination of the storm water runoff. Prior to discharging storm water into the right-of-way at the wetlands of Moose Meadows or the bioswale at the Seward Highway; runoff is treated by the filtration and infiltration of grassy ditches. Silt deposits and debris is settled out in the sumps of the storm drain system and rock lined ditches filter and dissipate the water. At Moose Meadows the rock lined ditches disperse the flow before entering the wetlands where the natural vegetation further decontaminates the runoff and allows for infiltration and evaporation of the remaining water. At the Seward Highway a landscaped bioswale was constructed to filter off silts and contaminations through compost socks to allow up to a half-foot of standing water for evaporation and infiltration. The wide and shallow ditch is intended to maximize the time water spends in the swale before it is discharged and conveyed into a series of culverts and grassy ditches prior to merging into the existing Old Seward Highway and O'Malley Road storm drain system.

*For the Municipality:* In 2018, the Municipality of Anchorage continued to evaluate the feasibility of incorporating rainfall runoff techniques in the repair and construction of public roads, streets, and parking lots.

As has been the case the last several years, within its transportation construction program, the MOA continues to focus on rehabilitation of existing roadways rather than re-construction of existing roads and the construction of new roads. The limited scope of these projects leads to fewer opportunities to improve on-site drainage, including the inclusion of LID. During 2018, the MOA incorporated LID/Green infrastructure on a number of public projects as a stormwater management technique. These projects include 100<sup>th</sup> Avenue, Providence Drive, and Spenard Road.

During the past year, six new subdivisions also incorporated LID/Green Infrastructure measures in road and drainage infrastructure to reduce stormwater runoff. These include:

- Heather Wood Subdivision – Vegetated Swales and Infiltration Trenches
- Girdwood Industrial Park – Vegetated Swales
- Lawhorn Subdivision – Infiltration Trench
- Blue Beary Subdivision - Vegated Swales
- Hamilton Subdivision – Retention Pond
- Denaly Estates –Vegetated Swales and Infiltration Trenches

### **3.2.6 Parking Lot Retrofit**

The permittees retrofitted a public parking lot to incorporate the use of LID for stormwater treatment. The Valley of the Moon Park parking lot, along 17<sup>th</sup> Avenue, was redesigned and reconstructed so that parking lot runoff is infiltrated in surrounding vegetation and snow melt runoff flows through a new bio-infiltration swale. The project is evaluated and reported in the 2018 LID Monitoring report in Appendix C2.

### **3.3 Permanent Storm Water Controls Plan Review and Approval**

*ADOT&PF Projects:* ADOT&PF conducts quarterly design meetings for all design and environmental staff, including topics related to permanent stormwater controls. In addition, ADOT&PF technology transfer staff set up annual training schedules with some courses specifically focused on storm water and drainage issues. ADOT&PF Hydrology staff participated in the 2018 Storm Water Solutions Virtual Expo. This expo included numerous educational opportunities related to storm water management and erosion control (e.g. vendors and webinars). Hydrology staff will continue to participate in this annual expo. The following webinars were attended:

A Way Forward: Turbidity, Construction Storm Water, and Passive Treatment

The Important Role of Vegetation in Storm Water Management

Municipal Water Supplies and Winter Road Maintenance: Determining Vulnerability for Midwestern MS4 Communities

Understanding the Performance of Houston's Urban Storm Sewer System During Hurricane Harvey

In addition to the Virtual Expo Storm Water Solutions provides on-demand videos related to storm water management and erosion control. In the future, these will be utilized by ADOT&PF Hydrology staff to learn about new permanent control measures and innovative approaches.

DOT&PF Hydrology staff also participates in Transportation Research Board webinars. In 2018 the following webinars were attended:

TRB Webinar: Design for Stream Restoration and Channel Stability at Stream Crossings

TRB Webinar: Service Life and Durability of Steel Culverts and Buried Bridges, Part 1

The Municipality of Anchorage in cooperation with ADOT&PF provided training on the new Anchorage Storm Water Manual (ASM). This training was available to ADOT&PF design/management staff.

*Municipal Projects:* The Municipality performs a regulatory review of all Municipal projects 10,000 sf and greater in compliance with our MS4 Permit requirement under part 3.2.4. The reviews encompass construction erosion control measures and permanent stormwater management practices. Reviews are documented through the Municipality's online tracking system and are a requirement for development project permit issuance. The MOA will continue to coordinate with ADEC to insure our projects meet the ADEC waste water regulations.

### **3.4 Permanent Storm Water Management Controls Tracking and Enforcement**

#### **3.4.1 Inventory and Tracking**

The Municipal Street Maintenance Division acquired and began implementing an asset management database they use to inventory and track municipal- and state-owned stormwater controls. This inventory and tracking database allows Street Maintenance to access information about the condition and maintenance requirements of the stormwater controls owned by the permittees.

The ADOT&PF and CBERRSA worked with WMS to capture information about state owned and area-wide controls. During the second term of the permit, they mapped stormwater controls using GPS instruments and populated the asset management database. During the third term they made periodic updates to incorporate MS4 public improvements as well as new information from construction record drawings.

*Private Storm Water Controls.* During the second term of the permit WMS developed a database for new and existing stormwater controls and, has since, updated it annually to include new development. As-built drawings of private stormwater controls are required prior to closing a Municipal Building Permit for new and redeveloped properties. These as-builts are scanned and recorded into the database. The Municipality also requires submittal of an Operations and Maintenance (O&M) agreement for private stormwater controls. During 2018, WMS continued to improve on the functionality and accessibility of this database using web-based GIS functionality. The goal is to try and better integrate data input, data recall and site inspection.

#### **3.4.2 O&M Agreements**

In 2015, WMS started requiring a legally enforceable and transferable O&M agreement for private stormwater controls on new and redeveloped properties to generate regular maintenance on private stormwater controls and demonstrate it to the Municipality. These O&M agreements are entered into a municipal database created to assist tracking and inspection of the permanent controls.

In 2018 the MOA received 1 legally recorded O&M agreement.

#### **3.4.3 Inspection and Enforcement**

The Permittees must ensure proper long term operation and maintenance of permanent storm water management practices through an inspection program.

*ADOT&PF and Municipal Storm Water Infrastructure:* See Section 5 for details on inspection and maintenance of ADOT&PF and Municipal stormwater management controls and infrastructure.

*Private Storm Water Management Controls:* Under the updated SWTPRGM, the Municipality now requires as-built (record) drawings of all constructed stormwater controls that were approved under a Municipal permit for projects 10,000 sf and above. They are scanned into a tracking database.

Projects falling under this new requirement must request a permanent control inspection to obtain a conditional certificate of occupancy. As part of this process, projects must provide a surveyed as-built of permanent stormwater controls and a recorded maintenance agreement with the Municipality for the upkeep of these controls. The Municipality manages installed permanent stormwater controls as a “use permit” similar to elevators and will require periodic re-certification and inspections based on site sensitivity and past compliance. Maintenance records will be required from the owner/operator prior to renewal. High priority sites, requiring, annual inspection, will be identified based on Checklist #3 of Building Safety Handout AG 21.

In 2018, three as-builts were received through the permanent controls process, and inspections were performed on the associated sites. In each case the sites were constructed as represented in the plans.

### **3.5 Permanent Storm Water Controls Training**

*ADOT&PF:* ADOT&PF conducts quarterly design meetings for all design and environmental staff, including topics related to permanent stormwater controls. In addition, ADOT&PF technology transfer staff set up annual training schedules with some courses specifically focused on storm water and drainage issues. ADOT&PF Hydrology staff participated in the 2018 Storm Water Solutions Virtual Expo. This expo included numerous educational opportunities related to storm water management and erosion control (e.g. vendors and webinars). Hydrology staff will continue to participate in this annual expo. The following webinars were attended:

- A Way Forward: Turbidity, Construction Storm Water, and Passive Treatment
- The Important Role of Vegetation in Storm Water Management
- Municipal Water Supplies and Winter Road Maintenance: Determining Vulnerability for Midwestern MS4 Communities
- Understanding the Performance of Houston’s Urban Storm Sewer System During Hurricane Harvey

In addition to the Virtual Expo Storm Water Solutions provides on-demand videos related to storm water management and erosion control. In the future, these will be utilized by ADOT&PF Hydrology staff to learn about new permanent control measures and innovative approaches.

ADOT&PF Hydrology staff also participates in Transportation Research Board webinars. In 2018 the following webinars were attended:

- TRB Webinar: Design for Stream Restoration and Channel Stability at Stream Crossings
- TRB Webinar: Service Life and Durability of Steel Culverts and Buried Bridges, Part 1

The Municipality of Anchorage in cooperation with ADOT&PF provided training on the new Anchorage Storm Water Manual (ASM). This training was available to ADOT&PF design/management staff.



*Municipality.* MOA staff received training on Stormwater Post-Construction BMPs, and LID at a number of presentations throughout the year:

The Municipality conducted and/or participated in the following training:

- 2018 Watershed Update/APDES Annual Meeting: March 8, 2018. This half-day meeting reviewed the findings of monitoring, assessments, mapping, and new programs associated with the permit. It was attended by members of MOA, ADOT, and the private sector.
- Storm Water Solutions, Storm Water Expo provided a variety of courses covering stormwater issues in April and October of 2018. WMS staff participated in both events. Topics covered:
  - Using Field Observations to Assess Long-term Sustainability of Urban Green Infrastructure
  - Reduce Stormwater Infrastructure with Vegetated and Aggregate Porous Pavements
  - Important Role of Vegetation in Stormwater Management
  - Industrial Stormwater Litigation Trends and BMP Case Studies
- WMS and ADOT program leads attended Forester University's, March 29, 2018, Taming the Documentation Dragon, which covered MS4 management strategies.
- WMS meets for bi-weekly staff meetings where members rotate responsibility for selection of videos covering relevant topics related to stormwater management. They range from regulatory practice to updated technical practice and current events. A list of the videos is available on the MOA Stormwater YouTube Channel: [https://www.youtube.com/channel/UCdr0yQY12\\_mDVHTMaRVBFVw](https://www.youtube.com/channel/UCdr0yQY12_mDVHTMaRVBFVw). Playlists are available for various training topics: Cold Weather/Climate, LID, Stormwater Management, Stormwater Construction Practices, Maintenance, and Rain Gardens.
- Design Criteria Training, MOA led Brown Bag Session, to designers and engineers on November 15, 2018.

## **4 Industrial and Commercial Discharge Management**

### **4.1 Inventory of Industrial and Commercial Facilities**

An inventory and map of facilities discharging to the MS4 was updated during the second year of the Permit, a year ahead of schedule. It contains the industrial sectors currently tracked as well as all industrial sectors listed in 40 CFR 122.26(b)(14), and a number of commercial locations including vehicle or equipment wash systems and animal facilities with the potential of negatively impacting the MS4. A revised inventory and map were provided in the 2016 report. In comparing the 2016 review to prior years' inventories, the permittees identified facilities that did not appear to have current Industrial SWPPPs. ADEC was notified of the discrepancies. The 2018, the inventory was updated and is provided in Appendix D1.

### **4.2 Snow Disposal Sites**

Part 3.3.2 requires permittees, within one year of the Permit effective date, and annually thereafter, to "...inventory and map locations of all permittee-owned and privately owned snow disposal sites that discharge directly to the MS4 or to receiving waters.." with mapping updates performed annually thereafter. In 2015, the permittees reviewed conditional use permits, interviewed rights of way staff, and WMS inspectors for changes to the map and list of all permittee-owned and all known privately-owned snow

disposal sites and found there were no changes from previous submittals. In 2017 field checks demonstrated some of the permitted snow disposal sites have been developed for other uses and are no longer being used for hauled snow disposal, and they were removed from the inventory. A map of snow disposal sites operating in the MOA can be found at: <http://bit.ly/1eDh4XA>.

During the second permit term a decision was made to place additional regulation on snow disposal sites as part of the Anchorage Municipal Code Title 21 revision of December 2010 and the larger Title 21 Land Use Code re-write expected to be adopted in February of 2013. This project summary of considerations and resulting regulatory updates was submitted in 2011. The relevant ordinance in Title 21.07.004.F of the Land Use Code was implemented January 2014. It is available at [www.muni.org](http://www.muni.org). As follow-up to this regulatory change, and by the end of the fourth year of the third term, the MOA must evaluate the program for effectiveness in protecting water quality.

During the second year the permittees began the evaluation of the additional regulation of the snow sites for water quality protection. The private snow sites were visited and their conditional use permits reviewed. We found that sites frequently were being used for more than one purpose, and that these uses sometimes conflicted with each other. In response to this finding, we placed language in the new DCM (2017 update) that allowed multi-uses but specified requirements for maintenance of the site to protect water quality during snow melt runoff periods. With the new DCM in place, WMS began working with conditional use permit applicants operating private snow sites regarding multi-use requirements and better site performance. One site in south Anchorage received a stop-work order until proper controls could be established. On the whole, regulations are sufficient, and the permittees will continue working with private snow disposal sites to improve operating practices.

### **4.3 Animal Facilities**

The Municipality of Anchorage continues to track animal control facilities under the current program, based on Permit Part 3.3.3. During 2018, the MOA conducted an evaluation of the program implemented in 2010 for animal facilities to prevent waste from facilities or other locations from entering the MS4 and protect water quality. The contractor's report is included as part of Appendix G1. The evaluation identified a number of items that may warrant further investigation and contained a set of recommendations for future action. These recommendations are summarized below. During the fourth year of the permit, the MOA will examine the items identified in the evaluation and implement the report recommendations, as needed, with coordination with the relevant municipal entities.

1. The Alaska Zoo and Hillside horse stables represent a potential source of fecal coliform pollution. The Alaska Zoo has worked with the MOA, other agencies, and community organizations during the past several years to reduce water quality impacts from the zoo. A continued effort to collaboratively engage the Zoo and stable owners in runoff management, and develop a set of best practices may further reduce the risk of fecal coliform pollution.
2. Designated off-leash dog parks likewise represent a potential source of fecal coliform pollution. The 2018 Evaluation identified a number of instances where signage may be out-of-date or confusing. WMS will work with the Parks and Recreation Department (Parks) to correct these signs. WMS will work with Parks on ways to continue enforcement of dog owners picking up their dog's waste. To the degree these parks represent successful management of pet wastes, WMS and Parks will determine how strategies from dog parks might be implemented in other areas where people are less likely to pick up after their pets: trailheads for Far North Bicentennial Park, the Gasline Trail, Chester Creek Bike Path, etc.

3. Work with the Anchorage Health Department to determine whether current site inspections for Animal Facility Licenses need to be improved relative to the location and manner in which animal wastes are permitted to be stored.
4. Work with the Anchorage Health Department to determine whether changes are needed to the Anchorage Municipal Code sections that regulate the keeping of animals in light of the changes to Anchorage's Stream Ordinance that were adopted in 2018.
5. The Animal Facility Evaluation noted a reduction in the number of Animal Facility Licenses. Separately, a similar reduction was seen in the industrial facility inventory prepared for Section 4.1 of this report. Work with the Anchorage Health Department to determine whether an actual reduction in the actual number of facilities has occurred.
6. The Animal Facility Evaluation suggested that there may be some unclear language in existing codes in regards to the number and type of animals that may be kept on a lot of a particular size. Work with the Anchorage Health Department to determine whether additional clarification is needed.

#### **4.4 Storm Sewer System Inventory and Mapping**

The Municipality and ADOT&PF annually update their MS4 inventory from construction record drawings as required under Permit part 3.4.1. This inventory includes:

- Pipe systems
- Inlets, catch basins and outfalls
- Structural stormwater treatment controls
- Receiving waters of the MS4
- Subbasin of each outfall
- MS4 roads and parking lots, and
- MS4 maintenance and storage facilities and snow disposal sites.

In 2016, the Municipality and ADOT&PF began work on additional requirements of the Permit Section 3.4.1 that must be completed within 3 years of the effective date of the Permit. These include developing a maintenance tracking base for the portions of the MS4 that are not covered by current databases, updating existing coverages, and collecting information related to OGSs outlined in Permit Section 3.4.1.7. Work was substantially completed in 2017, and in 2018 we continue to improve data sharing with the public.

These maps showing the combined ADOT&PF and MOA infrastructure, are updated regularly and are available at: <http://www.anchoragestormwater.com/maps.html> .

#### **4.5 Catch Basin and Inlet Inspections and Maintenance**

In compliance with Permit part 3.4.2 the permittees are required to conduct an inspection program to evaluate all permittee-owned or operated catch basins and inlets at least annually and take appropriate maintenance action based on these inspections. All principle MS4 maintenance agencies of the permittees have implemented an inspection and maintenance program.

Central Region Division's Maintenance & Operations (M&O), the maintenance arm for ADOT&PF's Anchorage MS4 jurisdiction, is continuing mapping efforts to correct existing ADOT&PF pipe mapping as well as capture new pipe features for inclusion in maintenance mapping sets. In 2018, ADOT&PF inspected 3,048 structures and cleaned 1319 catch basins. In addition, they inspected and cleaned 48 OGS. In all, they cleaned 20,085 linear feet of pipe in the MS4 system.

The Municipality's authorized MS4 maintenance agency for the Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA) implemented a comprehensive catch basin and inlet inspection and maintenance program for their service area. In 2018, 948 structures were inspected, and all but two, which did not have sediment, were cleaned.

The Municipality's authorized MS4 maintenance agency for the Girdwood Road Service Area (GSA) implemented a comprehensive catch basin and inlet inspection and maintenance program for their service area. In 2018, 45 catch basin and manhole structures were inspected, and none of them needed cleaned.

The Municipality's Anchorage Road and Drainage Service Area (ARDSA) comprising most roads in Anchorage not maintained by road service areas or owned by ADOT&PF continued its ongoing OGS and catch basin inspection and maintenance program. During 2018, 9770 controls were inspected, 272 OGS units and 4230 catch basins were cleaned.

The Permittees have collected fill rate data for their catch basins and have updated their respective cleaning schedules accordingly. This project was undertaken, for each the Municipality and ADOT&PF, by identifying representative basins according to land use and tracking their fill rates over a three year period. These rates can be applied to basins of similar character, and basins can be cleaned according to the rate-of-fill schedule unless information is gained about specific basins which supersedes the applied rate. Cleaning schedules are proposed to be set based on the following criteria.

- Material depth over a specified time period;
  - Basins where material is below 1" accumulation during a single year are proposed for inspection/cleaning every 4 years for inspection and cleaning
  - Basins where mater is above 1" during a single year are visited annually or bi-annually for cleaning/inspection;
- Location; a structure of a given configuration may have a different cleaning schedule when it is located at the bottom of a hill compared to an identical structure located at the top of a hill;

The fill rate data is provided in Appendix E1.

Additionally Permittees will develop SOPs for treatment and disposal of their catchbasin and OGS wastes by the fifth year of the permit.

## **4.6 Street and Road Maintenance**

### **4.6.1 Standard operating procedures**

Standard Operating Procedures are reviewed annually for Municipal and ADOT&PF street maintenance agencies. The full submission for them was in the 2016 annual report. Subsequent updates, when they are made, are included with the Operations reports in Section 1.

#### 4.6.2 Inventory of materials

Part 3.4.4.2 of the Permit requires permittees to “..maintain an inventory of street/road maintenance material, including use of sand and salt..” and report the inventory in the annual report. Road maintenance materials used by all Anchorage MS4 operators include primarily winter traction enhancing materials. The types of materials used vary somewhat from agency to agency and from street to street but mostly include application of traction-enhancing sands and a variety of deicers and anti-icers. The bulk of deicers are added to the sand prior to its application to the road surface to maintain sand fluidity in sanding vehicles and to help embed the sand particles in road ice. Sand gradations vary by agency with ADOT&PF operators typically using a somewhat finer gradation for their mostly higher speed roads than Municipal operators both for safety reasons and to improve stability of the sand on the road surface. Inventory tables of these materials are summarized in Table 5.1 below.

2: Table 5.1 – Anchorage MS4 Street Materials Inventory, 2018

Item	Type	Units	Amt. Stored	Amt. Ordered	Amt. Used	Storage Location
<b>ADOT&amp;PF</b>						
Sand	M&O spec.	ton	10,000	12,000	14,175	Anchorage
Sand	M&O spec.	ton	11,000	3,000	1101	Birchwood
Sand	M&O spec.	ton	14,000	4,000	3,468	Girdwood
NaCl	granular	ton	400	854	600	Anchorage
NaCl	granular	ton	0	0	0	Birchwood
NaCl	granular	ton	0	150	150	Girdwood
MgCl <sub>2</sub>	brine	gal	-	-	-	Girdwood
CaCl <sub>2</sub>	brine	tons			50	Anchorage
<b>MOA-CBERRSA</b>						
Sand	ARDSA spec.	ton	18,750	10,000	4091	Hiland
NaCl	granular	ton	10	20	10	Hiland
MgCl <sub>2</sub>	brine	gal	11,500	As needed	1467	Hiland
<b>MOA-ARDSA</b>						
Sand	ARDSA spec.	ton	10,000		8,000	Anchorage
NaCl	Granular	Ton	200		100	Anchorage
MgCl <sub>2</sub>	brine	gal	10,000		17,500	Anchorage
<b>MOA-GRSA</b>						
Sand	E-chips	Ton	922	800	769	Girdwood
NaCl	Granular	Ton	55	48	64	Girdwood
MgCl <sub>2</sub>	brine	gal	0	0	0	Girdwood

#### 4.6.3 Covered Sand Storage

Within four years of the effective date of the Permit the Permittees must complete an evaluation of the performance of the sand storage facilities developed during the second term at each of their primary materials storage locations. The evaluation must include an analysis of the amount of salt reduction resulting from the covered storage.

The Covered Sand Storage Performance Evaluation is attached as Appendix E2.

## 5 Street and Road Sweeping

### 5.1.1 Sweeping Management Plan

The permittees updated their Street Sweeping Management Plans to address recommendations of the *Anchorage Street Sweeping and Storm Water Controls: 2013 Performance Evaluation*. In the second term MOA and ADOT&PF submitted a combined plan, however, in the third term the permittees each developed individual sweeping plans, submitted with the 9-month report as required by Permit Part 3.4.5.1., to accommodate differences in their respective sweeping operations.

A list of roads where sweeping is technically infeasible was provided in the 2015 Annual Report, and it included alternative control measures as required by Permit Part 3.4.5.3. A visual inspection was performed to identify trash or other pollutant issues, and addressed and documented in the form of ditch cleaning and catch basin cleaning. Additional measures may be identified for these roads as needed.

In 2017 the Permittees began sweeping the streets according to the new schedules and sweeping plan. The 2018 sweeping activities were performed consistent with their new plan and schedule. The ADOT&PF and MOA Sweeping Reports are provided in Appendix E3.

### 5.1.2 Sweeping Assessment

Permit Part 3.4.5.4 requires the permittees to "...perform annual assessments of street sweeping effectiveness to minimize pollutant discharges to storm drains and creeks..." on the basis of the permit defined performance factors. The permittees have provided their 2018 summaries of street sweeping activities in their sweeping reports. Table 5.2 presents volumes of road materials picked up during the spring, summer, and fall sweeps.

3: Table 5.2 – Anchorage MS4 Sweeping Summary, 2018

<b>Spring 2018</b>						
	<b>EPA Category</b>	<b>Drainage Type</b>	<b>Street Miles</b>	<b>PickUp Miles</b>	<b>Total Volume* (cyds)</b>	<b>Unit Volume* (cyds/mile)</b>
<b>DOT**</b>	<b>Arterial</b>	OC	8.1	25.5	134.0	5.3
		CG	43.9	198.8	2838.0	14.3
		Mixed	48.5	188.2	3244.0	17.2
		<b>Total</b>	<b>100.5</b>	<b>412.5</b>	<b>6216.0</b>	<b>15.1</b>
	<b>Residential</b>	OC	55.8	146.4	792.4	5.4
		CG	3.6	21.6	164.0	7.6
		Mixed	26.9	107.7	514.0	4.8
		<b>Total</b>	<b>86.3</b>	<b>275.7</b>	<b>1470.4</b>	<b>5.3</b>
<b>ARDSA</b>	<b>Arterial</b>	Mixed	45.8	91.6	1926.0	21.0
	<b>Residential</b>	Mixed	580.6	1161.3	2215.0	1.9
<b>CBERRRSA</b>	<b>Residential</b>	OC	133.1	226.8	1449.0	6.4
		CG	38.7	77.5	675.0	8.7
		Mixed	29.0	58.6	294.0	5.0
		<b>Total</b>	<b>200.8</b>	<b>362.8</b>	<b>2418.0</b>	<b>6.7</b>

<b>Summer 2018</b>						
	<b>EPA Category</b>	<b>Drainage Type</b>	<b>Street Miles</b>	<b>PickUp Miles</b>	<b>Total Volume* (cyds)</b>	<b>Unit Volume* (cyds/mile)</b>
<b>DOT**</b>	<b>Arterial</b>	OC	8.1	25.5	41.0	1.6
		CG	43.9	198.8	725.0	3.6
		Mixed	48.5	188.2	570.0	3.0
		<b>Total</b>	<b>100.5</b>	<b>412.5</b>	<b>1336.0</b>	<b>3.2</b>
	<b>Residential</b>	OC	55.8	146.4	277.0	1.9
		CG	3.6	21.6	94.0	4.4
		Mixed	26.9	107.7	176.0	1.6
		<b>Total</b>	<b>86.3</b>	<b>275.7</b>	<b>547.0</b>	<b>2.0</b>
<b>ARDSA</b>	<b>Arterial</b>	Mixed	45.8	91.6	35.0	0.4
	<b>Residential</b>	Mixed	580.6	*	No Data Reported	*
<b>CBERRRSA</b>	<b>Residential</b>	OC	117.2	179.5	No Data Reported	
		CG	31.6	63.4	No Data Reported	
		Mixed	50.5	101.6	No Data Reported	
		<b>Total</b>	<b>199.4</b>	<b>344.4</b>	<b>No Data Reported</b>	

\*ARDSA and CBERRRSA Residential roads were swept on an "as-needed" basis to maintain a "visually clean" standard during the summer sweep period

<b>Fall 2018</b>						
	<b>EPA Category</b>	<b>Drainage Type</b>	<b>Street Miles</b>	<b>PickUp Miles</b>	<b>Total Volume* (cyds)</b>	<b>Unit Volume* (cyds/mile)</b>
<b>DOT**</b>	<b>Arterial</b>	OC	8.1	25.5	41.0	1.6
		CG	43.9	198.8	812.0	4.1
		Mixed	48.5	188.2	777.0	4.1
		<b>Total</b>	<b>100.5</b>	<b>412.5</b>	<b>1630.0</b>	<b>4.0</b>
	<b>Residential</b>	OC	55.8	146.4	289.0	2.0
		CG	3.6	21.6	72.0	3.3
		Mixed	26.9	107.7	199.0	1.8
		<b>Total</b>	<b>86.3</b>	<b>275.7</b>	<b>560.0</b>	<b>2.0</b>
<b>ARDSA</b>	<b>Arterial</b>	Mixed	45.8	91.6	52.0	0.6
	<b>Residential</b>	Mixed	580.6	1161.3	702.0	0.6
<b>CBERRRSA</b>	<b>Residential</b>	OC	57.3	104.6	126.0	1.2
		CG	16.1	32.3	48.0	1.5
		Mixed	127.2	254.9	204.0	0.8
		<b>Total</b>	<b>200.6</b>	<b>391.7</b>	<b>378.0</b>	<b>1.0</b>

\* Volumes represent only swept materials collected along reported/estimated Curb/PickUp Miles

OC = Open Channel Drainage  
CG = Curb and Gutter Drainage

\*\* Values reported by ADOT&PF in Anchorage MS4 Street Sweeping Report 2018

For 2018 ADOT&PF reported 100% completeness for all road segments and operational areas for the spring, summer, and fall sweep periods. ADOT&PF took and submitted pre- and post-sweep photos to support their assessment that roads were deemed 'visually clean' after sweeping. ADOT&PF also performed post sweep residual sampling in 2018 to better assess effectiveness of their sweeping practices.

CBERRRSA reported 100% completeness for the 2018 spring and fall sweep periods with no reported road segments or operational areas falling below permit requirements. For the 2017 summer sweep period CBERRRSA reported that roads were swept 'as needed' in order to maintain a 'visually clean standard' (as prescribed in the Street Sweeping Management Plan). CBERRRSA took and submitted before-sweep and after-sweep photos to support their assessment that roads were deemed 'visually clean' after sweeping.

ARDSA reported a sweeping completeness of 100% for designated streets within its administrative authority for the 2018 spring and fall sweep periods. For the 2018 summer sweep period ARDSA reported sweeping all of the Arterial type roads within its administrative authority, and swept Residential roads as needed in order to maintain a 'visually clean standard'.

In 2018, operators for the Girdwood Service Area (GSA) reported a total of 84 cubic yards of sediment collected for all sweeping operations in 2018. GSA reported 100% completeness for 2018 sweeping operations and all surfaces are swept until "visually clean".

## **5.2 Pesticide, Herbicide, and Fertilizer Applications**

The Municipal pesticide code is located in Title 15.75, available at:  
<http://library.municode.com/index.aspx?clientId=12717>.

It was updated during the second term to strengthen application restrictions, notifications, and certification requirements. These code requirements are enforced at Municipal facilities and an application log is maintained.

During 2018 permittees used pesticides in their greenhouses, the application log is presented in Appendix E4.

## **5.3 Storm Water Pollution Prevention Plans**

Stormwater Pollution Prevention Plans for certain permittee-owned activities were developed in the second term of the Permit term. Permittees developed plans for their material storage facilities, maintenance yards, and snow disposal sites. They are updated regularly and available at the italicized facilities for each owner in Table 5.3 and where practical at each facility site.

### **Inspection**

In 2018 inspections indicated by Stormwater Pollution Prevention Plans were performed at the facilities indicated in Table 5.3. Corrections were made as needed. The inspection reports are on file at each of the facility offices and provided in Appendix E5.

## **5.4 Training**

The Municipality and ADOT&PF met periodically during 2017 to coordinate their respective activities and discuss operational issues. Street managers from ADOT&PF and MOA participated in the 2018 Annual Meeting summarized in Section 2.4.

ADOT&PF crew members participated in a number of meetings which are identified in the MS4 Summary in Appendix A1.



Municipal Maintenance crews, at regular staff meetings, are given information regarding APDES Permit requirements in a variety of presentations and staff meetings to assist their understanding, decisions, and record-keeping about activities associated with Permit compliance. Training was conducted for:

- Ongoing at Regular Staff Meetings -Sweeping Practices/Protocol, project BMP's, SOP's and Spill Prevention/Response using SOPs and *Illicit Discharge Detection & Elimination, a Grate Concern* video, Excal Visual;
- 3/8/18 - APDES Annual Meeting
- MOA-ARDSA has 18 trained/certified AK-CESCL staff.
- The MOA maintains a YouTube channel for training, MOA Stormwater:  
[https://www.youtube.com/channel/UCdr0yQY12\\_mDVHTMaRVBFVw](https://www.youtube.com/channel/UCdr0yQY12_mDVHTMaRVBFVw).

Playlists are available for various training topics: Cold Weather/Climate, LID, Stormwater Management, Stormwater Construction Practices, Illicit Discharge, Inspection, Maintenance, Rain Gardens.

**4: Table 5.3 – MS4 Facilities with Storm Water Pollution Prevention Plans**

Facility	Location	Activities
<b>ADOT&amp;PF</b>		
Birchwood Maintenance	20651 Birchwood Spur Rd., Birchwood	Equipment & Materials Storage
Girdwood Maintenance	MP 90 Seward Hwy., Girdwood	Equipment & Materials Storage, Maintenance
<i>Anchorage Maintenance</i>	5300 E. Tudor Rd., Anchorage	Equipment & Materials Storage, Maintenance
O'Malley Snow Disposal	10675 Old Seward Hwy, Anchorage	Snow Storage
Tudor Snow Disposal	6110 Tudor Road, Anchorage	Snow Storage (operating under ARDSA SWPPP)
Hiland Road Snow Disposal	8500 Hiland Road, Eagle River	Snow Storage
<b>CBERRRSA</b>		
<i>Eagle River Maintenance</i>	8501 Hesterberg Ln, Eagle River	Equipment & Materials Storage
Chugiak Maintenance Facility	19200 Kerbow Ln., Chugiak	Equipment & Materials Storage
<b>ARDSA</b>		
<i>Kloop Maintenance Facility</i>	5701 Northwood Drive, Anchorage	Equipment Maintenance, Materials Storage & Snow Storage
Muldoon Maintenance & Storage Facility	7909 Boundary Ave., Anchorage	Equipment Maintenance & Materials Storage
Native Heritage Snow Disposal	8902 Heritage Center Drive, Anchorage	Snow Storage
Commercial Dr. Snow Disposal	2941 Commercial Drive, Anchorage	Snow Storage
Mountain View Snow Disposal	5100 Mountain View Drive, Anchorage	Snow Storage
Sitka Street Snow Disposal	1525 Sitka Street, Anchorage	Snow Storage
Tudor Snow Disposal	5300 Tudor Road, Anchorage	Snow Storage
C Street Snow Disposal	395 W 100 <sup>th</sup> Avenue, Anchorage	Snow Storage
Dowling Snow Disposal Site	6531 Spruce Street, Anchorage	Snow Storage

## 6 Illicit Discharge Management

### 6.1 Illicit Discharge Regulatory Strategy

The Municipal regulatory authority for water pollution control is found in Title 21.07.040, <http://library.municode.com/index.aspx?clientId=12717>. This code provides the basis for managing discharges to the storm sewer and waters of the U.S. It was updated effective January 2011 to conform to Permit requirements consistent with Part 3.5.1.1, provide a stormwater permit for discharges not covered under building permits, and accommodate CGP review authorities. It was carried forward into the Title 21 rewrite to its new position in Title 21.07.04. It is up to date for current permit requirements.

### 6.2 Illicit Discharge Reporting and Response

The Pollution Hotline, 343-4141, continues to operate with staff taking calls during regular business hours and retrieving messages from callers with complaints during non-business times. These hotline complaints are recorded into the Municipality's Infor (Hansen) Complaint Management System and forwarded to the appropriate department for response.

The Infor Public Sector System (a new version of the Hansen System software, implemented in 2015) is also available to community members on the Municipal Development Services Building Safety Land Use Code Enforcement website <http://www.muni.org/Departments/OCPD/development/BSD/Pages/CodeEnforcement.aspx> for on-line complaint recording and tracking.

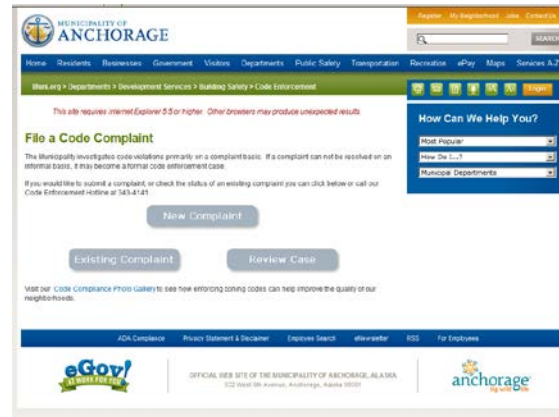


Table 6.1 (below) tallies complaints recorded through the on-line tracking system. Complaints were followed up within the required two working days, and resolved within a week. *Stormwater – construction* complaints were handled with the inspections in the Construction Site Management Program. *Prohibited discharges* complaints were handled as illicit discharge complaints.

5: Table 6.1 – Service Requests by Complaint Type, 2018

Department	Complaint Type	Number of Requests	Number Resolved
WMS	Stormwater – Construction	12	12
WMS	Prohibited Discharges – Private property	9	9
ROW	Prohibited Discharges – ROW	14	14

### Illicit Discharge mapping

Appendix F1 contains a location map of 2018 Anchorage prohibited discharge complaints. Inspectors visited all sites and, where appropriate, initiated clean-up. There were no recurrences associated with any of the discharges.

### **6.3 Dry Weather Screening**

The permittees continued to implement the re-designed dry weather screening program in compliance with Permit requirements. The 2018 report is provided in Appendix F2. In 2018, there were no exceedances for fecal coliform.

### **6.4 Spill Prevention and Response**

The permittees must prevent, respond to, contain and clean up all sewage and other spills that may discharge into the MS4. To meet this requirement the permittees convened a group of interested participants and mapped out the current Anchorage response. The information that came from these discussions was drafted into a Spill Response Program Agreement. The working group continues to coordinate the spill response program and they updated the Agreement in 2016 to reflect administrative changes.

#### **2018 Spill Response**

Spills that enter the MOA MS4 or receiving waters are reported to and archived by MOA WMS staff via Infor computer software. Spills that were contained and isolated to ground surfaces, but did not enter the storm drain system or were responded to by WMS staff are not included.

In 2018 the Municipality of Anchorage ARDSA staff reported responding to two spills. The first, a sheen on Chester Creek near the Sullivan Arena, was reported to ARDSA by ADEC at around 4:30pm on Sunday October 14<sup>th</sup>, 2018. Both ARDSA and ADEC staff responded the same day, with ADEC staff erecting an oil absorbent boom in Chester Creek around the storm drain outfall from which the sheen was emitting, and ARDSA staff working their way up the storm drain system upstream from the outfall. ARDSA staff noted a smell of what they thought was diesel fuel in the next 8 storm drain manholes upstream of the outfall, and placed absorbent booms in each. Inspections of additional storm drain structures upstream of those with evidence of contamination, yielded no other structures with a smell or other sign of fuel contamination. ADEC, ARDSA, and MOA ROW staff all investigated the surrounding area, but no active source of diesel or other fuel contamination was found. WMS staff interviewed employees from a few of the surrounding automotive businesses, but none reported any spills or knowledge of the event.

The second spill reported by ARDSA staff occurred on November 30<sup>th</sup>, 2018 when a 7.0 earthquake damaged and shifted two of four 10,000 gallon magnesium chloride (MgCl<sub>2</sub>) tanks located at ARDSA's Kloep Station facility, causing damage to the tank valves. Approximately 20,000 gallons of magnesium chloride spilled from the damaged valves, ran across a paved parking lot and into an adjoining unpaved snow disposal site within a matter of minutes. The material soaked into the ground and no liquid remained on the ground, making containment impossible. ADEC was contacted on December 1<sup>st</sup>, 2018, inspected the site and concurred that containment of the spilled material was not possible. There was no evidence suggesting that any material had drained into any MS4 or receiving water. ARDSA, in conjunction with Capital Projects, is developing a plan to better secure all tanks in place and provide a flexible plumbing system.

ADOT&PF reported one spill to an ADOT&PF owned MS4 in 2018. At approximately 7:15am on October 5<sup>th</sup>, 2018 a spill of approximately 75 gallons of diesel fuel occurred at the corner of King Street and Dimond Boulevard. The spill resulted from a two vehicle accident that punctured the saddle tank of a Charlie's Produce box truck. The fuel entered the ADOT&PF owned MS4 under Dimond Blvd. and into a wetland and sedimentation basin adjacent to Campbell Creek (behind Las Margaritas on Dimond and C St.). ADOT&PF hired NRC Alaska to clean the impacted storm drains, and ADEC staff placed and monitored absorbent

booms around the inlet to and three identified outfalls of the sedimentation basin to ensure that no diesel fuel migrated into Campbell Creek.

## 6.5 Used Oil and Toxic Materials

6.6 The permittees have an ongoing program for accepting hazardous materials including used oil and toxic waste at the Anchorage Regional Landfill and Central Transfer Station. Those locations will accept up to five gallons of household hazardous waste for free. Information and public education materials for this program are found on the Municipal Solid Waste Services homepage at <http://www.muni.org/departments/sws/pages/default.aspx>

## 6.7 Training

Training for identifying and eliminating illicit discharges, spills, and illicit connections to the MS4 was performed with the implementation of the Dry Weather Screening Monitoring as outlined in the Monitoring Plan.

Staff training was supported by:

- 2018 Watershed Update/APDES Annual Meeting: March 8, 2018. This half-day meeting reviewed the findings of monitoring, assessments, mapping, and new programs associated with the permit. It was attended by members of MOA, ADOT&PF, and the private sector.
- Storm Water Solutions, Storm Water Expo provided a variety of courses covering stormwater issues in April and October of 2018. WMS staff participated in Industrial Stormwater Litigation Trends and BMP Case Studies.
- WMS and ADOT&PF program leads attended Forester University's, March 29, 2018, Taming the Documentation Dragon, which covered MS4 management strategies.
- WMS staff was joined by Anchorage Waterways council for Forester University's Public Outreach, Crafting Messages that Work, April 26, 2018.
- WMS meets for bi-weekly staff meetings where members rotate responsibility for selection of videos covering relevant topics related to stormwater management. They include illicit discharge identification, cleanup, and education. A list of the videos on WMS's YouTube Training Channel: [https://www.youtube.com/channel/UCdr0yQY12\\_mDVHTMaRVBFVw](https://www.youtube.com/channel/UCdr0yQY12_mDVHTMaRVBFVw)

## 7 Public Education and Involvement

### 7.1 Public Education and Involvement

The Municipality, on behalf of the permittees, entered into an agreement with the Anchorage Waterways Council (AWC) to conduct the ongoing public education required by the Permit. A full account of education activities for 2018 is provided in Appendix G1.

### 7.2 Targeted Education and Training

See the following sections of this Annual Report regarding targeted training for permittee staff:

- Construction - Section 2.4

- New and Redevelopment - Section 3.5
- Stormwater Infrastructure - Section 4.10
- Illicit Discharge - Section 5.6

### **7.3 Annual Meeting**

The 2018 Annual Meeting provided information to participants about the activities related to the Municipal Separate Storm Sewer System (MS4) Permit. The meeting was held the morning of March 8th at the BP Energy Center and attended by over 70 people with an interest in stormwater management. The meeting used an “open house” format and included poster displays summarizing first year permit activities.

Information was presented about relevant topics including a proposed stormwater utility, watershed mapping, illicit discharge, and a DCM update. A description of the planned 2019 activities was provided. The final event of the meeting was a Q&A session where MOA, ADOT&PF staff and contractors were on hand to answer any questions about the items that were presented as part of the meeting. Presentation slides, program agenda, and poster summary are available in Appendix G2.

### **7.4 Bi-Annual Meetings**

Bi-annual meetings between the permittees and Alaska Department of Environmental Conservation (ADEC) were conducted in 2018 to provide a forum of discussion regarding permit activities and issues. These meeting summaries are available in Appendix G3.

### **7.5 Storm Water Website**

In 2018 the permittees provided access to their website found at

[www.AnchorageWatershed.com](http://www.AnchorageWatershed.com) or [www.AnchorageStormwater.com](http://www.AnchorageStormwater.com)

This homepage, contains all program information including draft and final project reports, data, map products, forms, permit applications, Storm Water Pollution Prevention Plan (SWPPP) guidance, and watershed plans. This site is accessible additionally through the municipal website:

[http://www.muni.org/Departments/works/project\\_management/WM/Pages/Default.aspx](http://www.muni.org/Departments/works/project_management/WM/Pages/Default.aspx)

## **8 Monitoring and Assessment**

### **8.1 Discharges to Water Quality Impaired Waters**

As listed in the Permit, pollutants of concern in Anchorage receiving waters include fecal coliform, petroleum products, and, for one lake, dissolved oxygen. The Municipality, acting on behalf of the permittees, will measure and evaluate the effectiveness of activities to control these pollutants of concern through the following means:

- Stormwater outfall monitoring
- Controls effectiveness monitoring
- Dry weather screening and follow-up
- Public education and involvement program

## 8.2 Monitoring Plan

The Municipality, on behalf of the permittees, updated the “Quality Assurance Project Plan” for third term activities. The Municipality, on behalf of the permittees, conducts monitoring for various purposes as summarized in Table 8.1.

6: Table 7.1 – Storm and Surface Water Monitoring Program Schedule

Monitoring Program Component	Proposed Sampling Dates				
	2015	2016	2017	2018	2019
Pesticide Screening	None	Aug-Sept	none	Aug-Sept	None
Dry Weather Screening	May-Sept	May-Sept	May-Sept	May-Sept	May-Sept
Control Measure Effectiveness	April-Nov	April-Nov	April-Nov	April-Nov	April-Nov
Snow Storage Site Retrofits	None	None	Mar-Jun	Mar-Jun	None
Stormwater Outfalls	Apr-Nov	Apr-Nov	Apr-Nov	Apr-Nov	Apr-Nov
LID Monitoring	May-Oct	May-Oct	May-Oct	May-Oct	May-Oct

### 8.2.1 Pesticide Screening

This sampling program is a continuation of the program started in the first permit term. Sampling was conducted in the second year and will be repeated in the fourth year of the permit term. The results of the second year were reported with the 2016 annual report. The fourth year is presented in Appendix H1.

### 8.2.2 Snow Storage Site Retrofits

The APDES stormwater discharge permit for the Anchorage MS4 requires monitoring of the retrofitted public snow storage sites relative to criteria already developed and published by the MOA Watershed Management Section regarding siting, design and operation of these types of facilities.

The permittees are required to perform monitoring at Tudor Road Municipal disposal site and Spruce Street Municipal snow disposal site twice during two years of the third permit term. Original plans to sample in 2016 were revised in response to lack of snow in the storage sites based on the low 2015-16 snow season. Sampling was performed in 2017, and repeated again in 2018. See data report in Appendix H2.

### 8.2.3 Storm Water Outfall Monitoring

Storm Water Outfall Monitoring was continued in 2018 according to the plan approved for the third term. Results are provided in Appendix H3.

An evaluation of monitoring results is required in years one and four of the Permit term with results provided with the applicable annual report. The first year evaluation discussing the effectiveness of street

sweeping to reduce turbidity and fecal coliform in the outfall and public education to reduce fecal coliform bacteria in the outfall was provided in the 2016 annual report. The fourth year is provided in Appendix H4

### **Monitoring Followup**

In 2018, the permittees continued the work initiated in 2017 to identify possible sources of TSS and fecal coliform that have been measured in the past. Staff walked the entire subbasin looking for activities or land uses within the drainage area that could be illegally or unintentionally introducing pollutants into the stormdrain system. The permittees also visually inspected catchbasins and the OGS upstream of the outfall. During these inspections, it was discovered that a cover was missing from a manhole. The manhole in question was recessed below existing grade potentially allowing dirt and other debris to flow directly into the stormdrain system. Maintenance staff replaced the missing lid and reconfigured the area around the manhole to eliminate the problem.

### **8.2.4 Quality Assurance Plan**

The Quality Assurance Plan (QAP) Appendix C for snow site monitoring activities has been updated to capture changes in staffing for key participants. The QAP excerpt is provided in Appendix H5.