2014 ANNUAL REPORT
APDES Permit No. AKS-052558

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Municipality of Anchorage

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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	Anchorages 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 APDES Permit No. AKS 05255-8, *"Authorization to Discharge Under the National Pollutant Discharge Elimination System"* (Permit), effective date February 1, 2010. This report satisfies the criteria set forth in Permit Section IV.C and is organized by program to demonstrate compliance with the *"Storm Water Management Program - Schedule for Implementation and Compliance"* presented in Section III of the Permit. 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) based on interests expressed during the public comment period associated with the draft Permit. The delegated activities are in the area of Public Education for General Audiences located in Permit Part II.B.6.

1. Program Coordination

1.1 Annual Meeting

The 2014 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 February 25th at the BP Energy Center and attended by over 100 people with an interest in stormwater management. The meeting used an "open house" format and included poster displays summarizing fourth year permit activities and a number of break-out sessions with presentations. The meeting also highlighted upcoming, fifth year activities and included a discussion of permanent stormwater controls, outfall disconnects, Design Criteria Manual (DCM) updates, and the Low Impact Development (LID) Implementation Plan. There was also a short discussion of the third term Permit. The power point slides, agenda, program, and poster summary are available in Appendix A1.

1.2 Quarterly Meetings

Quarterly Meetings between the permittees and Alaska Department of Environmental Conservation (ADEC) continued through the fifth permit year to provide a forum of discussion regarding permit activities and issues. These meeting summaries are available in Appendix A2.

1.3 SWMP

The Storm Water Management Plan (SWMP) actions and activities, defined in the Permit, are intended to reduce the discharge of pollutants from the MS4 into receiving waters to the maximum extent practicable (MEP). With this core goal in mind the permittees have implemented 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 our compliance reports. In 2013 a Permit Modification was made to the SWMP to assist the Permittees to better meet the intent of the Permit. Changes were made to: Part II.B.2(a), Part II.B.c(iv), Part II.B.2(f)iii, and Part IV.A.9. The Permit Modification was included in the 2013 Annual Report.

The compliance measures taken in 2014 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 permittees believe all fifth year Permit requirements were met on schedule.

Significant parts of this permit year were implemented by primary coordinating groups. They have provided 2014 MS4 Summaries for their areas of permit compliance. These are provided in Appendix A3.

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, and in 2014, include costs for the construction of ADOT&PF sand storage facilities. The 2014 costs are presented in Table 1.3

1: Table 1.1 – 2013 SWMP Program Costs

	ADOT&PF	Municipality	CBERRRSA	Total
Maintenance & Operations	$10.3M	$1.7M	$0.7M	$12.7M
Program Management/ Administration	$0.70M	$1.3M	-	$2.0M
	$11.0M	$3.0M	$0.7M	$14.7M

1.4 Storm Water Website

In 2014 the permittees provided access to their website found at www.AnchorageWatershed.com or www.AnchorageStormwater.com . This homepage, received a major update in 2013 to ensure it contains all program information including 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 .

1.5 Watershed Planning

The permittees are required to complete two watershed plans before the end of the second term of the Permit. 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

2 Construction Site Management

2.1 Regulatory Mechanism and Standards

Ordinance and/or Regulatory Mechanism

ADOT&PF Projects. ADOT&PF regulates stormwater management of their highway and aviation construction projects through its Standard Specification Section 641 Erosion, Sediment and Pollution Control for Highway Construction and Item P-157 for Erosion, Sediment and Pollution Control Airport Construction. These specifications sections were updated most recently on April 30, 2013. These stormwater specifications are contractually enforced. ADOT&PF provides guidance on contract stormwater administration to its project staff through the Alaska Construction Manual, Chapter 9.9. This manual was updated on July 7, 2014 and outlines procedures for implementing and monitoring construction SWPPPs.

Highway Standard Modification for Section 641 and Item P-157 for Airports, Erosion, Sedimentation and Pollution Control link:

http://www.dot.state.ak.us/stwddes/dcspubs/directives.shtml

Alaska Construction Manual link:

http://www.dot.state.ak.us/stwddes/dcsconst/pop_constman.shtml

Private Development. The Municipality regulates stormwater management at private construction sites Anchorage Municipal Code (AMC) Title 21. The Municipal ordinance 2010-81, adopted on December 7, 2010, amends Title 21 to require a permit, entailing plan review and approval, for ground disturbing activities. This ordinance adds a new section, AMC 21.67.09, to municipal code. A copy of the pertinent portion of ordinance 2010-81 (Section 47) was provided in the 2010 Annual Report

The new Title 21 carried this permit language forward. It can be found in AMC 21.07.04.E, https://www.municode.com/library/ak/anchorage/codes/code_of_ordinances?nodeId=TIT21LAUSPLNECOFFJA12014_CH21.07DEDESTNECOFFJA12014_21.07.040DRSTWATRERCOPRDI.

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.

Construction Storm Water Manual

ADOT&PF revised its Alaska SWPPP Guide in February 2011. Currently, the Alaska SWPPP updated its BMP Catalog to reflect emerging technologies and requirements of the 2011 ACGP. The revised edition will be published in 2015 upon receiving Federal Highway Administration (FHWA) approval.

Alaska SWPPP Guide Link:

http://www.dot.state.ak.us/stwddes/desenviron/pop_swppp.shtml

Private and Municipal Projects. The Municipality updated its Storm Water Plan Review and Treatment Guidance Manual (SWTPRGM) in September, 2010, to reflect the 2010 Alaska Construction General Permit and to include new items, such as a requirement for submittal of record drawings (as-builts) and to specify new inspection requirements. The manual is referenced both from AMC 21.67 (applicable to

private projects) and the new AMC 21.07, currently available by choice. It is also referenced in the Municipal Design Criteria Manual Chapter 2 (applicable to Municipal projects; see Section 3.1). A link to the manual is found at:
http://www.muni.org/Departments/works/project_management/Pages/StormWaterTreatmentPlanReview.aspx

The manual is scheduled to be revised again for greater clarity and for the purposes of consolidating and streamlining the various Municipal regulatory documents related to construction and new development. It is currently planned as Volume 2 of the Anchorage Stormwater Manual currently under development as part of the design criteria rewrite.

2.2 Plan Review and Approval

ADOT&PF Projects. During 2014, ADOT&PF reviewed and approved SWPPPs for 20 projects needing an NOI in the Municipality of Anchorage, 10 of which were carried over from the 2013 construction season. All of these projects were contracted and administered by ADOT&PF. A list is provided in Appendix B1. ADOT&PF is a co-operator on these 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 500 square feet. The types of projects reviewed include any work requiring a building permit, utility work, new subdivisions and road projects. On July 1, 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 2014, WMS reviewed, approved, and inspected approximately 452 Residential permits and 137 commercial buildings, and a number of commercial and government building additions. WMS also conducted Storm Water Pollution Prevention Plan reviews of 17 Municipal Projects.

The Municipal Development Services Division implemented a computer-based building permit administration system to track and document plan reviews and approvals in 2010. WMS continues to pursue applicable program updates in compliance with conditions of the Permit. Refer to Section 3.4.3 of this report for information regarding these updates.

2.3 Construction Site Inspections and Enforcement

2.3.1 Inspection and Enforcement Tracking

ADOT&PF Projects. A summary of inspection activities shows the ADOT&PF conducted 258 site inspections on 20 federally funded projects within the Municipality of Anchorage. ADOT&PF performed 204 site inspections on 16 highway projects ranging from major highway realignment to repaving arterial roads. 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 incidences 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 2014, 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.

Municipal: A summary of inspection activities reveals that 186 commercial site inspections and 450 residential site inspections were conducted during 2014 including 18 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 2014 no stop work orders were given. The records for site inspections along with associated compliance follow-up are available for review at WMS.

2.3.2 Enforcement Response Policy

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

- Alaska Construction Manual, Chapter 9.9 SWPPP & HMCP Implementation and Monitoring, updated on July 7, 2014
- Standard Specification Item 641 Erosion, Sediment and Pollution Control for Highway Construction, Section 641-3.04 Failure to Perform Work, updated on April 30, 2013
- Item P-157 for Erosion, Sediment and Pollution Control Airport Construction, Section 157-3.4 Failure to Perform Work, updated on April 30, 2013

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 Construction General Permit (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 after each inspection. The SWPPP Construction Inspection Report and the Corrective Action Log document the timely maintenance or corrective actions required.

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 actions 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/pop_constman.shtml

Highway Standard Modification for Section 641 and Item P-157 for Airports, Erosion, Sedimentation and Pollution Control link:

http://www.dot.state.ak.us/stwddes/dcspubs/directives.shtml

Municipal. The Municipality updated its escalating enforcement policy during the second year of the Permit. It was provided with the second annual report.

2.3.3 Construction General Permit Violation Referrals

ADOT&PF. ADOT&PF provides guidance to its project staff on reporting noncompliance in the Alaska Construction Manual, Chapter 9.9. In 2014, ADOT&PF did not file any reports of non-compliance to the ADEC on their projects within the Municipality of Anchorage.

Alaska Construction Manual link:

http://www.dot.state.ak.us/stwddes/dcsconst/pop_constman.shtml

Municipal. 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 2014, MOA did not file any reports of non-compliance to the ADEC.

2.4 Construction Program Education and Training

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.

ADOT&PF. ADOT&PF participated in the following trainings:

- Environmental Expo: This day-long information seminar incorporates a variety of speakers and topics related to all aspects of stormwater protection during construction. ADOT&PF held the Expo on April 14, 2014. One hundred and forty-nine DOT&PF Central Region Construction personnel attended.
- AK CESCL: Alaska Certified Erosion and Sediment Control Lead is a 2 day course. Per ADOT&PF' s Consent Decree with the EPA, all Project Engineers and SWPPP Inspectors must be AK CESCL certified or an approved equal. This program requires recertification every 3 years. Approximately 60 ADOT&PF Central Region Construction personnel participated in two of these courses, one course was held on April 22-23, 2014 and another on June 11-12, 2014..
- Alaska Forum On the Environment, 2014. The forum was held on February 3-7, 2014; Joshua James, ADOT&PF Central Region Stormwater Specialist attended.
- IECA 2014 Environmental Connection Conference: ADOT&PF continues to support training expenditures to keep our storm water staff current on changes in the industry. Two ADOT&PF

Central Region employees attended the four day 2014 Environmental Connection conference in Nashville, TN, sponsored by the International Erosion Control Association (IECA). The Conference was held on February 25-28, 2014; Mary Cunningham, ADOT&PF Central Region Stormwater Specialist and Laura Paul, ADOT&PF Central Region Construction Project Manager attended.

- ADOT&PF Statewide Annual Stormwater Field Review: ADOT&PF hired a consultant to work with key staff from the ADOT&PF Regions and Headquarters to review and evaluate our compliance program through a hands-on field audit of two active project sites in the Southcoast Region (formerly the Southeast Region). Twenty-one DOT&PF staff and contractors attended this field review in July 2014. After the review, we presented recommendations in the regional office for design engineers, construction managers, maintenance and environmental staff. The field review was conducted on July 8-10. Mary Cunningham, ADOT&PF Central Region Stormwater Specialist attended.
- BMP Development: A workgroup of ADOT&PF design, construction and maintenance staff developed standard drawings and specifications for best management practices in 2014. Forty storm water control measures were addressed, including erosion control measures, sediment control measures, and good housekeeping measures. Mary Cunningham and Joshua James, ADOT&PF Central Region Stormwater Specialists attended.

Municipality. The Municipality conducted or participated in the following training:

Stormtech Permanent Stormwater BMPs training: 2-13-14

2014 Watershed Update/APDES Annual Meeting: 2-25-14. This half-day meeting reviewed the findings of monitoring, assessments, mapping, and new programs associated with the permit. It also provided training (with continuing education units) and discussion groups for permanent BMPs available to meet retention/detention requirements.

AK CESCL: The Municipality ARDSA and CBERRRSA staff recertified its construction project staff through the AK CESCL training program on April 28-29, 2014. The course elements for this training were provided in the 2010 annual report and updated in the 2013 annual report.

Construction Inspector Training Academy, 4-07-14

Alaska Forum On the Environment, ADOT&PF, 4-14-14

Stormwater Solutions 9-25-14. Municipal Storm Water: Illicit discharge programs, storm water maintenance and management, and recent regulatory developments.

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. 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

Municipal Projects. The Municipality regulates permanent stormwater controls on its own projects through the Municipal DCM. This Permit requirement has been met by changes to the DCM as described in section 3.1.2.

Private Projects. The Municipality regulates permanent stormwater controls through the Anchorage Municipal Code Title 21, which refers to the DCM. This Permit requirement will be made by changes to Title 21 and the DCM prior to the Permit expiration date, as described in section 3.1.2.

3.1.2 Storm Water Design Criteria Manual

ADOT&PF Projects. The ADOT&PF continues to use the Alaska Highway Preconstruction Manual, Chapter 1120 (Elements of Design), Section 1120.5 (Drainage), and the Alaska Highway Drainage Manual as basic guidance documents. ADOT&PF Central Region Design Division does not have the authority to update or modify Department-wide manuals. ADOT&PF' s Division of Statewide Design & Engineering Services is responsible for and working on updating the Alaska Highway Drainage Manual to incorporate additional Storm Water Design Criteria. However, Central Region-specific modifications are made to standard specifications and design criteria as required to comply with the permit. The ADOT&PF Central Region Design Division is currently providing comments on proposed changes to Chapter 11 of the Alaska Highway Preconstruction Manual. Central Region Designers also use the Municipality's Drainage Design Guidelines, the Low Impact Development Design Guidance Manual, and the Stormwater Treatment Plan Review Guidance Manual (SWTPRGM) as needed to supplement the Alaska Highway Drainage Manual to comply with the MS4 Design Criteria.

Alaska Highway Preconstruction Manual link:

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

Alaska Highway Drainage Manual link:

http://www.dot.state.ak.us/stwddes/desbridge/pop_hwydrnman.shtml

Private and Municipal Projects. The Municipality establishes design criteria for permanent stormwater controls through Chapter 2 of its DCM, which is referenced from AMC Title 21. The DCM provides policy and incorporates by reference associated manuals, including the Drainage Design Guidelines, the Low Impact Development Design Guidance Manual, and the SWTPRGM. These manuals have all been updated between 2008 and 2010 to reflect current regulations and stormwater management practices; they may be found on the Municipal website.

With the requirement to retain a portion of stormwater runoff on site, the Municipality began a process to update and consolidate their various manuals into two comprehensive manuals incorporating related regulation, site-based practices, and operations and maintenance procedures. An internal review draft of the new DCM, and its companion the Anchorage Stormwater Manual, was completed in 2012. In 2013 and 2014 the current and proposed DCM and accompanying draft Stormwater Manual were reviewed through a volunteer public review process. This provided great opportunity to discuss stormwater goals with community design and construction practitioners and develop a new stormwater manual meeting both

community needs to the maximum extent possible while also complying with the requirements and compliance schedule specified in the Permit.

A Low Impact Development Implementation Plan for the new design criteria and stormwater manual has been developed, based on the 2013 Permit Modification which recognized a need to take a studied approach to LID projects in Anchorage. The Implementation Plan, provided in Appendix C1, 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 current permit term toward solutions in the form of detention and water quality treatment through LID/Green Infrastructure anticipated in the following permit term.

3.2 Low Impact Development Strategy and Pilot Projects

3.2.1 LID Incentives Strategy

The Municipality continues to sponsor an incentive program for rain gardens and LID projects supported by a grant from the United States Fish and Wildlife Service. In 2014, this program continued to support all types of vegetated LID techniques and offer a larger financial incentive for bigger and more varied rain garden projects; rain gardens with contributing areas greater than 2,000sqft qualify for a reimbursement of up to $5,000. In 2014, the program supported the construction of 4 new rain gardens throughout Anchorage. Incentive support includes, but is not limited to, technical guidance, manuals, brochures, websites, tours, financial cost sharing, hands-on workshops, private consultations, ongoing classroom support for school projects, and ongoing maintenance for public rain gardens.

The 1306 square feet of rain gardens constructed in 2014 capture and treat runoff from roughly 16,420 square feet of impervious surface. For a single half inch rain event, the rain gardens would collectively pool and infiltrate approximately 5,100 gallons of storm water throughout the Municipality, relieving a slight amount of pressure from the MS4. With 133 hours of in-kind labor, those who build rain gardens receive a good education on stormwater management and LID.

More information on the Anchorage Rain Garden Program can be found on the website www.AnchorageRainGardens.com. A map and more details on the constructed rain gardens can be found in Figure 3.1 and Table 3.1 below.

2 Figure 3.1: Map of Rain Gardens Constructed in 2014

3: Table 3.1 – Rain Gardens Incentivized in 2014

Type (Commercial, Residential)	Project Name	Impervious Contributing Area (sqft)	Final Garden Size (sqft)	In-kind Labor (hr)	Reimbursement	In-Kind Materials ($)	Total Garden Cost
R	Residential	830	100	0	$750.00	$780.00	$1,530.00
R	Residential	275	56	62	$663.54	$663.54	$1,327.08
C	Providence House	4515	400	0	$2,257.00	$9,243.00	$11,500.00
C	Alaska Baptist Family Services	10800	750	71	$1,688.91	$1,688.91	$3,377.82
Total	**4 Rain Gardens**	**16420**	**1306**	**133**	**$5,359.45**	**$12,375.45**	**$17,734.90**

3.2.2 Pilot projects

The ADOT&PF and the Municipality constructed five projects as required by Part II.B.2.c of the Permit for incorporation of LID. The Municipality conducted hydrologic performance evaluations for each completed project. Results of the evaluation may be used to revise the design criteria described in Section 3.2.

ADOT&PF Projects. ADOT&PF Central Region's three pilot projects include West Dowling Phase I and II, the Seward Highway Tudor to Dowling project, and the AMATS Muldoon Road pedestrian & landscaping, Phase III project. West Dowling Phase I and the Muldoon Road landscaping project are complete and monitoring was performed at these sites during the summer season of 2013. The Seward Highway Tudor to Dowling project was completed early 2014 and monitored through the wet season.

Municipal Projects. The Municipality constructed a Rain Garden at Taku Park, built in 2007 in anticipation of the new permit, and consistent with the pilot project requirement. In 2012 a monitoring station was set up to track its performance. Also in 2012, the Municipality designed and constructed a LID project at the Russian Jack Springs Park ballfield where site redevelopment was under way. The site parking lot incorporated a subsurface site runoff infiltration gallery as well as a cold climate trial of pervious asphalt over a portion of the parking surface.

Project descriptions and initial monitoring for the LID pilot projects were provided in the 2012-13 annual reports. Additional monitoring for recently completed sites and follow up for previously monitored site(s) is provided in Appendix C2. Information learned from pilot projects will be used as described in the implementation plan presented in Section 3.1.

3.2.3 Rain Gardens

This Permit requirement was met through construction of 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 were quantitatively evaluated with the results included in the LID Monitoring Report and appendices discussed in Section 3.2.2.

Other rain gardens were constructed in neighborhoods around Anchorage as part of the LID incentives program discussed in Section 3.2.1. Still others were constructed as part of private developments and identified through the LID/Green Infrastructure Working Group. In the interest of developing a performance record for various types of controls, private projects will be tracked/monitored as discussed in the Implementation Plan described in Section 3.1.2.

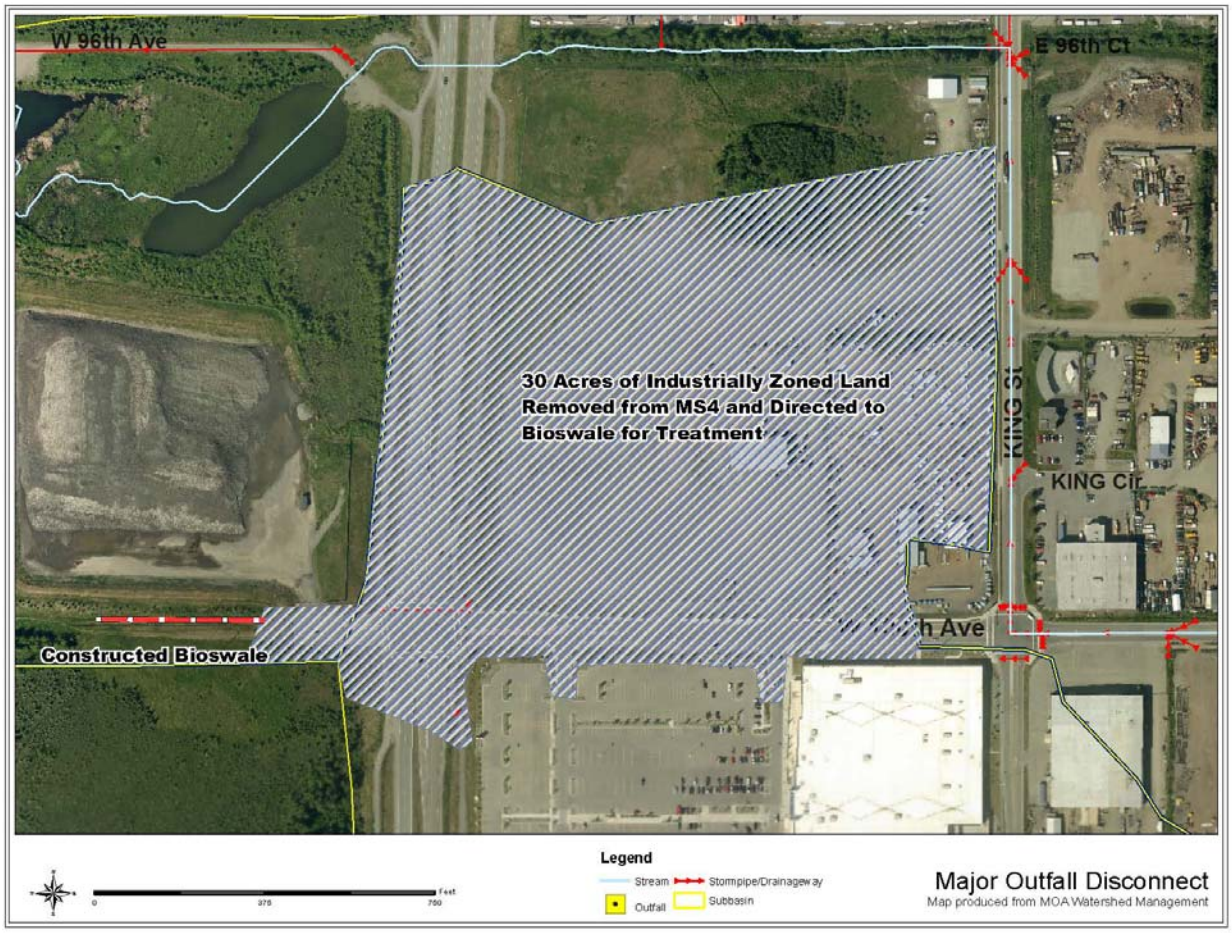
3.2.4 Riparian Zone Management

During the 5-year permit term the permittees disconnected one major outfall as well as additional minor outfalls. Over 30 acres of industrial-zoned area was removed from the portion of the MS4 draining subbasin 1230. This new outfall is in the vicinity of the intersection of 100th Avenue and C Street (Figure 3.2). The industrial area and adjacent roadways in this area are now routed to a constructed bioswale for water quality treatment, before draining to adjacent wetlands. Bioswales were also constructed to treat stormwater discharges from subbasins 1442 and 884). These subbasins and outfalls are adjacent to one

another and drain 53 acres of residentially-zoned land in the Bayshore West Subdivision to Campbell Lake (Figure 3.3).

The stormwater disconnects discussed in the 2013 Annual Report were delayed in 2014 due to unanticipated issues in the bid/contracting/construction processes. It is anticipated these disconnected outfalls will be constructed in 2015.

4: Figure 3.1 – Major Outfall Disconnect



Riparian Area Protection

The permittees are required to provide a list of riparian areas prioritized for protection or acquisition. The list and maps were prepared as part of an overall wetlands protection program for all areas in the Municipality of Anchorage. Acquisition is implemented through the debit/credit program for wetlands development. The lists and maps are provided in Appendix C3.

5: Figure 3.2 –Outfall Disconnect

3.2.5 Parking Lot Retrofit

Parking lot retrofits were included in three pilot projects discussed in Section 3.2.2. The Taku Park and Russian Jack Park parking lot upgrades for the Municipality and the Dowling Road project for ADOT&PF were reported in 2013 in the LID Monitoring Report.

An additional parking lot upgrade at the Ship Creek Hatchery was identified from ADOT&PF in 2014. Results from the analysis are included in the LID Monitoring Report in Appendix C2.

3.2.6 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 also working to establish direction and guidelines on using LID on all projects where it is feasible.

Municipality. In 2013, the Municipality of Anchorage began evaluating the feasibility of incorporating rainfall runoff techniques in the repair and construction of public roads, streets, and parking lots. The Request for Proposal (RFP) documents that initiate these projects were modified to include the following language:

- *Evaluate the feasibility of incorporating Low Impact Development (LID) runoff reduction techniques. LID measures to be considered may include, but not be limited to: canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, rain gardens, infiltration trenches, extended filtration and/or evapotranspiration and/or any combination of these practices. Where such practices are found to feasible they should be incorporated in the project design.*

Within its transportation construction program, the MOA has had a recent focus on the rehabilitation of existing roadways rather than re-construction of existing roads and the construction of new roads. This has had the effect of reducing the number of projects with scopes broad enough to include changes to the drainage system. During 2014 the MOA did manage to include a number of rainfall reduction techniques on the 35th Avenue Project. These measures included canopy interception through maximizing tree preservation and the construction of bioswales to treat stormwater discharges flowing to Fish Creek. Appendix C4 documents the projects the MOA considered for LID feasibility and those outcomes.

3.3 Permanent Storm Water Controls Plan Review and Approval

ADOT&PF Projects. ADOT&PF continues to review all projects during the three phases of the project development:

- Local Review (approximately 30 to 50 percent complete)
- Plans-In-Hand Review (approximately 75 percent complete)
- Pre-Plans, Specification and Estimate (Pre-PS&E) Review (approximately 95 percent complete)

In addition, on larger projects, an Erosion and Sediment Control Plan (ESCP)-focused review occurs after the Pre-PS&E review to ensure stormwater issues are addressed. Plan reviews are conducted by design and environmental staff, as well as the Central Region Hydrologist.

Private Development. The Municipality continues to review all work requiring building permits and new subdivisions for permanent stormwater runoff practices. Issuance of a building or stormwater permit will serve as written approval as specified by the APDES MS4 Permit.

Municipal Projects. The Municipality performs a regulatory review of all Municipal projects 10,000sf and greater in compliance with our MS4 Permit requirement under part II.B.2.d)i and the ADEC Construction General Permit. The reviews encompass construction erosion control measures and permanent stormwater management practices. 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

Private Storm Water Controls. In 2010, WMS began developing a database for the new and existing stormwater controls. As-built drawings of private stormwater controls, certified by a Professional Engineer, are required prior to closing a Municipal Building Permit for new and redeveloped properties. These as-builts are scanned and recorded into the database.

Public (ADOT&PF and Municipal) Storm Water Controls. In 2010, the Municipal Street Maintenance Division acquired and began implementing an asset management database that will be used to inventory and track municipally- and state-owned stormwater controls. In 2011-12, the Street Maintenance Division

mapped stormwater controls using GPS instruments and populating the asset management database. This inventory and tracking database will allow Street Maintenance to access information about the condition and maintenance requirements of the stormwater controls owned by the permittees.

In 2011, as part of its review and approval process described in the SWTPRGM, the Municipality began requiring submittal of an Operations and Maintenance (O&M) Manual for private stormwater controls. This was a first step toward alerting property owners of their responsibilities in maintaining stormwater controls.

3.4.2 O&M Agreements

Starting in early 2015, WMS is 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 will be scanned and entered into the tracking database. WMS also has prepared an inspection form (Appendix C5) for use by property owners to annually demonstrate their BMP maintenance.

3.4.3 Inspection and Enforcement

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, and as part of a Permit requirement described in an earlier section, the Municipality now requires as-built (record) drawings of all constructed stormwater controls that were approved under a Municipal permit. As-builts are scanned and entered into the tracking database described above

In 2014 the Municipality of Anchorage continued to make progress in the inspection and enforcement of permanent stormwater controls. Section II.B.2(f) of the 2013 permit modification initiated a change so that all components of the program will commence at the same time. Previously, inspection and enforcement began before there was a binding maintenance requirement.

In 2014, changes to the municipal building permitting system were finalized that will require: 1) the receipt of a surveyed as-built of permanent stormwater controls, 2) a final inspection of stormwater controls, and 3) the recording of a maintenance agreement with the Municipality for the upkeep of these controls prior to the issuance of a Certificate of Occupancy (CO)

The draft of the recorded maintenance agreement the permittees included in last years permit was adopted and is currently in use by the MOA The Municipality intends to treat installed permanent stormwater controls as a “use permit” similar to elevators and will require annual re-certification and periodic inspections based on site sensitivity and past compliance. Maintenance records will be required from the owner/operator prior to annual renewal. High priority sites, requiring, annual inspection, will be identified based on Checklist #3 of Building Safety Handout AG 21.

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.

Municipality. MOA design and construction staff received training on Stormwater Post-Construction BMPs, and LID at a number of presentations throughout the year as demonstrated in Section 2.4.

4 Industrial and Commercial Discharge Management

4.1 Inventory of Industrial and Commercial Facilities

An inventory and map of facilities discharging to the MS4 has been updated. 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. The inventory and map are provided in Appendix D1.

4.2 Snow Disposal Sites

Part II.B.3.b) requires permittees, within one year of the Permit effective date, 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 2014, the permittees have no changes to the map and list of all permittee-owned and all known privately-owned snow disposal sites submitted in the 2011 annual report.

Based on the inventory and information collected over several past permit years 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

4.3 Animal Facilities

The Municipality evaluated whether to further regulate commercial animal facilities through ordinance or other regulatory mechanism to prevent animal waste from entering the MS4 and protect water quality. While this project is due in year three, the Municipality completed it ahead of schedule. The report, submitted in the 2011 annual report summarizes the decisions and actions taken by the Municipality to further regulate through performance standards the animal facilities in Anchorage. An updated list for 2014 is included in Appendix D1.

5 Stormwater Infrastructure and Street Management

5.1 Storm Sewer System Inventory and Mapping

Under Permit part II.B.4.a) permittees "..must update current records to develop a comprehensive inventory and map of the MS4s.." within three years of the effective date of the Permit. Inventory and maps must cover the entire MS4 and provide location, attribute and spatial reference information at minimum for all of the following MS4 features:

- Pipe systems
- Inlets, catchbasins 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

The Permit requires that the mapping be sufficiently complete and connected to establish relative spatial relationships. For example, outfalls must be associated with receiving waters (requiring outfalls and receiving waters to be mapped and spatially referenced to each other). Similarly, drainage systems must be spatially related to outfalls and sufficiently complete (include enough connecting information, including pipes, ditches, and natural drainage features) to allow mapping the entire area (subbasin) that contributes to its associated outfall. Finally, the Permit also requires mapping of all MS4 permittee-owned roads and parking lots as they relate to the Anchorage MS4.

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

5.2 Catch Basin and Inlet Inspections and Maintenance

In compliance with Permit part II.B.4.b) the permittees were required to "..initiate an inspection program to inspect all permittee-owned or operated catch basins and inlets at least annually and take appropriate maintenance action based on these inspections.." within two years of the effective date of the Permit. All principle MS4 maintenance agencies of the permittees have taken preparatory steps in development of such an inspection and maintenance program and, in fact, began implementation of select inspections and maintenance activities in 2010 as part of those program development efforts.

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 2013, ADOT&PF inspected 3140 structures and cleaned 1586 catchbasins. In addition, they inspected and cleaned all 48 OGS. In all, they removed approximately 868 cubic yards of material from the MS4 system.

The Municipality's authorized MS4 maintenance agency for the Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA) was also able to implement a comprehensive catch basin and inlet inspection and maintenance program in 2010. In 2014, 1,058 structures were inspected, and 981 catchbasins including 11 oil & grit separators (OGS) were cleaned. CBERRRSA added 29 new structures and 4 recently located structures to its mapping inventory in 2014.

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 catchbasin inspection and maintenance program. During 2013, all controls were inspected, all 242 OGS units and 1336 catchbasins were cleaned.

5.3 Street and Road Maintenance

5.3.1 Standard operating procedures

Standard Operating Procedures were reviewed in 2014 for Municipal and ADOT&PF street maintenance agencies. Existing practices are updated as needed to reflect changes. No changes were made.

5.3.2 Inventory of materials

Part II.B.4.c)(ii) 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.

6: Table 5.1 – Anchorage MS4 Street Materials Inventory, 2014

Item	Type	Units	Amt. Stored 12/31/2014	Amt. Ordered 2014	Amt. Used 2014	Storage Location
ADOT&PF						
Sand	M&O spec.	ton	8,000	9982	10,000	Anchorage
Sand	M&O spec.	ton	0	4990	3,000	Birchwood
Sand	M&O spec.	ton	2,000	10,000	8,000	Girdwood
NaCl	granular	ton	1000	1700	500	Anchorage
NaCl	granular	ton	0	0	0	Birchwood
NaCl	granular	ton	0	300	300	Girdwood
MgCl^2	brine	gal			6500	Girdwood
MOA-CBERRRSA						
Sand	ARDSA spec.	ton	25,250	16,000	4,334	Hiland
NaCl	granular	ton	3	30	30	Hiland
MgCl^2	brine	gal	7,900	As needed	17,338	Hiland
MOA-ARDSA						
Sand	ARDSA spec.	ton	10,000	10,000	10,000	Anchorage
MgCl^2	brine	gal	10,000	10,000	10,000	Anchorage

5.3.3 Covered Sand Storage

Part II.B.4.c)(iii) of the Permit requires permittees to "..build covered storage facilities ['sand sheds'] at each of their primary materials storage locations.." within five years (per permit modification) of the effective date of the Permit. All principle Anchorage MS4 operators have met this goal.

ADOT&PF. Construction was completed for the Girdwood sand storage facility in 2013, and for the Anchorage, and Birchwood sand storage facilities in 2014, They are all in operation.

MOA-CBERRRSA. In 2014 for two covered storage units located at CBERRRSA's Eagle River, Highland Rd. and Chugiak facilities. The facilities were completed in December 2014 and are in the process of being placed in operation.

MOA-ARDSA. ARDSA completed design of its heated sand shed in 2005 and completed construction at its main Kloep Station in late 2006. The facility has been fully operational since that time and features conveyor truck loading and automated liquid deicer application, reducing total salt loading on winter sand by about a factor of 5. This operational structure brings MOA-ARDSA into full compliance with this Permit requirement.

5.4 Street and Road Sweeping

5.4.1 Sweeping Assessment

Part II.B.4.d 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 the 2014 summary of street sweeping activities in Appendix E1. Excerpts from this report are provided in Table 5.2 summarizing permittees' sweeping performance and effectiveness,

In 2013 the permittees submitted the *Anchorage Street Sweeping and Storm Water Controls: 2013 Performance Evaluation*, as an updaste to the report previously submitted in 2002. The permittees performed an assessment of control practices and reviewed sampling efforts and studies performed under earlier Anchorage MS4 permit terms.

7: Table 5.2 – Anchorage MS4 Sweeping Summary, 2014

Spring 2014

	EPA Category	Drainage Type	Street Miles	PickUp Miles	Total Volume* (cyds)	Unit Volume* (cyds/mile)
DOT	**Arterial**	OC	8.1	16.1	190.0	11.8
		CG	39.6	103.8	2609.0	25.1
		Mixed	44.0	121.3	3018.0	24.9
	Residential	OC	51.7	103.3	833.0	8.1
		CG	4.1	12.0	224.0	18.7
		Mixed	28.4	59.0	518.0	8.8
ARDSA	**Arterial**	OC	0.0			
		CG	40.8	131.8	2772.1	21.0
		Mixed			307.8	
	Residential	OC	112.5		5.1	
		CG	464.7	837.6	831.9	10.5 [1]
		Mixed			5498.9	
CBERRRSA	**Residential**	OC	140.8	52.5	160	3.0
		CG	15.9	31.9	254	8.0
		Mixed	42.7	85.9	213	2.5

Summer 2014

	EPA Category	Drainage Type	Street Miles	PickUp Miles	Total Volume* (cyds)	Unit Volume* (cyds/mile)
DOT	**Arterial**	OC	8.1	16.1	60.0	3.7
		CG	39.6	103.8	533.0	5.1
		Mixed	44.0	121.3	602.0	5.0
	Residential	OC	51.7	103.3	741.0	7.2
		CG	4.1	12.0	130.0	10.9
		Mixed	28.4	59.0	492.0	8.3
ARDSA	**Arterial**	OC	0.0			
		CG	40.8	131.8	126.7	1.0
		Mixed			10.8	
	Residential	OC	112.5		2.7	
		CG	464.7	837.7	27.2	0.3 [1]
		Mixed			104.6	
CBERRRSA	**Residential**	OC	140.8	52.5	No data reported	
		CG	15.9	31.9	No data reported	
		Mixed	42.7	85.9	No data reported	

Fall 2014

	EPA Category	Drainage Type	Street Miles	PickUp Miles	Total Volume* (cyds)	Unit Volume* (cyds/mile)
DOT	**Arterial**	OC	8.1	16.1	59.0	3.7
		CG	39.6	103.8	642.0	6.2
		Mixed	44.0	121.3	802.0	6.6
	Residential	OC	51.7	103.3	707.0	6.8
		CG	4.1	12.0	138.0	11.5
		Mixed	28.4	59.0	495.0	8.4
ARDSA	**Arterial**	OC	0.0			
		CG	40.8	131.8	312.1	2.4
		Mixed			12.6	
	Residential	OC	112.5		2.6	
		CG	464.7	837.7	363.6	4.6 [1]
		Mixed			2146.6	
CBERRRSA	**Residential**	OC	113.8	0.0	0	
		CG	4.6	9.1	11	1.2
		Mixed	80.4	161.2	41	0.3

1..Inferred results: All ARDSA data reported in mixed drainage format. <10% data suitable for drainage type inference and analysis.
* Volumes represent only swept materials collected along reported/estimated Curb/PickUp Miles
OC = Open Channel Drainage
CG = Curb and Gutter Drainage

ADOT&PF reported 100% completeness for all road segments and operational areas for the spring, summer, and fall sweep periods. CBERRRSA reported 100% completeness for the spring and fall sweep periods with no reported road segments or operational areas falling below permit requirements. For the 2014 summer sweep period CBERRRSA reported that roads were swept 'as needed' (as prescribed in the Street Sweeping Management Plan) and did not report any volumes of swept materials. This suggests that only open channel type roads swept with kick broom type sweepers were swept in the summer period. ARDSA reported a sweeping completeness of 100% for designated streets within its administrative authority for the spring and fall sweep periods, though performance reports submitted by ARDSA did not have volume totals reported for a few of the sweep sectors. ARDSA reported this was a result of poor reporting by sweeper operators, and that all designated roads were swept according to frequency category requirements for the spring and fall sweep periods. For the summer sweep period, ARDSA reported sweeping all of its arterial and collector type roads, and reported sweeping its residential roads 'as needed'.

5.5 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 has been updated to strengthen application restrictions, notifications, and certification requirements. These code requirements are enforced at Municipal facilities and an applications log is maintained.

5.6 Storm Water Pollution Prevention Plans

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

Inspection

In 2014 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.

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

Facility	Location	Activities
ADOT&PF		
Birchwood Maintenance	20651 Birchwood Spur Rd., Birchwood	Equipment & Materials Storage
Girdwood Maintenance	MP 90 Seward Hwy., Girdwood	Equipment & Materials Storage, Maintenance
Anchorage Maintenance	5300 E. Tudor Rd., Anchorage	Equipment & Materials Storage, Maintenance
O'Malley Snow Disposal	O'Malley & O Seward Hwy, Anchorage	Snow Storage
Tudor Snow Disposal	Tudor Road, Anchorage	Snow Storage (operating under ARDSA SWPPP)
Hiland Road Snow Disposal	Hiland Road, Eagle River	Snow Storage
CBERRRSA		
Eagle River Maintenance	8501 Hesterberg Ln, Eagle River	Equipment & Materials Storage
Chugiak Maintenance Facility	19200 Kerbow Ln., Chugiak	Equipment & Materials Storage
ARDSA		
Kloep Maintenance Facility	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
Northwood Snow Disposal Site	Northwood Drive, Anchorage	Snow Storage
Commercial Dr. Snow Disposal	Commercial Drive, Anchorage	Snow Storage
Mountain View Snow Disposal	Mountain View Drive, Anchorage	Snow Storage
Sitka Street Snow Disposal	Sitka Street, Anchorage	Snow Storage
Tudor Snow Disposal	Tudor Road, Anchorage	Snow Storage
C Street Snow Disposal	C Street, Anchorage	Snow Storage
Dowling Snow Disposal Site	Dowling Road, Anchorage	Snow Storage

5.7 Training

The Municipality and ADOT&PF met periodically during 2014 to coordinate their respective activities and discuss operational issues. Municipal and ADOT&PF Maintenance crews were 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. A summary of ADOT&PF and Municipal training meetings are summarized in Section 2.4.

6 Illicit Discharge Management

6.1 Illicit Discharge Regulatory Strategy

The Municipal regulatory authority for water pollution control is founded on Title 21.67, 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 the latest MS4 Permit requirements, 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.

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 Hansen Complaint Management System and forwarded to the appropriate department for response.

The Hansen System 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 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.

9: Table 6.1 – Service Requests by Complaint Type, 2013

Department	Complaint Type	Number of Requests	Number Resolved
WMS	Stormwater – Construction	18	18
WMS	Prohibited Discharges – Private property	12	12
ROW	Prohibited Discharges – ROW	12	12

Illicit Discharge mapping

Appendix F1 contains a location map of 2014 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 new Permit requirements. The 2014 report is provided in Appendix F2. In 2014, there were no threshold exceedances, and no outfalls required follow-up action, but the monitoring team submitted a list of damaged and clogged outfalls for followup by maintenance personnel.

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 current Anchorage response. The information that came from these discussions was drafted into two documents. The Spill Response Program Agreements were provided in the 2011 annual report. The working group continues to coordinate the spill response program and will update it in 2015 to reflect administrative changes.

2014 Spill Response

In 2014 the Municipality of Anchorage responded to one spill. The spill was of an unknown amount of hydraulic fluid from an Alaska Waste garbage truck. The spill occurred on Whispering Loop, on the street in front of 6594 Whispering Loop in Anchorage. Alaska Waste staff handled initial site containment and cleanup, while ADEC and MOA staff inspected manholes and catch basins 'downstream' of the spill to assess how much of the storm drain system had been contaminated. Alaska Waste was contracted with Emerald Services Inc. and authorized them to clean up the necessary storm drain structures and dispose of the contaminated materials.

6.5 Used Oil and Toxic Materials

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

6.6 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 videos on illicit discharge detection and elimination, stormwater detention practices, and emergency operations training.

7 Public Education and Involvement

Education and training for the public and for permittee staff is discussed in this section. For Permit requirements addressing the webpage and annual and quarterly meetings, see Section 1 of this Annual Report.

- **Ongoing Education and Public 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 copy of the scope of work for this sole-source agreement was provided in the 2010 Annual Report. A full account of education activities for 2014 is provided in Appendix G1 and summarized below.

In 2014, AWC continued to work with schools and youth in a variety of programs, neighborhoods, property managers, residents, businesses, and local citizens to educate and improve environmental stewardship of waterways in the community by way of several different programs.

Fecal coliform bacteria issues: The Scoop the Poop (STP) committee, convened by AWC, is a long-standing dedicated group formed from a variety of stakeholders whose sole focus is to reduce fecal coliform bacteria in local waterways. In conjunction with this objective, AWC used a FY 2014 ACWA (Alaska Clean Water Actions) grant awarded by the Alaska Department of Environmental Conservation (ADEC) to review locations, conditions, and usage of "poop waste stations" throughout the Municipality in order to assess their effectiveness in reducing fecal coliform bacteria in creeks. The ADEC grant ran from July 1, 2013, through June 30, 2014. The existing map on the AWC website was updated (anchoragecreeks.org/pages/scoopthepoop_about.php), and it now depicts the 44% increase (58 to 103) increase in the previous number of "poop waste stations". The dramatic rise was partly a result of doing a comprehensive inventory of stations and purchasing 18 Mutt Mitt ® stations that were installed at new locations or those needing replacements. In addition, 80,000 Mutt Mitt ® bags were bought with grant funds for distribution by the Municipality's Parks and Recreation Department (as they stock the stations), and 25 new acrylic rack card holders with a newly designed educational rack card were attached to 25 high-use Mutt Mitt ® stations. Inventory sheets were prepared for all stations and provided to the MOA Parks and Recreation Department and Watershed Management Services (WMS). Examples of the deliverables for the ADEC grant are in the Appendix.

In addition to pet waste, AWC has taken the lead in working to reduce another source of fecal coliform bacteria from humans feeding waterfowl. Fecal coliform bacteria testing by AWC has resulted in extremely high counts, particularly in Fish Creek, due to the concentration of geese and ducks in summer and ducks

in winter who are being hand-fed by humans. AWC was able to get considerable publicity on this issue over the year (in the Appendix), but the problem along with hundreds of ducks remains. This is a huge problem that needs to be worked on now.

"Creeks as Classrooms" is a program that has been funded by ConocoPhillips for 5 years where AWC works year-round with Anchorage students and teachers and other youth groups on creek stewardship, water quality monitoring, recycling, and the science of life in the creeks. Each of the past 5 years has seen a remarkable increase in the number involved—AWC is reaching out and working with between two and four thousand K-University youth annually. The 2014 database and pictures are in the Appendix.

AWC was asked by Watershed Management Services (WMS) in 2014 to compile the recommendations from over 2 years of work by a multi-group task force that was gathering and updating information on the Chester Creek watershed in order to complete a current watershed plan. A draft watershed plan was completed and distribution began in September 2014 to appropriate people and commissions for comments. It has been presented to the Watershed and Natural Resources Commission (WNRC) where it received a resolution endorsing it dated 10/31/14, and it will be presented to the Planning and Zoning Commission on February 9, 2015, before going to the MOA Assembly for adoption. Copies were mailed to all MOA Community Councils for comments, and the Northeast Community Council requested a presentation, made by Cherie Northon, on January 15, 2015. The draft watershed plan and the WNRC resolution are in the Appendix.

During the 5th year of the current APDES permit, AWC conducted a repeat comparative survey on public perception of watersheds from stormwater education as was done in 2010 in order to evaluate the progress of the outreach programs. An executive summary and conclusion are included herein, and the final report will be completed and available shortly.

The ongoing effort to eradicate Reed Canarygrass on upper Chester Creek (by tarping the invasive vegetation) also provided an opportunity for outreach about creek health and invasive plants to residents in the adjacent area. It is also resulting in new information about the tenacity of this invasive and how experimental programs to control it may or may not be effective.

One other issue that AWC tackled this year involves monofilament fishing line that is discarded (along with other fishing and regular trash) at local fishing sites, such as Ship Creek, Campbell Creek, and Jewel Lake. For United Way's "Day of Caring" on September 10, 2014, AWC organized a cleanup of several areas by Alyeska Pipeline Services employees and over 20 miles of monofilament were collected and sent to Berkley Industries for recycling. AWC plans on pursuing this with "homemade" PVC recycling bins specifically for monofilament collection, and is currently seeking grant funding for the project.

Through these programs, publications, and events, AWC continues to further stormwater education in the Municipality of Anchorage.

A summary of the 2014 accomplishments are listed following and copies of deliverables can be found in Appendix G1.

- The Scoop the Poop (STP) committee held cleanup events at 2 off-leash dog parks (University Lake and Connors Bog) on April 25. Approximately 200 people participated in this event (which tends to coincide with Earth Day/Week), and an *Alaska Dispatch* reporter was present at Connors

Bog because an award of recognition from the Mayor was given to Tish Kippenham (along with a modest check from STP committee member donations), a dedicated volunteer who cleans up buckets of pet waste (left by others) at Connors Bog almost daily.

- At eight different 2014 pet-related events, AWC staff spoke to hundreds of people, answered a variety of pet questions, and handed out fliers for responsible stewardship, including information on MOA animal code, regulations and laws. Five times the number of pledges to clean up pet waste from the previous year were added to our database. The old Scoop the Poop brochure was updated by a graphic designer (volunteer) from the Alaska SPCA. Hundreds of new brochures have been printed and STP members continue to replenish many of the original twenty-five local pet service locations plus new ones. The STP rack card has been provided to property managers, such as the Alpine Apartments, in order to encourage pet waste cleanup on their grounds. Finally, gardener Jeff Lowenfels must be recognized for his periodic reminders in his weekly *Alaska Dispatch* column about cleaning up pet waste.
- Garden chemical runoff, car washing, invasive plants, and hazardous fluid management were addressed again at two garden tabling and educational events (Sears Spring Garden Show on April 19 and the August 25 Alaska Botanical Garden's Harvest Festival) in addition to AWC's Annual Creek Cleanup Celebration on May 17, which attracted hundreds of attendees. Short surveys on gardening and yard habits are given to event attendees who are then entered in a drawing for books by "Gardener" Jeff Lowenfels who promotes chemical-free yards.
- The annual Creek Cleanup Day in May was expanded to a week-long event. Approximately 500 volunteers cleared tons of debris from creeks over the 8 days. On Saturday, May 17, there was a celebration with educational information from a variety of groups (ALPAR, STP, Trout Unlimited, Knik Canoers and Kayakers, and Anchorage Parks and Recreation). This event commemorated 30 years of Creek Cleanup and Governor Tony Knowles, who helped begin the program in 1984, was the guest speaker. He presented a variety of awards to many long-time AWC members.
- A new flier titled "How to Live with a Lake" was developed because of the discovery of pesticides in two Anchorage lakes in 2013. A mailing of over 700 targeted addresses was just completed and already AWC has received inquiries about lake issues from recipients.
- Interaction with Anchorage School District students, camp youth, and others totaled around 2,500 in 2014 as noted above. Many of the participants worked with AWC for several days, so the number only represents individuals and not contact hours—which were considerable.
- TV newstories were aired on KTVA covering pet waste, feeding waterfowl, Creek Cleanup, and Day of Caring. Following are some links to the videos:
    - http://www.ktva.com/you-have-poop-on-your-shoes/ (1/22/14)
    - http://www.ktva.com/anchorage-creek-cleanup-coming-up-773/ (4/25/14)
    - http://www.ktva.com/midtown-park-has-dirty-water-675/ (8/5/14)
    - http://www.ktva.com/volunteers-roll-up-sleeves-for-day-of-caring-482/ (9/10/14)
- Several stories were published in the *Alaska Dispatch* on pet waste, the revival of salmon in Chester Creek (Craig Medred); problems in Cuddy ponds (Fish Creek) from the public feeding waterfowl (Rick Sinnott) plus letters to the editor from AWC; and two stories were done on Alaska Public Media (KAKM and KSKA) that focused on pet waste. Links are at:

  - http://www.alaskapublic.org/2014/03/03/picking-up-the-poop-in-anchorage/ (3/3/14)
  - http://www.alaskapublic.org/2014/07/25/fecal-bacteria-contaminates-many-anchorage-waterways/ (7/25/14)

- On September 10, AWC sponsored a monofilament and trash cleanup for United Way's "Day of Caring". Alyeska Pipeline Services provided a team that collected several bags of trash along popular fishing locations including Jewel Lake, Campbell Creek, and Ship Creek (http://www.ktva.com/volunteers-roll-up-sleeves-for-day-of-caring-482/). AWC recycled over 20 miles of monofilament line at Berkley Industries in December (http://www.berkley-fishing.com/Recycling/Berkley-recycling,default,pg.html).
- The AWC Annual Meeting was held October 14 and titled, "*1984-2014, Have our Creeks Changed?*". Presenters included some of the original founders and board members of AWC. All in all, based on the literature that had been archived and current data, it is clear that there has been a significant improvement in water quality in some areas, although the fact remains that almost every creek in the Anchorage Bowl is on the EPA Impaired Water list for fecal coliform bacteria. Eagle Rivers remains listed for toxic and other deleterious organic and inorganic substances, as does Ship Creek for petroleum and hydrocarbons.
- For the 2010 Stormwater Education Public Perception Survey, there were 497 usable survey responses, and in 2014 that number increased to 681, or a participant increase of 37%. The recent survey appears to have a broader geographic representation as well. Overall, there were significant improvements in many knowledge areas, no change in some, and fewer noteworthy negative changes. The complete report is still in draft form, but for the summary, which has been completed, it is valuable to point out that there has been an increase in those who think the quality of creeks and streams is better than 4 years ago, and more respondents appear to be aware of problems from stormwater runoff, animal wastes, lawn and household chemicals, and sewage and leaking septic systems. In brief, it appears that the focus of the education program since 2010 is making headway on problems that were identified then, but, as is often the case, change occurs and future outreach and education programs need to not only address the past but look to what might be the next and more relevant issues.
- The new information card, mentioned above, specifically targeting lakes was developed and distributed, AWC participated in the regular garden and pet events that we have over the years, and the number of youth who are being reached continues. Additionally, AWC staff learned a lot about human behavior and habits during the ADEC poop station project which will provide a sharper focus on outreach, and we are looking at new areas of concern for education and outreach.

7.1 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 3.6
- Stormwater Infrastructure - Section 5.7
- Illicit Discharge - Section 6.6

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
- Structural controls effectiveness monitoring
- Dry weather screening and follow-up
- Public education and involvement program

8.2 Monitoring Plan

In January, 2011, the Municipality, on behalf of the permittees, submitted the "Quality Assurance Project Plan - Municipality of Anchorage Monitoring Program for APDES Permit Number AKS-052558". The permittees updated the Quality Assurance Plan in January, 2012 to reflect final project site selection and monitoring details. The Municipality, on behalf of the permittees, conducts monitoring for various purposes as summarized in Table 8.1.

10: Table 8.1 – Storm and Surface Water Monitoring Program Schedule

Monitoring Program Component	Proposed Sampling Dates			
	2011	2012	2013	2014
Pesticide Screening	June-Aug	None	June-Aug	none
Dry Weather Screening	May-July	May-July	May-July	May-July
Structural Controls*	April-Dec	April-Dec	April-Dec	April-Dec
Snow Storage Site Retrofits	None	Mar-May	Mar-May	none
Stormwater Outfalls	Apr-Oct	Apr-Oct	Apr-Oct	Apr-Oct
LID Monitoring	None	None	None	May-Oct

*Structural Controls include sediment basins and- oil and grit separator devices

8.2.1 Pesticide Screening

This sampling program, conducted in 2011 and again in 2013 focused on two pesticides believed to be most likely present in Anchorage water bodies.

In 2014, the Permittees followed up on the 2013 finding of the herbicide 2-4D in one of the lakes monitored. (refer to the 2013 Pesticide Screening Report for details). The permittees believe the longer warm season experienced during the summer of 2013 was the primary reason Anchorage experienced a positive result in

this monitoring. Residents likely spent more time creating and caring for green lawns, thus contributing chemical runoff to receiving systems. The MOA responded with a focused education project alerting lake homeowners to the results of the 2013 screening and encouraging them to find alternative methods to pesticides. The associated outreach flier, *How to Live With a Lake*, is included in the education report in Appendix G1.

8.2.2 Existing Structural Controls - OGS and Sedimentation Basin Evaluation

The MOA and DOT are required under their joint APDES stormwater permit to evaluate the performance of OGS and sedimentation basins within the Anchorage municipal separate storm sewer system (MS4) and to report results in the third year of the permit term (IV.A.8., p. 39). The report was provided as requested in the 2012 annual report.

8.2.3 Snow Storage Site Retrofits

The APDES stormwater discharge permit AKS-052558 for the Anchorage MS4 requires retrofit and evaluation of at least two 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 completed one retrofit at the Tudor Road Municipal snow disposal site prior to February 1, 2012, and repaired a weak point in the runoff channel during the summer/fall of 2012. Currently this site is in operation. A second design for the Spruce Street Municipal snow disposal site was constructed in the spring of 2012. The second site was put into operation in fall 2012. Both sites were tested for water quality performance in spring, 2013, with results reported in 2013 Annual Report.

In 2013 and 2014 ADOT constructed improvements to the Hiland Road and O'Malley Snow Disposal Sites. Hiland Road had a berm constructed around the perimeter of the site to force runoff to the detention pond that was constructed on the back side of the lot. The retention pond is lined with riprap to retain sediment before water is discharged down a rock lined flume into the vegetation where it infiltrates into the ground. A floating boom is anchored at the top of the rock flume to catch any floating trash or contaminants and retain them in the pond. Wattles are located at the bottom of the rock flume in three tiers to catch any contaminants or trash debris that may have traveled down the flume.

The O'Malley snow disposal site has a new berm constructed around the perimeter of the lot. The entire lot was graded to keep sediment on site and direct runoff to two drainage beehives that are connected to the MOA stormwater system. A series of filtering methods are in place to treat the meltwater prior to discharge. Concrete barriers are placed in front of the beehives to keep equipment and additional sediment from entering the system. Wattles are the next tier of filter to capture additional sediment loads. Riprap was placed around the beehives to slow the velocity of the runoff and deter erosion around the outlets. The riprap also filters additional sediment by capturing it in the uneven surface before it gets to the outlet. Sediment cages are placed over the beehives. The cages are 2 feet high and allow a large amount of water to build up and seep through the fabric while retaining any sediment in the runoff. This is the last layer to filter even more sediment out of the runoff before it enters the MOA stormwater system.

An assessment for each site will be performed in the spring to assess any BMP issues and adjust as needed.

8.2.4 Storm Water Outfall Monitoring

The Storm Water Outfall Monitoring Plan was implemented after ADEC review and approval during the summer of 2011. The fifth year results are provided in the 2014 Stormwater Outfall Monitoring Report in Appendix H1. Also included in the report is an analysis of trends and observations for four years of available data.

8.2.5 Quality Assurance Plan

The Quality Assurance Plan (QAP) for specified permit monitoring activities was completed in 2010, and revised and finalized after review by the ADEC. An updated version was provided in the 2012 annual report.