U.S. Army Garrison Alaska

Fort Wainwright, Alaska

2021 Storm Water Annual Report

MS4 Permit Year 5

APDES Permit No. AKS055859

February 14, 2022

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Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
APDES	Alaska Pollutant Discharge Elimination System
BMP	best management practice
Brice Environmental	Brice Environmental Services Corporation
CGP	Construction General Permit
COR	Contracting Officer's Representative
CWA	Clean Water Act
DMR	discharge monitoring report
DPW	Directorate of Public Works
ENV	Environmental Division
FAI	Fairbanks International Airport
FWA	Fort Wainwright, Alaska
GC	Garrison Commander
GI	Green Infrastructure
GIS	geographic information system
HAZMAT	hazardous material
HHW	household hazardous waste
HW/HMMP	Hazardous Waste/Hazardous Materials Management Plan
ICE	Interactive Customer Evaluation
IDDE	Illicit Discharge Detection and Elimination
LID	Low Impact Development
NO_3	nitrate
MCM	minimum control measure
MPP	Monitoring Program Plan

MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
NHC	North Haven Communities LLC
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PAO	Public Affairs Office
POL	petroleum, oils, and lubricants
QAPP	Quality Assurance Project Plan
RPMP	Real Property Master Plan
SPCC	Spill Prevention, Control, and Countermeasures
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWSC	Storm Water Steering Committee
TP	total phosphorus
TSS	total suspended solids
UA	urbanized area
USACE	U.S. Army Corps of Engineers
USAG	United States Army Garrison
WPM	Water Program Manager
WQS	water quality standards

1.0 INTRODUCTION

United States Army Garrison (USAG) Alaska encompasses two installations: Fort Greely and Fort Wainwright. Fort Wainwright, Alaska (FWA) continues to represent the physical location of the installation located east of Fairbanks, Alaska and USAG Alaska is the organization tasked with maintaining the entire garrison and environmental compliance on the cantonments and training areas.

This document has been prepared to satisfy the annual reporting requirements for the FWA Municipal Separate Storm Sewer System (MS4) Permit, permit number AKS055859. The U.S. Environmental Protection Agency's (EPA) requirement to obtain a National Pollutant Discharge Elimination System (NPDES) MS4 Permit under the Clean Water Act (CWA) applies to owners and operators of municipal storm sewer systems within urbanized areas (UA) as defined by the U.S. Bureau of the Census. In Alaska, the EPA has allowed the Alaska Department of Environmental Conservation (ADEC) to issue and oversee permits through the Alaska Pollutant Discharge Elimination System (APDES). USAG Alaska was issued the MS4 Permit on September 26, 2016 with an effective implementation date of November 1, 2016 and expiration date of October 31, 2021.

On May 3, 2021 USAG Alaska submitted a new permit application to APDES; however, because of time, resource, and other constraints, but through no fault of the permittee, a new permit was not able to be issued before the expiration date. On October 29, 2021 ADEC notified the Army that the previous permit has been administratively continued and will remain fully effective and enforceable until a new permit is issued. At the time of writing this report, a new permit has not been issued by ADEC.

Site Description

Fort Wainwright is a 916,000-acre military reservation in central Alaska, located east of Fairbanks in the Chena River drainage basin. The post location is shown on Figure 1, including the Real Property Master Plan (RPMP) Planning Area of the main cantonment. The reservation consists of the cantonment area and contiguous and non-contiguous training and maneuver areas. Facilities regulated under the MSGP are located in the cantonment area, which includes Ladd Army Airfield. The Chena River discharges into the Tanana River west of Fairbanks city limits. The Tanana River, a major tributary of the Yukon River, flows south of Fairbanks city limits.

The cantonment is centrally located and comprised of troop and family housing, administrative facilities, industrial and industrial-like facilities, and community facilities. The topography of the cantonment area is generally flat, except for Birch Hill along the northern end of the installation boundary. Much of the cantonment area is unpaved, except for roads, housing areas, parking areas, and airfield runways and ramps.

USAG Alaska also holds an APDES Multi-Sector General Permit (MSGP) and Storm Water Pollution Prevention Plan (SWPPP) for industrial storm water discharges and the activities. Within or adjacent to the UA boundary there is an airfield (Sector S), warehousing and vehicle maintenance (Sector P), and an inactive gravel pit (Sector J). Outside of the UA, USAG Alaska operates a landfill (Sector L) which does not discharge directly to waters of the U.S.

Regarding MS4 Permit coverage, only a portion of the FWA installation is included within the UA. This portion consists mainly of the developed portion of FWA known as the cantonment area (Figure 2). Activities located outside of the UA where storm water has potential to run-on to an MS4 are treated as subject to MS4 requirements. Receiving waters of the FWA MS4 are identified as the Chena River and wetlands. In previous years, the gravel pit known as Badger Pit was identified as a receiving water, but in 2020 the U.S. Army Corps of Engineers (USACE) Regulatory District issued a jurisdictional determination that this gravel pit is not a water of the U.S. The two outfalls leading to the gravel pit are no longer included as compliance points in the MS4 or MSGP storm water plans.

More information about the USAG Alaska storm water permits can be found on the Fort Wainwright Storm Water website at the following web address:

https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

Responsible Parties

The USAG Alaska Garrison Commander (GC) has ultimate responsibility for all regulatory compliance at Fort Wainwright and specific tasks for maintaining the installation are delegated through the chain of command. The Directorate of Public Works (DPW) encompasses the divisions that oversee environment, contracts, engineering, housing, and others required to maintain the installation. The Directorate of Public Works (DPW), Environmental Division (ENV) Chief has been delegated authority by the Garrison Commander to sign and submit documents related to the FWA MS4 Permit and MSGP, assisted by the DPW ENV Compliance Branch Chief. The

DPW ENV Water Program Manager (referred to in this document as WPM) has direct responsibility for day-to-day compliance in coordinating and implementing the MS4 Permit tasks at FWA.

The Garrison Commander is typically stationed at Fort Wainwright for 2 to 3 years and command authority is delegated directly from Headquarters, Department of the Army (HQDA). Under Army Regulation 200-1, Environmental Protection and Enhancement, the GC will apply for, sign, arrange funding, and maintain all applicable Federal, State, and local environmental permits. On July 22, 2021, command of USAG Alaska was transferred from Colonel Christopher J. Ruga to Colonel Nathan S. Surrey. The ADEC was notified up updated names and contact information via e-mail in August 2021 and a memorandum describing the change of command is appended to this Annual Report.

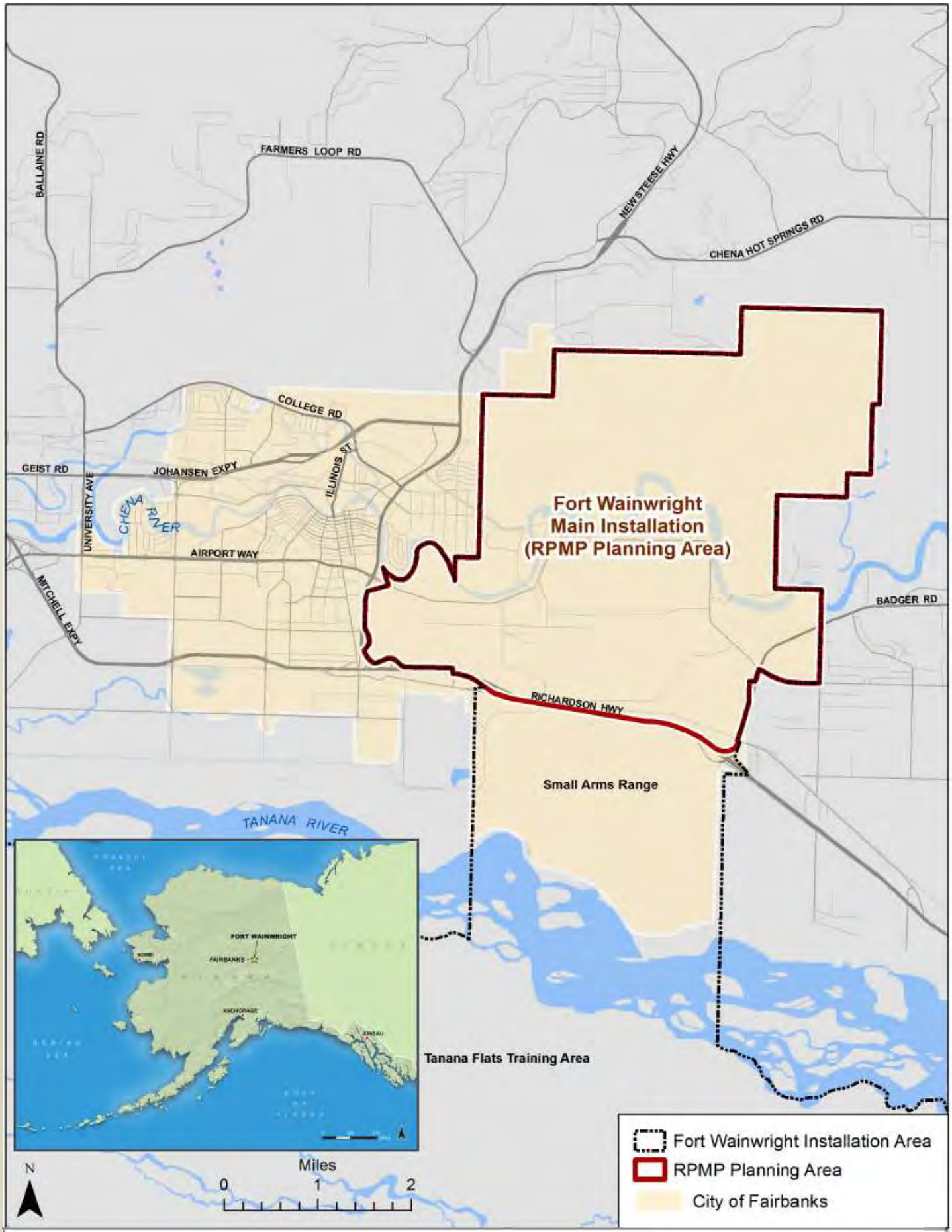

Figure 1. Fort Wainwright Location Map

Map prepared for the Fort Wainwright Master Plan

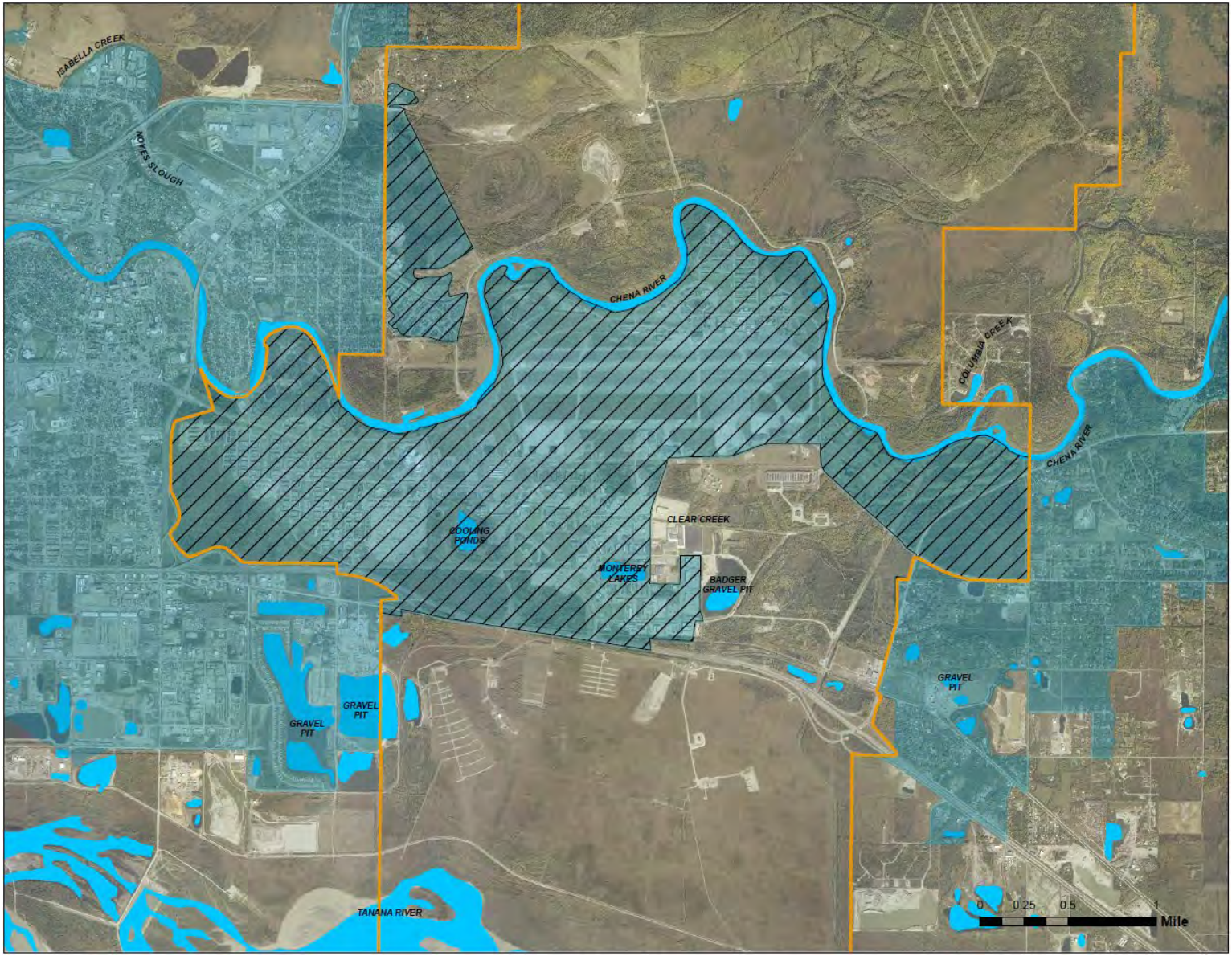

Figure 2.

The Urbanized Area at Fort Wainwright

Legend

- Installation Boundary
- Census Bureau Urbanized Area
- Urbanized Area within Installation Boundary

Map prepared for the Fort Wainwright Storm Water Management Plan

2.0 STORM WATER ANNUAL REPORTING

USAG Alaska must submit a Summary Annual Report and a Detailed Annual Report to fulfill the reporting requirements set forth in Part 4.3 of the MS4 Permit. The Summary Annual Report is included as Appendix A and the Detailed Annual Report comprises the main body of this document.

Annual Reports are due 15 February, following each respective Permit year and this report accounts for the 2021 calendar year.

The purpose of the Annual Report is to:

1. Evaluate compliance with Permit conditions,
2. Gauge the appropriateness of best management practices (BMPs),
3. Track BMP implementation towards satisfying measureable goals identified in the Storm Water Management Plan (SWMP), and
4. Determine the overall effectiveness of the SWMP.

Minimum Control Measures

This document is structured according to the Minimum Control Measures (MCMs) listed in section 3 of the FWA MS4 Permit:

- MCM 1: Public Education and Outreach
- MCM 2: Public Involvement and Participation
- MCM 3: Illicit Discharge Detection and Elimination
- MCM 4: Construction Site Storm Water Runoff Control
- MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment
- MCM 6: Pollution Prevention and Good Housekeeping

The final section of this Annual Report is the Program Evaluation.

Detailed Annual Report Requirements

The following items must be included in, or with, the Annual Report, at a minimum:

- An updated SWMP document as required in Part 2.0 of the MS4 Permit.

- A description of the effectiveness of each SWMP program component or activity (see Part 4.2 of the MS4 Permit).
- Planned activities and changes for the next reporting period for each SWMP program component or activity.
- An evaluation of compliance with the requirements of the MS4 Permit, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals of the SWMP for each MCM.
- Results of any information collected and analyzed during the previous twelve-month reporting period, including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the maximum extent practicable.
- A summary of the activities USAG Alaska plans to undertake during the next reporting cycle (including an implementation schedule) for each MCM.
- Proposed changes and completed changes to the SWMP, including changes to any BMPs or any identified measurable goals for any MCMs.
- Description and schedule for implementation of additional BMPs that may be necessary, based on monitoring results, to ensure compliance with applicable water quality standards (WQS).
- Notice if USAG Alaska is relying on another entity to satisfy some of the permit obligations, if applicable.

The following sections of this report address applicable provisions in the above list. Copies of all Annual Reports must be available to the public through the municipal library system, a USAG Alaska-maintained website, or other easily accessible location.

The permittee must track the annual number of inspections, official enforcement actions, and types of public education activities and outcomes, as stipulated by the respective program requirement. Information summarizing these activities during the previous reporting period must be included in the Annual Report.

3.0 MINIMUM CONTROL MEASURES

Information required under each MCM in the Permit is presented in the following subsections.

3.1 MCM 1: Public Education and Outreach

The permittee must document the following information related to public education and outreach in the Annual Report required in Part 4.3:

1. Describe the public education program and outreach activities accomplished during the previous calendar year, including at least one copy of all educational material distributed;
2. Describe the methods and frequency of disseminating information;
3. Describe the target audiences and pollutants/sources that are addressed by the program and how they were selected;
4. Estimate the number of people reached by the program over the previous twelve month period;
5. List the measurable goals for the public education and outreach program over the next twelve month period;
6. List the dates by which the measureable goals will be achieved; and
7. Identify the person(s) responsible for implementing and coordinating the education activities.

The existing public education program has continued, primarily through the FWA Facebook page, the Alaska Post newspaper, and distribution of printed materials.

The USAG Alaska Garrison Commander has ultimate responsibility for all regulatory compliance at Fort Wainwright, but for brevity that role is not noted in the tables below and for each MCM. The WPM is responsible for overseeing the day-to-day requirements of the MS4 Permit and MSGP, assisted by the environmental contractor, Brice Environmental. The garrison's Public Affairs Office (PAO) is instrumental in communication and publishing of DPW ENV's educational materials. Two other key organizations to storm water compliance are the DPW Housing office and their privatized housing partner, North Haven Communities, LLC (NHC).

The following tables summarize the different public education and outreach efforts done in 2021.

Activity	**Newspaper Article**
Description	"The Water Cycle and YOU"
Method	Alaska Post newspaper online version

Frequency	Once on January 8, 2021
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors; People in the community; Those interested in Fort Wainwright activities
Pollutants/ Sources	Litter, sediment, fertilizers, oils, pesticides, pet waste
Reason for selection	Provide education about the causes and impacts of water pollution, as well as actions people can take to protect water quality.
People reached	5,300 copies of the Alaska Post were dropped off at newsstands in Fort Wainwright, North Pole, and Fairbanks. Data is not available on the number of people reading the digital version.
Discussion	This article and the diagram that goes with it were designed to be a starting point for further discussions about water quality concerns and to highlight concerns/advice that DPW ENV and environmental representatives from other agencies wish to express to the public. This article can be run again for new readers and adapted to a Facebook post for "Sergeant Salmon's School of Environmental Basics" in 2022.

Activity	**Earth Day Video Messages**
Description	5 Facebook video posts on the theme of "How to make everyday Earth Day"
Method	PAO filmed 5 video spots with various Army Civilians. Videos ranged from 25 to 51 seconds and directed viewers to resources to learn more.
Frequency	Once, April 22, 2021
Target Audience	Soldiers, Families, and Civilians
Pollutants/ Sources	Household hazardous waste (HHW), spills, vehicle fluids, pet waste, recreation, hunting

Reason for selection	To educate residents on HHW program
People reached	Each post was viewed by approximately 1,300 to 2,200 people
Discussion	Matthew Sprau – DPW Environmental Division https://fb.watch/b3Wcc6wNbm/ Daniel Yamamoto – Auto Skills Center https://fb.watch/b3Wd74gzkW/ Ida Petersen – Ecosystems & Storm Water Opinion Survey https://fb.watch/b3WdBi89-K/ Kathleen Gannon – Household Hazardous Waste Program https://fb.watch/b3WetGgIGT/ Sgt. Devan Leon – Wildlife Conservation & Cultural Resources https://fb.watch/b3W7TxArvS/

Activity	**Spouse-to-Spouse Earth Day Event**
Description	Spot on Facebook Live video and distributed DIY Up-cycled Dog Bag Dispenser Kits, other environmental coloring books/flyers
Method	Army Community Services hosted a hybrid Facebook Live & drive-through event with multiple video spots. The WPM spoke on behalf of the program to advertise Earth Day event & the 2021 Storm Water Opinion Survey and handed out swag to participants.
Frequency	Once, April 15, 2021
Target Audience	Soldiers, Families, and Civilians
Pollutants/ Sources	Pet waste, litter, leaks/drips/spills
Reason for selection	To educate residents on negative effects of pet waste and encourage them to clean it up.
People reached	Approximately 86 Facebook views and 20 individuals/families in drive-through
Discussion	

Activity	**National Night Out materials**
Description	Booth with multiple environmental displays, Household Hazardous Waste pickup/dropoff, "fishing" activity for kids to demonstrate the impact of pollution to the Chena River, DIY Up-cycled Dog Bag Dispenser Kits, dog pooper-scoopers, advertisement for the 2021 Storm Water Opinion Survey
Method	Two staff from DPW ENV manned the booth for several hours,
Frequency	Once, July 27, 2021
Target Audience	Soldiers and Families, other Residents and Civilians
Pollutants/ Sources	Pet waste, litter, household hazardous waste, leaks/drips/spills
Reason for selection	To educate residents on negative effects of pet waste, litter, and spills and encourage them to clean it up.
People reached	Estimated 50 individuals
Discussion	The in-person celebration for National Night Out was able to resume in 2021 because it is an outdoor event and COVID precautions were in place. Inclement weather shortened the total length of the event, but many visitors seemed happy to have an opportunity to gather and learn about different programs services at FWA. Most people who visited the booth picked up doggie bag kits, but only a handful picked up other storm water handouts or dog pooper-scoopers.

Activity	**Pet Waste flyer**
Description	2-sided flyer with roll of pet waste bags
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested

	Reviewed annually
Target Audience	Family housing tenants
Pollutants/ Sources	Pet waste
Reason for selection	To educate residents on negative effects of pet waste and encouraging them to clean it up.
People reached	1,570 flyers and 200 pet waste bags were provided to NHC in 2021.
Discussion	

Activity	**Environmental Handbook**
Description	76-page booklet describing each Environmental Program, including Pollution Prevention and Storm Water, Permits
Method	Booklet handed out at Newcomer's Briefing, Orientation for New Employees, military Environmental Compliance Officer training, at motor pools, in the DPW ENV office, and at events that DPW ENV hosts or participates in
Frequency	Once per month, to each attendee
Target Audience	Incoming Soldiers and Civilians
Pollutants/ Sources	HAZMAT (POL, paint, solvents, fuel), oil, antifreeze, detergents, pesticides, pet waste, grass clippings, spills
Reason for selection	To educate newcomers to Fort Wainwright on the Garrison's environmental policies and resources, and how to find more information. Reviewed both materials and determined to be accurate and useful.
People reached	Estimated 500

Discussion	The booklets were supplied to the Newcomer's Briefing, but only distributed between November and December 2021 due to staff changeover. The new organizers of the Newcomer's Briefing are distributing the booklets again in 2022. Orientation for New Employees captures people who may be new to working for USAG Alaska but do not need to attend the Newcomer's Briefing such as Fairbanks residents, spouses, and current employees doing refresher training. In addition to the booklets available at motor pools, approximately 20 booklets were given directly to military unit leadership during a coordination meeting in 2021. Events where handbook were distributed include the Earth Day event, Storm Water Steering Committee meetings, Spouse-to-Spouse Meetings, and National Night Out.

Activity	**Small Construction Sites Brochure**
Description	Best Management Practices for Small Construction Sites on Fort Wainwright trifold brochure
Method	Digital, with DPW ENV Work Order Reviews
Frequency	Once per month, to each attendee
Target Audience	Incoming Soldiers and Civilians
Pollutants/ Sources	HAZMAT (POL, paint, solvents, fuel), oil, antifreeze, detergents, pesticides, pet waste, grass clippings, spills,
Reason for selection	Remind engineers, contractors, and other construction management people about the storm water requirements on Fort Wainwright and highlight some typical construction best management practices.
People reached	Project teams for 33 different construction projects.

Discussion	The need to distribute the Small Construction Sites Brochure varies by the number of unique small soil-disturbing projects in any given year and the location/site conditions.

Activity	**Storm Water signage**
Description	"Be the Solution to Storm Water Pollution" posters are displayed in 3 kiosks along walking/bike trails. 6 new interpretive signs were produced for installation along the Chena River trail by the DPW ENV Natural Resources Program.
Method	Sign display
Frequency	Once, reviewed annually
Target Audience	Soldiers, Families, Civilians, and other people recreating or passing by bike path.
Pollutants/ Sources	Pet waste, illegal dumpling, spills, trash from hauling or dumpsters, hazardous waste, litter, car washing, camping, vehicle maintenance
Reason for selection	These pollutants and sources have been observed on Fort Wainwright in the past. People who see the sign can see how to manage these activities properly and have some recognition of the Storm Water Program.
People reached	Estimated greater than 100 people
Discussion	"Be the Solution to Storm Water Pollution" signage was re-reviewed in 2021 and determined to be accurate and useful. Although there is now a 24-hour spill reporting number and the posters show the old phone number, this number is still active and acceptable to use. The subjects of interpretive signs are: Landscape Architects (beaver), Chena River, Fish Species, Hydrology, Invasive Species, and What is a Wetland?. The signs are ready to be installed once the ground thaws in Spring 2022.

	Additional signage was developed between DPW ENV and FMWR to supplement the trio of posters in kiosks and the new interpretive signs. The signs are smaller, intended to be temporary/seasonal, and focus on specific concerns for environmentally sensitive areas. Unfortunately, these signs were not completed by the time the summer season ended and DPW ENV to produce and install them in spring 2022.

Activity	**HHW Brochure**
Description	Trifold brochure
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested
Target Audience	Family housing tenants
Pollutants/ Sources	Household hazardous waste (HHW)
Reason for selection	To educate residents on proper disposal/reuse of consumer products and hazardous materials used in residential setting.
People reached	400 brochures were provided to NHC in 2021.
Discussion	This brochure was reviewed in 2021 and DPW ENV determined that it was still accurate and useful.

Activity	**Healthy Yards & Gardens Brochure**
Description	Trifold brochure
Method	Through NHC in Welcome Bags
Frequency	As each family moves onto Post, re-stock NHC as requested
Target Audience	Family housing tenants

Pollutants/ Sources	Fertilizer, nutrients, invasive species, pesticides/herbicides, pet waste, spills of petroleum and other pollutants, household hazardous waste
Reason for selection	Prior education materials did not have specific discussion about appropriate yard care techniques for protecting water quality, including proper timing and use of fertilizers as specified in MS4 Permit section 3.1.1.2.
People reached	1,450 brochures were provided to NHC to distribute to new residents
Discussion	The Healthy Yards & Gardens brochure was developed with cooperation from the DPW ENV Natural Resources program and will feedback from the Storm Water Steering Committee.

Activity	**Website**
Description	Updating Storm Water Website
Method	Online, Fort Wainwright Facebook Page
Frequency	Updated March and April 2021
Target Audience	General public, Soldiers, Families, Civilians, Veterans, contractors
Pollutants/ Sources	All described in activities above.
Reason for selection	The Storm Water website was updated in March 2021 with the 2020 MS4 Annual Report, 2021 Storm Water Management Plan, Environmental Handbook, and Pet Waste & Water quality handouts including the D.I.Y. Up-cycled Dog Bag Dispenser instructions.
People reached	Number of site visitors is not available at this time
Discussion	The website was updated once in 2021, but information was posted to the Garrison Facebook Page at various times during the

year. The Healthy Yards & Gardens Brochure and Construction will be posted to the Storm Water Website in early 2022.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for Public Education and Outreach in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Newspaper Article
Description	Publish an article in the local newspaper regarding storm water pollution prevention
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager will submit the article to Fort Wainwright Public Affairs Office for publication and dissemination in the newspaper and on the FWA Facebook page.

Measureable Goal	Review, Update, or Produce Educational Materials
Description	Review current handouts (brochures and flyers) Review handouts for coverage of the MCM 3 requirement that education materials must include hazards related to illicit discharges and improper waste disposal to inform users of the storm water conveyance system and the general public.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager will review educational materials that are currently distributed.

Measureable Goal	Review, Update, or Produce Housing Tenant Materials

Description	Review NHC booklet and handouts provided to NHC for residents
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor

Measureable Goal	**Review, Update, or Produce Educational Materials**
Description	Produce and install signage describing storm water pollution prevention and pet waste management for sensitive areas and recreational parks. Install Natural Resources signage.
Dates to achieve goals	30 June 2022
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor will produce and install temporary signage. DPW ENV Natural Resource program will install the permanent signage.

Measureable Goal	**Update Storm Water Website**
Description	Update Storm Water Website semi-annually with newest annual reports and outreach materials.
Dates to achieve goals	31 March 2022 31 December 2022
Person(s) responsible	DPW ENV Water Program Manager will work with the Fort Wainwright Public Affairs Office to make changes to the Storm Water Website, located at the web address below: https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

3.2 MCM 2: Public Involvement and Participation

The permittee must document the following information related to public involvement/participation in the Annual Report required in Part 4.3:

1. Describe the activities and target audiences for public involvement that the program accomplished for the proceeding twelve month period, including any monitoring and/or survey results, number of storm drains stenciled, etc.;
2. Describe the procedure(s) for receiving and reviewing public comments;
3. Describe the measurable goals for the public involvement/participation program over the next twelve month period;
4. List the dates by which the permittee will accomplish each of the upcoming measurable goals; and
5. Identify the person(s) responsible for implementing and coordinating the public involvement/participation activities.

As COVID-19 policies allowed, in-person outreach was able to resume in 2021 for several events.

Activities and Target Audiences

Each MCM 2 Activity performed in 2021, target audience, results (if applicable) and other information, is presented in the following tables.

Activity	**Website**
Description	USAG Alaska hosts a website where relevant information and storm water documents are available. The SWMP and all Annual Reports are posted to the website.
Target Audience	Soldiers, Families, Civilians, and contractors; People in the community; Those interested in Fort Wainwright activities
Results	Number of site visitors is not available at this time
Discussion	DPW ENV Water Program Manager will work with the Fort Wainwright PAO to make changes to the Storm Water Website, located at the web address below: https://home.army.mil/alaska/index.php/fort-wainwright/storm-water

Activity	**Community Trash Pickup Day**

Description	USAG Alaska hosts an annual Spring Clean Up trash pickup day. Military units installation organizations are each assigned a "piece of the rock" to sweep for litter. NHC interfaces with residents to ensure housing areas are cleaned up.
Target Audience	Soldiers and Families; Civilians and contractors
Results	Trash pickup was performed over the week of 1-4 June 2021.
Discussion	Although at this time COVID-19 precautions were in place, outdoor, social-distanced activities such as Spring Clean Up were able to be performed.

Activity	**Public Knowledge/Attitude Survey for Storm Water**
Description	The 2022 Storm Water Opinion Survey
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors; People in the community
Results	19 individuals competed the Storm Water Opinion Survey In 2022.
Discussion	The survey via Microsoft Forms was redistributed with only minor changes. Advertising on the Fort Wainwright Facebook page and in the Alaska Post newspaper did not receive as much engagement as the previous iteration. A short video segment for Earth Day, which spoke on the importance of the survey and included the weblink, was shared on Facebook, but no significant change was observed in the number of respondents.

Activity	**Storm Drain Stenciling**
Description	Decals featuring the Sergeant Salmon mascot and the words, "NO DUMPING DRAINS TO CHENA RIVER" to be placed on or next to each storm drain inlet.
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors

Results	Not all of the remaining storm drain inlets were marked during 2021.
Discussion	The target of marking 100% of storm drain inlets was not met. This activity will be continued in 2022.

Activity	**Storm Water Steering Committee Meetings**
Description	4 Quarterly Storm Water Steering Committee Meetings
Target Audience	Soldiers, Families, Civilians, Veterans, and contractors; People in the community; ADEC staff
Results	4 Storm Water Steering Committee Meetings were held, one each quarter of 2021: March 31 2021, July 8, 2021, August 25, 2021, and December 22, 2021.
Discussion	Although many members of the public are invited to participate in the Storm Water Steering Committee Meetings, the attendees in 2021 were all attending in an official capacity representing their respective organizations. In 2022 specific individuals from the Resident Advisory Board will be invited to hopefully increase representation of residents.

Receiving and reviewing public comments

Public input may be received through the following avenues as applicable:

- Through NHC staff or Maintenance hotline (907) 353-7000
- By Interactive Customer Evaluation (ICE) comment to DPW or PAO
- By attending or calling into the Storm Water Steering Committee meetings
- By calling the contact information on the SWPPP posting at the site
- By contacting the DPW Customer Service number at (907) 361-7069
- Via phone or e-mail directly to DPW ENV

Comments will be reviewed by the DPW ENV WPM and shared with project management staff. Comments to North Haven Communities projects will first go through NHC's internal management procedures and if necessary, will be brought to DPW's attention during the regular water quality meetings or via e-mail.

Findings from Public Knowledge/Attitude Survey

The primary goals of the Public Knowledge/Attitude Survey for Storm Water were to: 1. Gauge the community attitude on environmental quality; 2. Identify the level of knowledge regarding storm water and pollution prevention; and 3. Evaluate the effectiveness of the MCM 1 Public Education Program. Survey results were compared to the previous survey effort from 2019/2020.

Attitude: Compared to the 2019/2020 Storm Water Opinion Survey, a larger percentage of respondents indicated that their and their families' actions have a large impact on the environment. The opinion of the quality of the environment at Fort Wainwright shifted from a majority of "much healthier" responses to "slightly healthier." When asked about specific sources of pollution, the vast majority of respondents viewed each source as having a medium or high impact on the environment. As in the previous survey, the top pollutants of concern were petroleum/vehicle fluids, hazardous chemicals including antifreeze, and litter. A notable change from 2020 is that the proportion of high impact ratings for pet waste increased. When asked about specific consequences of pollution, again the majority of respondents viewed the impacts to each ecosystem as medium or high. Aquatic life in the Chena River, including plants and fishes, and ecosystems downstream of Fort Wainwright were rated as the most likely to be impacted by storm water pollution and humans living and working on Post were rated as the least likely.

Knowledge: In 2021, a higher percentage of respondents received information about environmental programs in general, as well as from Community Action Council meetings and on Facebook. A higher percentage of respondents dispose of their used oil at the FNSB Solid Waste Facility or transfer site. This change is likely due to the fact that more Army Civilians completed the survey, who typically live off-post, as well as the FNSB's efforts to encourage proper disposal. Rates for vehicle washing and maintenance, pet waste disposal, and the Household Hazardous Waste Program were similar to the 2019/2020 survey.

Effectiveness: Approximately 75% of respondents received information from DPW ENV. Of those respondents who received information from DPW ENV in any form, and a similar rate recognized Sergeant Salmon. As in the previous survey, individuals were more likely to respond if their job involves attendance at the Storm Water Steering Committee meetings or if they already have an interest in environmental subjects.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for public involvement and participation in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Post SWMP and Annual Reports online
Description	The SWMP and all Annual Reports must be made available to the public by posting them on an FWA-maintained website.
Dates to achieve goals	31 March 2022
Person(s) responsible	DPW ENV Water Program Manager and PAO, who oversees the USAG Alaska website.

Measureable Goal	Community Trash Pickup Day
Description	Annual event to involve the community in picking up litter and other pollutants. Typically, this is performed in the spring once snow has melted and exposed trash, spills, and other concerns.
Dates to achieve goals	30 June 2022
Person(s) responsible	The USAG Alaska Garrison Commander will issue an Operations Order to perform the community cleanup event in spring 2022. Organizations will participate in the cleanup during these dates.

Measureable Goal	Storm Water Steering Committee Meetings
Description	Host 4 quarterly Storm Water Steering Committee (SWSC) Meetings and invite SWSC members, the public, and ADEC to participate.
Dates to achieve goals	31 December 2022

Person(s) responsible	DPW ENV Water Program Manager and environmental contractor, Storm Water Steering Committee Members

Measureable Goal	**Storm Drain Stenciling**
Description	Complete storm drain stenciling that was not performed in 2021.
Dates to achieve goals	31 October 2022
Person(s) responsible	DPW ENV Water Program Manager and environmental contractor

Other Projects in Development

The DPW ENV is developing plans for a nature walk event and ongoing nature notebook program aimed at encouraging Soldiers, families, and other interested community members in observing and interacting with the environment. These activities may begin in late summer 2022 or early summer 2023.

Several community gardens are slated to be constructed by NHC after the idea was presented during the Winter 2021 Storm Water Steering Committee Meeting. Specific locations and designs have not been finalized, but NHC leadership is looking to construct raised garden beds and DPW ENV is looking to expand the availability of community garden space to soldiers living in barracks outside of the NHC footprint. These community gardens will be an opportunity to provide education and hopefully recruit residents to participate in other environmental programs.

3.3 MCM 3: Illicit Discharge Detection and Elimination

The permittee must document the following information related to illicit discharge detection and elimination (IDDE) in the Annual Report to ADEC:

- A description of the criteria used to prioritize investigations in areas suspected of having illicit discharges (e.g., targeting older areas of the FWA, areas of high public complaints, areas of high recreational or environmental value such as parks, golf courses, and drinking water sources);
- A description of procedures used to locate and remove illicit discharges, including detection methods;
- A summary of all dry weather testing conducted to date, and of permittee activity to remove any illicit discharge(s) identified;
- A copy of the established ordinance or other regulatory mechanisms used to prohibit illicit discharges into the MS4. If the permittee has yet to develop this local requirement, describe the plan and schedule for doing so and progress towards implementation;
- A description of the enforcement policy and jurisdiction. The policy must include procedures for coordination with adjacent municipalities and/or federal or state regulatory agencies to address situations when investigations indicate the illicit discharge originates outside the permittee's jurisdiction. Where a permittee lacks legal authority to establish enforceable rules or if an illicit discharger fails to comply with procedures or policies established by the permittee, the policy must include procedures for notifying DEC for assistance in enforcement of this permit provision;
- A description of the methods used over the previous 12-month period to inform the public and/or train employees, contractors, and tenants about illicit discharges and the improper disposal of waste;
- A list of measureable goals for the illicit discharge detection and elimination program for the next 12 month period, and the dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the illicit discharge detection and elimination program.

USAG Alaska's IDDE program is provided in the Illicit Discharge Detection and Elimination Program Manual. The IDDE Program Manual has previously been submitted to ADEC and is on file at the DPW ENV office. This document can be provided upon request to the DPW ENV Water Program Manager by phone or e-mail at: (907)

361-9686, (907)361-6220 or ida.r.petersen.civ@mail.mil. Much of the following information is discussed further in the IDDE Program Manual.

Investigation Criteria

The IDDE Program Manual describes the procedures for determining and prioritizing illegal discharges as follows. The determination of the occurrence of an illicit discharge by the DPW ENV Water Program Manager or other train staff, based on an observed illicit discharge by an individual or the public, such as during their daily activities, or a follow-up from an incident reported earlier.

A severity index classification of 'potential', 'suspect,' or obvious' is assigned for each. If more than one outfall screening produces one of these classifications, investigation efforts shall be prioritized as:

- Obvious – Illicit discharge(s) suspected of being sanitary sewer discharges or significantly contaminated, such as vehicle washing outdoors, would have this classification
- Suspect – Numerous physical indicators result in this classification including staining of the ground, odor, or stressed vegetation.
- Potential – These discharges should not be expected to be hazardous to human health and safety such as trash.

In 2021, most illicit discharges investigated were result of spills, construction violations, or outdoor vehicle washing and subsequently identified as "obvious". Typically, the DPW ENV Spills Program investigates and tracks illicit discharges that are also ADEC-reportable spills of oil and hazardous substances. The DPW ENV Water Program generally investigates and tracks illicit discharges that deal with other pollutants such as sediment, litter, sewage, color, or odor.

Procedures to Locate and Remove Illicit Discharges

Location of illicit discharges relies on reporting of spills and illegal activities, outfall monitoring, MSGP monitoring and MS4 monitoring. A detailed description of the procedures is provided in the IDDE Program Manual. In addition, the DPW ENV 24-hour spill hotline is also used to report illicit discharges. The phone number is (907) 482-7267. Reports may still be made to the DPW ENV office at (907) 361-9686 or (907) 361-6220.

The primary goal of investigating suspected illicit discharge is to prevent or reduce the impact of pollutants on waters of the U.S. and the MS4. Procedures for investigation

include onsite investigation, documentation, information-gathering through interviews, continued monitoring, identification of responsible parties, and coordination with other parties involved. Further detail of these procedures is provided in the IDDE Program Manual. Once found, the illicit discharge source should be eliminated and efforts documented on the IDDE Tracking Form or IDDE Tracking Spreadsheet.

Dry Weather Testing

No dry weather tests were performed in 2021, although monitoring was performed. All illicit discharges were identified and removed without the need for testing. Because most of the MS4 on FWA consists of open drainages and underground storm water lines are not widespread, identification of the source has been straightforward and is found before pollution is able to reach an underground storm water line or waters of the U.S.

As part of a separate groundwater monitoring project, a sump drain from a utilidor was identified by a contractor. DPW ENV visited the MS4 open drainage nearest to the utilidor in September 2021 and did not identify discharge. The WPM will visit the location earlier in the season to see if snowmelt increases the amount of water that can be seen.

Activity to Remove Illicit Discharges

Twenty-six Illicit Discharges were recorded on the Fort Wainwright Spill Log. The majority of these discharges were due to leaking equipment and vehicles. In these cases, the contaminated material was cleaned up by using absorbent material, digging out snow, digging out soil, and/or repairing the damaged equipment or vehicle.

One Illicit Discharge was recorded as a result of notification from USACE project staff and a resulting MS4 Construction Site Inspection. The construction site access/exit points and soil stockpiles were not stabilized and there were no control measures in the nearby open drainage. Project staff installed straw wattles in the drainage ditch and the soil stockpiles were removed, so this illicit discharge was eliminated.

Copy of Ordinance and Enforcement Policy

Garrison Policy #35 was updated in 2021 with more information about compliance and enforcement regarding illicit discharges. The policy letter discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units, directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties

include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation. The letter explains actions that may be taken with individuals or entities that fail to comply with the SWMP. The policy also includes enforcement procedures and actions, including enforcement escalation procedures for recalcitrant or repeat offenders.

Training

As part of the MSGP SWPPP and MS4 Operations and Maintenance (O&M) Program, employees working with pollutants and activities with potential to discharge pollutants receive an annual storm water training. Foremen and supervisors receive this training as well as materials to train other employees. An effort is made to train both a primary and alternate storm water supervisor.

The DPW ENV Hazardous Waste Program leads a monthly initial and refresher training for hazardous material (HAZMAT) and hazardous waste handling and disposal. People responsible for each hazardous waste accumulation area are trained at least annually. Staff of the environmental contractor routinely work with Soldiers, Civilians, and contractors who operate accumulation areas on the installation.

Storm Sewer System Map

The storm sewer system map "Flow Direction Mapbook" has not been updated, but the ArcGIS map used by DPW personnel, which includes locations and characteristics of all storm drainages, has been updated to include new construction. When an additional storm water drainage study has been performed or when a new model is created, the flow direction mapbook will be revised.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for IDDE, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Continue to Implement the IDDE Program
Description	DPW ENV will ensure that IDDE tracking forms or spill log is updated. DPW ENV and contractor staff will investigate any illicit discharge within 15 days of its detection, and take action to eliminate the source of the discharge within 45 days of its detection.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor, DPW ENV Spills Program Manager

Measureable Goal	Wet Weather Outfall Inspections
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season. (co-listed with MCM 6 measureable goals)
Dates to achieve goals	31 October 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Dry Weather Outfall Inspections
Description	Perform a dry weather inspection at all outfalls at least once during the non-snowy season.
Dates to achieve goals	31 October 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Dry Weather Testing
Description	If dry weather flows are observed during inspections or otherwise discovered, the DPW ENV Water Program will perform field screening of the surface water. Field screening may include, but is not exclusive to, measuring flow rate, temperature, pH, dissolved oxygen, conductivity, off-gas of volatiles, and/or turbidity.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Update Maps
Description	As infrastructure on FWA changes, DPW ENV will incorporate new drainages and other features will be incorporated into the storm water Geographic Information Systems (GIS) database.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV WPM, DPW and USACE project managers and planners, GIS contractor

Measureable Goal	Outreach Materials
Description	MCM 3 mandates the Permittee inform users of the storm water conveyance system and the general public of hazards related to illicit discharges and improper waste disposal. These topics are included in MCM 1 and will continue to be part of public education and outreach.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV WPM, with assistance from DPW ENV Hazardous Waste Program, environmental contractor, PAO, and NHC

3.4 MCM 4: Construction Site Storm Water Runoff Control

The Annual Report must document the following SWMP information related to construction site runoff control:

- A copy of the established ordinance or other regulatory mechanism used to require erosion, sediment and waste controls at construction sites. If the permittee has yet to develop the required regulatory mechanism, describe the plan and schedule for doing so;
- A summary of the number of sanctions and enforcement actions taken by the permittee to ensure compliance with the construction site ordinance during the previous 12-month period. To the extent allowable under the legal authority of the permittee, sanctions may include both monetary and non-monetary penalties;
- A copy of the written requirements for appropriate erosion, sediment and waste control BMPs at construction sites;
- A summary of the number of site plan reviews conducted;
- A description of the procedures for receipt and consideration of information submitted by the public;
- A summary of the number of sites inspected during the previous 12-month period, including a description of the site inspection procedures, how sites will be prioritized for inspection, and when and how often a site will be inspected;
- A list of measurable goals for the construction site runoff control program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the construction site runoff control program.

Copy of Ordinance and Enforcement Policy

Garrison Policy #35 has been updated and remains in place. The policy letter, discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units, directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation. The letter explains actions that may be taken with individuals or entities that fail to comply with the SWMP. The policy also includes enforcement procedures

and actions, including enforcement escalation procedures for recalcitrant or repeat offenders.

The MS4 Construction Site Inspection Form specifies the following enforcement actions in the order they will be followed if the violation is not corrected:

- Re-inspection required
- Meeting with Contracting Officer's Representative (COR) and Contractor to resolve issues
- Up-Chain for Command Action
- Disclosure of violation(s) to federal/state agencies

Construction Enforcement Summary

Number of Sanctions/Enforcement Actions: 1 construction project site was identified for re-inspection based on the routine inspection findings, which were resolved by the second inspection. This site was also the source of an illicit discharge of sediment into the MS4 and was eventually resolved.

Written Requirements for BMPs

The SWMP identifies the Army Low Impact Development (LID) Technical User Guide as the major reference for permanent BMPs in construction projects.

For temporary BMPs, FWA provides contract language that the contractor must select and maintain the erosion and sediment controls such that water quality standards are not violated as a result of construction activities. United Facilities Guide Specifications (UFGS) 01 57 19 Temporary Environmental Controls is the guide the DoD uses to specify construction in contracts.

The ESCP Template requires the following control measures:

- Mark clearing lines
- Control flow rate (such as on-site detention)
- Install sediment controls (such as fiber rolls [wattles])
- Stabilize soils (such as compaction, mulching or seeding)
- Protect drain inlets
- Stabilize channels and outlets
- Control pollutants (good housekeeping)
- Control de-watering
- Maintain BMPs (such as wattles, concrete clean-outs, sweeper trucks or personnel, spill pads, drip pans, and/or water truck)

- Manage the project (phase activity, maintain ESCP, training, minimize soil disturbance, good housekeeping, monitoring/inspection)
- Site-specific BMPs (curb flow line protection wattles, catch basin protection, manhole protection, entry control point and signage, spill kit, water truck and sweeper)

The brochure titled USAG Alaska Small Construction Sites Best Management Practices for Storm Water Pollution Prevention describes the following BMPs:

- Erosion Control
    - Marking site limits
    - Construction phasing
    - Maintain natural buffers
    - Manage run-on and run-off
    - Cover and contain exposed soil
- Sediment Control
    - Protect storm drain inlets (fiber rolls and silt fence)
    - Protect water bodies and wetlands
    - Entrance/exit control
    - Site Inspections
- Good Housekeeping
    - Waste handling
    - Hazardous materials handling/storage
    - Spill prevention
- Common Structual Control Measures & Supplies
    - Plastic liner
    - Fiber mats/fabric
    - Orange snow fence
    - Paint, flagging, and cones
    - Fiber rolls or wattles
    - Silt fence and stakes
    - Sandbags
- Final Stabilization
    - Re-growth of vegetation
    - Gravel
    - Pavement or other durable material

Other construction site environmental requirements are further addressed by the DPW ENV Hazardous Waste Program, Solid Waste Program, and Spills Program.

Site Plan Reviews

Fourteen storm water plans were reviewed in 2021. Below a summary of these plans is broken down by whether the project is in the UA of the FWA MS4 and whether the project required a Storm Water Pollution Prevention Plans (SWPPP) with APDES Alaska Construction General Permit (CGP) coverage, or if an Erosion and Sediment Control Plan was prepared for the FWA MS4 Program to review:

(3) SWPPPs inside the MS4
(2) SWPPPs outside the MS4
(8) ESCPs inside or immediately adjacent to the MS4

Comments identified for storm water plans in 2021 frequently pertained to site map, locations of contaminated sites, and illicit discharge/spill response and reporting procedures.

Procedure for Public Input

Public input may be received through the following avenues as applicable:

- Through NHC staff or Maintenance hotline (907) 353-7000
- By Interactive Customer Evaluation (ICE) comment to DPW or PAO
- By attending or calling into the Storm Water Steering Committee meetings
- By calling the contact information on the SWPPP posting at the site
- By contacting the DPW Customer Service number at (907) 361-7069
- Via phone or e-mail directly to DPW ENV

Comments will be reviewed by the DPW ENV WPM and shared with project management staff. Comments to North Haven Communities projects first go through NHC's internal management procedures and if necessary, are brought to DPW's attention during the regular water quality meetings or via e-mail.

Site Inspections

Inspection procedures: DPW ENV does two kinds of inspections at construction sites: site visits and MS4 Construction Site Inspection. For general environmental concerns and informal storm water inspections, the DPW ENV Water Program Manager, or a trained individual designated by the DPW ENV Water Program Manager, does a site visit to a construction site. Site visits are often performed for a specific environmental

concern, such as contaminated soil or groundwater, hazardous materials and waste handling, dust control, or storm water concerns.

To ensure the MS4 and CGP requirements are met, DPW ENV performs a formal MS4 Construction Site Inspection. The inspection form for the latter procedure includes fields for project information, common corrective actions, inspection type, enforcement actions, and inspector signature. The inspector reviews the hardcopy SWPPP or ESCP and checks that maps and self-inspections are current. The inspector walks around the entire site, typically with the Storm Water Supervisor or other project representative, and looks for BMPs, run-on, and runoff. Concerns for structural BMPs include proper placement, construction, condition, and BMP choice. The inspector is encouraged to discuss storm water observations with the project personnel and

Other agencies that are stakeholders in the project perform site inspections. Stakeholders that own or lease property, or are responsible for construction management like the USACE, Doyon Utilities LLC (DU), and the Bureau of Land Management (BLM), have their own internal procedures and generally include DPW ENV on findings from their inspections.

Prioritization: The top priority for MS4 Construction Site Inspections is to inspect construction sites with CGP coverage where storm water is discharged to the Fort Wainwright MS4 or waters of the U.S. and located within the MS4 urbanized area boundary. The next priority is construction sites that are less than 1 acre in size, but disturb 5,000 square feet of soil, and are located within/discharge storm water to the MS4. Thirdly, DPW ENV may inspect construction sites located outside of the MS4 and do not discharge to the MS4, that have obtained coverage under the CGP.

When/How often inspections performed: Typically inspections are performed once per calendar year. During a routine investigation, if there are the inspector may flag the site for re-inspection. A site may also receive an inspection before construction begins (NOI Inspection), at the end of final stabilization (NOT Inspection), or as a result of a complaint to DPW ENV.

Number of sites inspected: In 2021 there were a total of 7 active construction sites discharging to the MS4 with greater than 1 acre of soil disturbance and covered under the CGP. All 7 of these construction sites were inspected by DPW ENV following the MS4 Construction Site Inspection procedure. One project site was inspected twice by formal inspection because of the number of findings from the initial inspection. The re-inspection found that all necessary corrective actions were taken. One project site located outside of the MS4 boundary was inspected as well.

During the formal inspections, 15 violations were identified and corrected by project staff. The most common types of violations in 2021 were proper BMP installation and maintenance, SWPPP signage and recordkeeping, and construction exits/track-out.

In 2021 there were a total of 6 active construction sites with 5,000 square feet to 1 acre of soil disturbance that were required to write and follow an ESCP. One land clearing project was completed before it was flagged for an ESCP and the project managers were notified of future storm water plan requirements. Of these projects, DPW ENV performed only one formal inspection and the DU projects were inspected by DU Environmental staff.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for construction site storm water runoff control in 2021, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Construction Storm Water Training
Description	Although the permit requirements have already been met for this MCM, DPW ENV believes an additional training would be helpful for changing contractors and staff. The 2018 Annual Report identified a goal for DPW ENV staff and environmental contractor to update the MS4 Construction training and conduct another training session for the FWA construction/design/engineering audience related to the construction ordinance and BMP requirements referenced in Parts 3.4.3 and 3.4.4 of the MS4 Permit. Although training slides were reviewed with individuals, a larger training was not completed in 2021 and will remain as an open goal for 2022. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 1-25 Stryker Brigade Combat Team personnel. This training will occur sometime during the 2021 calendar year when the appropriate audience is available.

Dates to achieve goals	30 April 2022
Person(s) responsible	DPW ENV Water Program Manager

Measureable Goal	Storm Water Plan Inspections
Description	The permittee shall review all SWPPPs and ESCPs for construction sites in their jurisdiction for appropriate erosion/sediment/waste control at least once per year.
Dates to achieve goals	31 December 2022
Person(s) responsible	The DPW ENV Water Program Manager, trained DPW ENV personnel, and/or environmental contractors will review the plans and submit comments to the project management.

Measureable Goal	Construction Site Inspections
Description	The permittee shall inspect all construction sites in their jurisdiction for appropriate erosion/sediment/waste control at least once per year.
Dates to achieve goals	31 December 2022
Person(s) responsible	The DPW ENV Water Program Manager, trained DPW ENV personnel, and/or environmental contractors inspect each construction site (located within or impacting the MS4 boundary) once per year.

3.5 MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment

The Annual Report must document the following SWMP information related to post-construction storm water management:

- A copy of the BMP design manual containing structural and non-structural BMPs that will be used to manage post-construction runoff from new development and redevelopment projects within the MS4. List any specific priority areas for this program;
- An explanation of the design and performance features of the chosen BMPs that are intended to minimize water quality impacts;
- A copy of the established ordinance or other regulatory mechanism used to address post-construction runoff control. If the permittee has yet to develop the required regulatory mechanism, describe the plan and schedule for doing so;
- A description of how long-term operation and maintenance of the selected BMPs will be ensured, including the organizations responsible and their expected operation and maintenance schedule;
- A description of the plans to inform and educate developers and the public about appropriate project designs that minimize water quality impacts;
- A list of measurable goals for the post-construction runoff control program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and/or title of the person(s) responsible for coordination and implementation of the post-construction storm water management program.

Post-Construction Design Manual

The Army Low Impact Development (LID) Technical User Guide is the primary reference for LID and green infrastructure (GI) concerns in Army projects. The document, implementing guidance, training, and other resources are available online at the following web address:

https://mrsi.erdc.dren.mil/sustain/cx/lid/

This BMPs listed in this document were compared with four other resources: the Public Works Technical Bulletin 200-1-121 USACE Storm Water BMPs for LID, the LID BMP Toolbox from USACE, the Alaska Storm Water Guide, and the Fairbanks Green Infrastructure Manual.

The Army LID Technical User Guide includes climatic considerations for most structural BMPs, and conditions at Fort Wainwright align most with the Continental (microthermal) climate.

On Fort Wainwright, projects conducted by NHC, DU, and medical facilities constructed using DoD Medical funding are not required to follow the Army LID Technical User Guide. However, these organizations are encouraged to use LID design techniques listed in the guide.

Specific priority areas

In the past, FWA projects had not been considered for storm water drainage effects on nearby facilities, which resulted in issues like seasonal flooding. Storm water impacts are being discussed early in the planning and design phase for new development.

Written Strategy for GI/LID BMPs

The most current implementation guidance is provided in the memorandum titled "2017 Implementing Guidance, Army Stormwater Management Using Low Impact Development," referred to in this document as the "LID Implementing Guidance." According to the LID Implementing Guidance, project planning includes the following steps: site selection, site planning, runoff assessment, LID BMP strategy, cost estimating and reporting. The LID BMP strategy determined by DPW Master Planning is presented at the planning charrette phase, then integrated into the project design. Changes to the LID BMP strategy are communicated between DPW Master Planning and the project engineers and managers. Inspections during construction, addition to the real property inventory, an LID BMP Owner's Manual for operation and maintenance, example contract language, and other considerations are discussed/included in the memo.

The following tables summarize the BMPs provided in the Army LID Technical User Guide. Pollutants specifically evaluated for each BMP include total suspended solids (TSS), total phosphorus (TP), nitrate (NO_3), and temperature. These pollutants are included in the table below if the BMP is considered to have medium or high effectiveness. Some BMPs may have low effectiveness for mitigating these pollutants even if not listed. Refer to the Army LID Technical User Guide and LID Implementing Guidance for more detailed discussion.

BMP	**Minimize Total Disturbed Area**
Description	Minimizing the total disturbed area for a construction project is a site planning strategy that is designed to reduce the amount of disturbance to the site from the building footprint and orientation itself, including roads and parking lots, to ground disturbed during construction.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Preserve Natural Flow Pathways and Patterns**
Description	Preserving natural flow patterns and pathways during and after construction is a site planning strategy to maintain existing drainage patterns, areas of sheet flow, areas of the site that have depression storage, existing grades, ditches, and channels as much as possible.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low-to-medium maintenance with low-to-medium winter performance.
Pollutants/ Sources	TSS, TP

BMP	**Protect Riparian Buffer Areas**
Description	Riparian buffers are vegetated areas, natural or re-established, along water courses that protect the integrity of the habitat and hydrologic functions of that water course. Protection of riparian buffers can be determined during the project planning phase.
Type	Non-structural

Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Protect Sensitive Areas**
Description	Natural areas with high habitat value and function, water supply areas, areas of special geologic concern, culturally significant areas, and natural areas with high storm water management functions, such as sandy soils, must be identified and protected from pollutants and erosive flows associated with runoff from developed areas. Other areas include, but are not limited to, riparian buffers, wetlands, hydric soils, floodplains, steep slopes, woodlands, and other valuable habitat, such as critical habitat and rare, threatened and endangered species habitat.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Cluster Development**
Description	Cluster development refers to the concentrated development of buildings and residential lots on a portion of a larger site through avoidance of sensitive areas and reducing the lot size or reconfiguring the lot footprint.
Type	Non-structural
Features	Acceptable for residential applications.

	Generally low cost and low-to-medium maintenance with high winter performance.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Minimize Soil Compaction**
Description	Minimizing soil compaction is the practice of preventing loss of soil structure and function through avoiding and minimizing ground disturbance during construction and land use activities. Soil compaction can occur from activities such as stockpiling, heavy equipment traffic, high pedestrian use, and even heavy rainfalls
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with low-to-medium winter performance.
Pollutants/ Sources	TSS, TP, temperature

BMP	**Reduce Impervious Surfaces**
Description	Reducing impervious surfaces includes minimizing the area of streets, parking lots, and driveways as well as the surface area of the building roof. Disconnecting large areas of imperviousness or contiguous developed areas with parcels of perviousness is also a consideration when reducing impervious surfaces.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, temperature

BMP	**Site Fingerprinting**
Description	Site fingerprinting is a technique used to minimize site disturbance during construction. The smallest possible disturbance area is delineated and flagged to prevent traffic or materials storage on areas designated for conservation.
Type	Non-structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low-to-medium maintenance with high winter performance. High effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Bioretention**
Description	Bioretention is a flat-bottomed, shallow landscaped depression or basin used to collect and hold storm water runoff; allowing pollutants to settle and filter out as the water infiltrates into the ground or to an underdrain, depending on soil conditions. The various layers in the bioretention area typically include: plants, mulch or ground cover, engineered soil media, and a gravel base layer with a possible underdrain.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally medium cost and medium maintenance with medium winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Vegetated Swale**
Description	A vegetated swale is a broad, shallow storm water channel that is often used as a pretreatment device for other BMPs or to reduce the timing of and volume of runoff. Vegetated swales are densely planted with a variety of grasses, shrubs, and/or trees designed to slow, filter, and, in some cases, infiltrate storm water runoff from adjacent areas. Includes grass swales, wet swales, and bio-swales.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low-to-medium maintenance with medium winter performance. One advantage is that maintenance of vegetated swales at USAG Alaska is already included in Base Operations activities. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Vegetated Filter Strip**
Description	A vegetated filter strip is a densely vegetated strip of gently sloping area that receives runoff from an adjacent impervious area as sheet flow.
Type	Structural
Features	Acceptable for residential applications. Generally low-to-medium cost and low-to-medium maintenance with high winter performance. Medium effectiveness for climate at FWA.

Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Permeable Pavements**
Description	Permeable pavements are similar to conventional pavements but have pores or voids that allow storm water runoff to filter through the pavement surface into an underlying stone reservoir, where it is temporarily stored then either infiltrated or directed to another BMP or permeable area.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with high winter performance. Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Low effectiveness for climate at FWA (not recommended).
Pollutants/ Sources	Function of removing pollutants is dependent on construction techniques and BMPs used in conjunction.

BMP	**Rainwater Harvesting**
Description	Rainwater harvesting involves the collection and storage of rainwater for future use. Rainwater harvesting applies to collection from rooftops and on a large-scale from other impervious surfaces, such as parking lots. Collected rainwater is stored in tanks, barrels, or cisterns for later use in non-potable applications or irrigation.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and medium maintenance with medium winter performance. At USAG Alaska use of a rain barrel or cistern is

	not recommended unless maintenance is first arranged by contract or agreement. Effective for hydrologic objectives of: peak flow control, volume reduction, and water conservation. High effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Green Roofs**
Description	Green roofs (also known as living roofs and eco roofs) consist of a layer of vegetation installed on top of a conventional flat or slightly sloped roof that absorb rainwater in the soil media to be uptaken and transpired by vegetation or discharged to another BMP or storm water system.
Type	Structural
Features	Acceptable for industrial applications. Generally high cost and medium maintenance with medium winter performance. At USAG Alaska, green roofs are typically only used at existing earthen-covered storage facilities. Effective for hydrologic objectives of: peak flow control and water quality improvement.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Infiltration Practices**
Description	Infiltration practices are natural or constructed land areas located in permeable soils that capture, store, and infiltrate the volume of storm water runoff into the surrounding soil. Types of infiltration practices include dry wells, infiltration basins, infiltration berms, infiltration trenches, and subsurface infiltration beds.
Type	Structural

Features	Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement. Acceptable for residential and industrial applications. Cost and maintenance vary by type and generally medium-to-high winter performance. Dry wells are generally discouraged for use at USAG Alaska due to the incidence of historically contaminated of soil and groundwater in various areas.
Pollutants/ Sources	TSS, TP, NO_3 (varies), temperature

BMP	**Level Spreaders**
Description	A level spreader is an erosion control measure that is designed to mitigate the impact of high velocity storm water surface runoff, and can also serve to increase infiltration and reduce water pollution. Level spreaders are often used in conjunction with other LID BMPs or conventional storm water BMPs.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low cost and low maintenance with medium winter performance. Level spreading devices help to reduce the erosive nature of storm water runoff by uniformly diffusing both high and low flows over a wide area. They can also serve to promote infiltration and improve water quality by evenly distributing flows over a stabilized vegetated surface.
Pollutants/ Sources	While level spreaders themselves do not remove pollutants, by dispersing runoff to a buffer or bioretention cell, pollutants can be effectively removed.

BMP	**Constructed Filter**

Description	Constructed filters are precast or cast in place structures or excavated areas containing a layer of sand, compost, organic material, peat, or other media that filter and treat storm water runoff.
Type	Structural
Features	Acceptable for industrial applications. Generally medium-to-high cost and high maintenance with medium winter performance. Effective for hydrologic objectives of: peak flow control and water quality improvement. May be used in areas where there is a limited amount of space to treat runoff from impervious areas such as parking lots, walkways, and roofs.
Pollutants/ Sources	TSS, TP, NO_3

BMP	**Soil Restoration**
Description	Soil restoration is a practice used to deeply till compacted soils and restore their porosity by amending them with compost or other acceptable organic material.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally medium cost and low maintenance with high winter performance. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Reforestation and Afforestation**

Description	Reforestation refers to the reestablishment of forested cover in areas where development has removed forest. Afforestation is the establishment of forests on grasslands or other areas that were previously unforested.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with medium winter performance. Medium effectiveness for climate at FWA.
Pollutants/ Sources	TSS, TP, NO_3, temperature

BMP	**Riparian Buffer Restoration**
Description	Riparian buffer restoration refers to natural or constructed low-maintenance ecosystems adjacent to surface waterbodies. The riparian vegetation slows and dissipates storm water runoff entering the receiving waterbody by absorbing the energy and volume of the storm water runoff. The riparian vegetation also acts as a filter to remove pollutants from both overland storm water flow and shallow groundwater flow.
Type	Structural
Features	Acceptable for residential and industrial applications. Generally low-to-medium cost and low maintenance with medium winter performance.
Pollutants/ Sources	TSS, TP, NO_3, Temperature

Stormwater retention and detention ponds take up valuable space, are not considered LID BMPs and are highly discouraged. Traditional retention and detention ponds do not provide for maintaining pre-development hydrology, allow for minimal infiltration, and provide minimal water quality benefits.

Copy of Ordinance

Garrison Policy #35 discusses the MS4 Permit, SWMP program goals, and the requirements of the six MCMs. All individuals, units, directorates, activities, organizations, partners, and tenants at USAG FWA are required to comply with FWA MS4 Permit provisions and the installation SWMP. These parties include military, contractors, consultants and all other personnel living, working, or conducting other authorized activities, on the installation.

Long-term operation and maintenance

Currently, inspection and long-term operation and maintenance (O&M) of existing BMPs is included in the contracts for Base Operations and NHC's contractor. Because the majority of structural LID BMPs at Fort Wainwright have low maintenance requirements, such as vegetated swales and vegetated filter strips, regular mowing, trimming, and re-planting activities are typically sufficient.

Future BMPs will be reviewed in a case-by-case basis to determine whether they will be maintained or repaired by routine contract or require a more specific work solution.

Training

Training for Army LID is available online at the following web address:

https://mrsi.erdc.dren.mil/sustain/cx/lid/

Training specific to Fort Wainwright was not conducted in 2021, but will be administered in conjunction with the MS4 Construction training for the FWA construction/design/ engineering audience in 2022. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 1-25 Stryker Brigade Combat Team personnel.

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for post-construction storm water management in new development and redevelopment in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Distribute Design Manual
Description	Continue to ensure that all project design individuals and organizations have access to the LID Implementing Guidance and Army LID Technical User Guide & associated resources
Dates to achieve goals	31 October 2022, ongoing during project planning
Person(s) responsible	DPW Water Program Manager, DPW Master Planner

Measureable Goal	Training
Description	Update the MS4 Construction training and conduct another training session for the FWA construction/design/engineering audience related to MCM 4 and MCM 5 requirements. The audience invited will include DPW Engineering Division, Master Planning Division, Business Operations Division, and Utilities and Privatization staff, USACE staff, Lend Lease (development for NHC) personnel, Doyon Utilities personnel, and 1-25 Stryker Brigade Combat Team personnel.
Dates to achieve goals	30 April 2022
Person(s) responsible	DPW ENV Water Program Manager

3.6 MCM 6: Pollution Prevention and Good Housekeeping

The Annual Report must document the permittee's efforts to prevent or reduce pollutant runoff from the FWA operations through the operation and maintenance program, including:

- A description of the activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the MS4;
- A description of the employee training program used to prevent and reduce storm water pollution including the targeted department personnel, frequency of such training, and a copy of training materials;
- A summary description of the controls for reducing or eliminating the discharge of pollutants from areas owned or operated by the permittee, including but not limited to streets, roads, and highways; municipal parking lots; maintenance and storage yards; waste transfer stations; fleet or maintenance shops with outdoor storage areas; salt/sand storage locations; and snow disposal sites operated by the permittee;
- A description of procedures to ensure proper disposal of waste removed from the MS4 and the MS4 operations including dredge spoil, accumulated sediments, floatables, and other debris;
- A description of procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices;
- A list of all industrial facilities owned or operated by the permittee that discharge to the MS4, including industrial facilities that are subject to the APDES MSGP or individual APDES permits for discharges of storm water associated with industrial activity, and/or facilities identified as part of the inventory required in Part 3.3.1 of this permit. Include the DEC permit tracking number or a copy of the Industrial Notice of Intent form for each facility, as appropriate;
- A list of measurable goals for the pollution prevention and good housekeeping program, including dates by which the permittee will achieve each of the measurable goals; and
- The name and title of the person(s) responsible for coordination and implementation of the pollution prevention and good housekeeping program.

Operations and Maintenance (O&M) Program

The USAG Alaska O&M Program Document discusses the following activities occurring at FWA and the controls to reduce negative impacts to storm water quality:

- Use of sand/gravel and road deicers
- Fleet maintenance and vehicle washing operations
- Street sweeping, cleaning and maintenance
- Grounds/parks, golf course, and open space maintenance operations
- Building maintenance
- Solid waste transfer activities
- Water treatment plant operations
- Storm water system maintenance
- Snow disposal site operations
- Materials storage
- Hazardous materials storage
- Used oil recycling
- Spill control and prevention measures for refueling facilities
- FWA new construction and land disturbances

The O&M Program references the FWA Hazardous Waste/Hazardous Materials Management Plan (HW/HMMP) and the FWA Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The O&M Program Document also outlines the training and inspection procedures for motor pools, maintenance facilities, and universal waste generators, as well as outlining allowable non-storm water discharges.

The following tables describe the activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the MS4.

Procedure	**Facility Inspections**
Description	Annual inspections of facilities that have the potential to negatively impact storm water quality
Type	Inspection
Quantity	Once per year

Audience	DPW ENV Water Program Manager, environmental contractor, MSGP Facility Storm Water Supervisors, MS4 Facility Storm Water Supervisors
References	FWA MSGP, MS4 O&M Program Document
Discussion	The mission of the O&M Program is to prevent or reduce pollutant runoff from FWA operations. The O&M Program requires that facilities that are not inspected under the MSGP SWPPP on a quarterly basis, fall within the FWA MS4 urbanized area, and require some oversight be inspected on an annual basis

Procedure	**Historical Spill Site Inspections**
Description	Locations where a major spill has occurred within the past three years are inspected
Type	Inspection
Quantity	Once per year
Audience	DPW ENV Water Program, DPW ENV Spills Program, environmental contractor
References	FWA MS4 SWMP, MS4 O&M Program
Discussion	Areas where a major spill has occurred within the past three years need to be inspected on an annual basis. Observations are noted on the O&M Historical Spill Location Inspection Form. The purpose is to ensure that pollutants are not entering water bodies through storm water runoff and that the cause of the historical spill is no longer an issue.

Procedure	**Wet-weather Outfall Inspections**
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season.
Type	Inspection

Quantity	Once per year at each of the outfalls
Audience	DPW ENV Water Program and Environmental Contactor
References	FWA MS4 SWMP, MS4 Monitoring Program Plan
Discussion	The MS4 Permit requirement is to inspect these areas at least annually. This task is done by filling out an inspection form or other written report and taking photographs.

Procedure	**Snow Disposal Area Inspections**
Description	Inspect areas where snow is stockpiled and observe environmental conditions
Type	Inspection
Quantity	4 times per year
Audience	DPW ENV Water Program Manager and environmental contractor, DPW Base Operations and Base Operations contractor, NHC
References	FWA MS4 SWMP, FWA MSGP
Discussion	Snow stockpiles are inspected by DPW ENV Water Program on a quarterly basis. The MS4 Permit requirement is to inspect these areas at least annually. This task is done by filling out an inspection form or other written report and taking photographs. In the springtime, snow stockpiles are monitored for runoff to ditches, swales, water bodies, or wetlands. The inspection's purpose is to ensure that the snow stockpile areas are not being contaminated, snow is being stored properly, and no issues will arise come the spring melt.

Procedure	**Catch Basin Inspections**
Description	Annual inspection of storm water inlets
Type	Inspection
Quantity	50% of catch basins each year

Audience	DPW ENV Water Program Manager and environmental contractor, DPW Base Operations and Base Operations contractor
References	MS4 SWMP
Discussion	The inspection's purpose is to ensure that the storm inlets are functioning properly and that they will continue to properly function. There are five types of storm inlets; catch basin, drop inlet, curb inlet, surface linear, and roof drain. Inspections look for presence of water, damage, odor, trash, sediment, and condition of storm inlet. In addition, the MS4 requires that all storm inlets are marked with a stencil or placard. The structural integrity of the storm inlets are assessed by giving them a color rating, Green: No faults, Yellow: Damage to surrounding concrete or grates, Red: Broken frame.

Procedure	**Seasonal Surface Water Drainage Preventative Maintenance Program**
Description	Observation of storm water during break up and preventative maintenance
Type	Program: inspections and maintenance
Quantity	Inspections scheduled once per year during spring break up Maintenance performed through the summer
Audience	DPW Base Operations and Base Operations contractor
References	Base Operations Contract, FWA SWMP, O&M Program Document
Discussion	Program includes observation of snow melt water for direction of flow, blockage, flow problems, overflow, condition of culverts, drains, and ditches, culvert markers, trash and debris. Problems identified are prioritized for maintenance.

Procedure	**Employee Training**
Description	Storm Water Annual Training
Type	Regular Training Program

Quantity	Multiple trainings, employees receive once per year
Audience	DPW Base Operations and contractor, NHC Maintenance and landscaping, Pest Management staff, MSGP Storm Water Supervisors
References	MS4 SWMP, MSGP SWPPP
Discussion	At this point, only storm water supervisors or a limited number of individuals from each facility or organization receive the annual training.

Procedure	**Soil and Waste Management**
Description	Oversight of waste disposal and soil/sediment management
Type	Procedure/policy
Quantity	Not applicable
Audience	Waste generators
References	Installation Hazardous Waste/Hazardous Materials Management Plan, project-specific Environmental Protection Plans
Discussion	The garrison's waste disposal is managed by the DPW ENV Solid Waste and Hazardous Waste Programs. Most solid waste, including municipal trash, is disposed of at the Fairbanks North Star Borough Landfill. The landfill located on Post, outside of the UA and MS4 jurisdiction, is now used solely for asbestos-containing material and fly ash. Hazardous waste and universal waste is carefully tracked and disposed of by an environmental contractor under the supervision of the Hazardous Waste Program Manager. For the foreseeable future, soil from the installation is not permitted to be disposed of or used off the installation due to an agreement with the EPA and ADEC Contaminated Sites program. Staff from DPW ENV is fundamentally involved in management of soils and dredge material.

Procedure	**Flood Management**

Description	Buildings sited within or partially within the 100-year floodplain must follow Department of Defense (DoD) policy for construction in flood plains. For any project in or adjacent to the flood plain, applicable permits must be obtained from the Fairbanks North Star Borough (FNSB) Flood Plain Program.
Type	Procedure/policy
Quantity	Each project
Audience	DPW ENV Water Program, DPW ENV Natural Resources, training area managers, project managers, designers, and contractors
References	FNSB Flood Plain Program UFC 1-200-01 DoD Building Code and UFC 3-201-01 Civil Engineering
Discussion	Buildings sited within or partially within the 100-year floodplain must follow Department of Defense (DoD) policy for construction in flood plains. In some cases a waiver must be obtained from Army environmental leadership to construct in the special flood hazard area. Projects involving bank restoration or other flood management concerns are flagged for further environmental consideration. Applicable permits must be obtained from the FNSB Flood Plain Program. Where there is question of applicability, DPW ENV requests a decision from the FNSB Flood Plain Program.

Street and Storm Drain Cleaning Study

The MS4 Permit requires USAG Alaska to complete a study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other FWA activities with potential for storm water impacts. This study must also examine the existing practices for the disposal of waste removed from the MS4 and the MS4 operations. The Storm Drain and Street Cleaning Operations document in Appendix G summarizes the information that has been collected and what data will be collected in the future.

Industrial Facilities

Currently, two MSGP permits exist at Fort Wainwright. The US Army Garrison Fort Wainwright tracking number is AKR06AC73. Permit authorization under the 2020 MSGP was granted by ADEC effective July 2, 2021.

The Fort Wainwright Central Heat and Power Plant (CHPP) tracking number is AKR06AE33. This facility is owned and managed by DU. The CHPP facility has been sloped to minimize the outflow of storm water from the facility footprint. A relatively small amount of storm water is discharged from the north vehicle entrance and eventually into the MS4 drainage ditch along Neely Road.

The facilities included in the 2021 MSGP SWPPP are presented in the following table.

List of FWA Industrial Facilities:

Industrial Sector	Building number	Description	Activity with Potential to Pollute Storm Water							
			Fueling/ De-fueling	Above Ground Liquid Storage Tanks	Vehicle, Aircraft, & Equipment Maintenance	Vehicle, Aircraft, & Equipment Washing	Loading/ Unloading Materials	Industrial Waste Management	Outdoor Storage	Salt Storage
L	1191	Directorate of Public Works (DPW) Landfill	X	X	X		X	X		
P	1500	BLM Maintenance Facility & Fuel Pump	X		X		X	X	X	
S	1510	BLM Bulk Fuel Issue and HM/HW Management Storage	X	X			X	X	X	
P	1544	BLM Fire Cache Warehouse			X	X	X	X	X	
S	- -	BLM Fire Retardant Storage and Issue	X	X	X	X	X	X	X	
S	1557	Hangar 1						X		
S	1565	Aviation Fueling and Fuel Storage	X				X	X	X	
S	2077 (east)	Hangar 8	X		X	X	X	X	X	
S	2077 (west)	Hangar 7	X		X	X	X	X	X	
S	2081	Aviation Re-fuel Facility	X	X				X		
S	2088	Hangar 6	X		X	X	X	X	X	
P	2116	Alert Holding Area (AHA)					X			
S	2120	Fueling/De-fueling Island at AHA	X	X						
S	2132	Hangar 5	X		X	X	X	X	X	
P	2295 (north & south)	Vehicle/Equipment Maintenance Facility	X		X	X	X	X	X	
P	2400	Railhead Operations	X	X		X	X		X	
P	2297	Brigade Motor Pool			X	X	X	X	X	

Industrial Sector	Building number	Description	Activity with Potential to Pollute Storm Water							
			Fueling/ De-fueling	Above Ground Liquid Storage Tanks	Vehicle, Aircraft, & Equipment Maintenance	Vehicle, Aircraft, & Equipment Washing	Loading/ Unloading Materials	Industrial Waste Management	Outdoor Storage	Salt Storage
S	3007	Hangar 4	X		X	X	X	X	X	
S	3009	Unmanned Aircraft Systems (UAS) Hangar	X		X		X	X	X	
S	3015	DPW Contractor Maintenance	X		X	X	X	X	X	X
P	3030	Logistics Readiness Center					X		X	
P	3380	Stryker Wash Facility				X		X		
P	3425	Vehicle/Equipment Maintenance Facility			X	X	X	X	X	
P	3479 (South)	Light Maintenance Facility			X		X			
P	3480	Maintenance Facility			X	X	X	X	X	
P	3485	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3487	Warehouse					X		X	
P	3489	HW Consolidation Facility					X	X	X	
P	3490	DOL Installation Maintenance Division			X	X	X	X	X	
P	3492 (north & south)	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3494 (north & south)	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3496	Vehicle/Equipment Maintenance Facility		X	X	X	X	X	X	
P	3498	Consolidated Brigade Motor Pool		X	X	X	X	X	X	
P	5008 & 5010	Brigade Warehouse		X			X		X	

Non-MSGP facilities chosen to be incorporated in O&M Program are included in the O&M Program document and shown in the table below.

List of Non-Industrial Facilities with Potential Storm Water Impacts

Building Number	Description	Activity with Potential to Pollute Storm Water									In MS4
		Fueling/De-fueling	Above Ground Liquid Storage Tanks	Vehicle and Equipment Maintenance	Vehicle and Equipment Washing	Loading/ Unloading Materials	Hazardous Waste Management	Universal Waste Management	Outdoor Storage	Salt Storage	
1053	Northern Warfare Training Center			X		X	X	X	X		Yes
1185	Birch Hill Ski Area	X	X	X		X	X	X	X		No
2095, 2096	Chena Bend Golf Course Maintenance	X	X	X	X	X	X	X	X		Yes
3018	DPW Contractor Shops					X	X	X	X	X	Yes
3026	Pest Management Shop				X	X	X	X	X		Yes
3030	Logistics Readiness Center (Inspected under MSGP)					X	X	X	X		Yes
3467	Vehicle / Equipment Maintenance Facility			X	X	X	X	X	X		Yes
3470	Vehicle / Equipment Maintenance Facility			X	X	X	X	X	X		Yes
3484	Defense Fuel Supply Point (Bulk Fuel Issue)	X	X			X	X				Yes
3562	Quick Lane Maintenance Shop			X		X	X	X	X		Yes

Building Number	Description	Activity with Potential to Pollute Storm Water									In MS4
		Fueling/De-fueling	Above Ground Liquid Storage Tanks	Vehicle and Equipment Maintenance	Vehicle and Equipment Washing	Loading/Unloading Materials	Hazardous Waste Management	Universal Waste Management	Outdoor Storage	Salt Storage	
3730	Automotive Skills Center			X	X	X	X	X	X		Yes
4050	MWR Outdoor Recreation			X	X	X	X	X	X		Yes
4058	AAFES Express Fueling Station	X				X		X	X		Yes
5109	Fort Wainwright Range Control	X	X	X		X	X	X	X	?	No

Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for O&M in 2022, the dates to achieve them, and the person(s) responsible for each. As previously noted, the Garrison Commander has ultimate authority for Permit compliance, but the roles listed in these tables reflect who is delegated to help achieve each goal.

Measureable Goal	Wet Weather Outfall Inspection
Description	Perform a wet weather inspection at all outfalls at least once during the non-snowy season. (co-listed with MCM 6 measureable goals)
Dates to achieve goals	31 October 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	Snow Disposal Area Inspections
Description	Perform an inspection at all snow disposal areas at least once per year. Typically, snow disposal areas are inspected during spring breakup to monitor meltwater and during the summer as they melt.

Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	**Catch Basin Inspections**
Description	Inspect 50% of catch basins each year. Because many catch basins were not inspected in 2020, they will be inspected in 2021 and the total percentage of catch basins inspected this year will be greater than 50.
Dates to achieve goals	31 October 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor

Measureable Goal	**Street & Storm Drain Cleaning Study**
Description	USAG Alaska will continue to collect data as part of the study of the effectiveness of current street cleaning operations, storm drain cleaning operations, and other storm water impacts.
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager, environmental contractor, with assistance from DPW ENV Natural Resources and DPW Base Operations

Measureable Goal	**Training**
Description	FWA must continue to update and conduct training for appropriate FWA personnel related to optimum maintenance practices for the protection of water quality
Dates to achieve goals	31 December 2022
Person(s) responsible	DPW ENV Water Program Manager

4.0 MONITORING, EVALUATION, REPORTING, AND RECORDKEEPING REQUIREMENTS

The MS4 Permit requires USAG Alaska to discuss measures that will be implemented over the next 12-month period to achieve compliance with permit provisions. Most of these requirements and associated measures are specific to MCMs and are discussed in Section 2.0 of this report. This section discusses additional requirements that are not specific to the six MCMs, and therefore, were not previously discussed in this report.

4.1 Monitoring Program Plan

Part 4.1.1 of the MS4 Permit requires a comprehensive Monitoring Program Plan (MPP) and Quality Assurance Project Plan (QAPP). A description of this plan must be included in the SWMP document. The Monitoring Program Plan must be designed to accomplish the following objectives:

- Assess compliance with this permit
- Measure the effectiveness of the SWMP
- Measure the chemical, physical, and biological impacts to the receiving waters resulting from storm water discharges
- characterize storm water discharges
- identify sources of specific pollutants
- detect and eliminate illicit discharges and illegal connections to the MS4

Monitoring of storm water outfalls in accordance with the FWA MPP and QAPP began in 2018. Eight of the outfalls at Fort Wainwright were selected for regular sampling.

Due to the variable conditions at and upstream of each outfall, samples cannot always be collected during monitoring events. Access to the actual outfall may also be blocked by the Chena River, as has historically been an issue Outfall FWA-A and Outfall-009.

USAG Alaska uses weather data recorded at the Fairbanks International Airport (FAI) weather station to keep the official log. For reference, weather data is also accumulated from the North Pole weather station. In the spring, personnel visit outfalls regularly around the anticipated breakup date to determine where flow may be sampled. After the breakup sample has been collected, attempts for sample collection are made when the precipitation forecast for Fairbanks is great enough that it is

expected to generate flow. Staff may stop by several outfalls or look at drainage ditches to determine how likely an impending discharge event is to occur. The likelihood of a discharge event is dependent on how dry the soil is, whether the ground is frozen, the ambient temperature and pressure, and the intensity and duration of the rain event forecasted. In interior Alaska, rainfall patterns change during the season. In the early- to mid-summer, intense, geographically concentrated rain events can cause flow at one outfall but not another, or can yield very different readings from weather station to weather station. In the later summer, rain events may occur at a lower intensity but over a longer period of time and a broader area.

Monitoring results are recorded on a Discharge Monitoring Report (DMR) form and submitted annually to ADEC for the previous 12-month period along with this Annual Report. Figure 3 shows the locations of storm water outfalls from the Fort Wainwright MS4.

The DPW ENV is responsible for developing and implementing the MS4 monitoring program and associated submittals.

Outfall Monitoring Requirements

The selected outfalls must be monitored four times per year. Samples are analyzed for the parameters presented in the table below. Measurement of fecal coliform and E. coli bacteria has been added to the MPP/QAPP above and beyond the permit requirements in order to monitor the impact of pet waste from residential neighborhoods.

Parameter	Units	Discussion	Value Comparison [1]
Flow	Cubic feet per second (cfs)	Flow measures the volume of water passing through the outfall over a given time period. Flow can vary widely during and after a rainstorm.	Varies at each outfall
Temperature	Degrees Celsius (°C)	Temperature at each outfall can depend on the weather, the surfaces storm water lands on and runs across, presence of non-storm water discharges, how long water sits, and other factors.	Less than 30°C; 5 to 17°C [3]
pH	Standard pH units	pH is commonly known as acidity and is dependent on a host of environmental	6.5 to 8.5

		interactions. Rain and snowmelt is generally lower in pH than water in a lake or river that has interacted with the environment.	
Dissolved oxygen (DO)	Milligrams per liter (mg/L)	Fresh rain often has a higher DO level than surface water, and fast-moving water has a higher DO level than stagnant water. Interaction with biological organisms and certain inorganic chemicals can lower the DO of water. Cold water can hold more DO than warm water.	
Biochemical oxygen demand, 5-day (BOD)	mg/L	BOD is the amount of oxygen needed to biologically degrade, or oxidize, organic matter in the water.	Less than 1.0 [4]
Chemical oxygen demand (COD)	mg/L	COD is the amount of oxygen used to oxidize both biological and non-biological materials in the water. COD can measure organic material that decomposes very slowly like wood, which is not typically measured by BOD. COD can also rise if there are vehicle fluids, trash, fertilizers, pesticides, or other pollutants.	3.0 to 46 [4]
Turbidity	Nephelometric turbidity units (NTU)	Turbidity is how cloudy or clear a sample of water appears. Most tap water is less than 1 NTU. Higher turbidity may result from naturally-occurring organic matter, like decaying leaves, or from pollutants such as sediment or algae blooms.	25 [2]
Total suspended solids (TSS)	mg/L	TSS is generally proportional to turbidity measurements, but specifically measures the amount of particulate material suspended in the water.	13 to 42 [4]
Total aromatic hydrocarbons (TAH)	Micrograms per liter (µg/L)	TAH is the sum of certain hydrocarbon chemicals. The source of TAH is most likely from human sources such as vehicle fluid leaks, drips, and spills.	15; no film or sheen

Total aqueous hydrocarbons (TaqH)	µg/L	TaqH is the sum of certain petroleum hydrocarbons that tend to be very persistent in water. TaqH does not measure oil and grease that floats on the water surface.	15
Fecal Coliform	Presence/Absence or colony forming units per 100 milliliters (CFU/100mL)	Fecal coliform is a type of bacteria. It may not be harmful in itself, but it is an indicator of untreated sewage, pet waste, or wild animal scat present in the water.	200 CFU/100mL over 30 days [5]
Escherichia coli (E. coli)	Presence/Absence or CFU/100mL	Most types of E. coli bacteria are not harmful, but some strains can cause illness in people and other animals. Like fecal coliform, presence of E. coli indicates untreated biological waste in the water.	126 CFU/100mL over 30 days

Notes:

[1] Unless otherwise specified, values from 18 AAC 70, Fresh water uses: Water recreation: contact recreation

[2] Sigler and others (1984) suggest a limit for salmonids of 25 nephelometric turbidity units

[3] Brungs and Jones (1977) suggest water temperature of 5-17°C for salmonoids growth.

[4] Alaska Army Lands Withdrawal Renewal EIS (1999), typical values listed in text.

[5] 18 AAC 70, Fresh water uses: Water recreation: secondary recreation

Each of these measurements can provide information about what types of pollutants storm water may be interacting with, or potential issues with drainage on Fort Wainwright. However, one measurement alone cannot tell the whole story, but be used as a clue to determine the source or cause(s).

Storm water is referred to as a "non-point source" because it is made up of water falling on or running through a wide variety of landscapes and potential pollutants. This means that sample results are a reflection of what is going on over a large area and individual issues may be difficult to track down. It also means that the combination of many small sources of pollution can add up to become one large source of pollution. Monitoring these parameters over time helps provide more clues to tell the story of Fort Wainwright storm water quality.

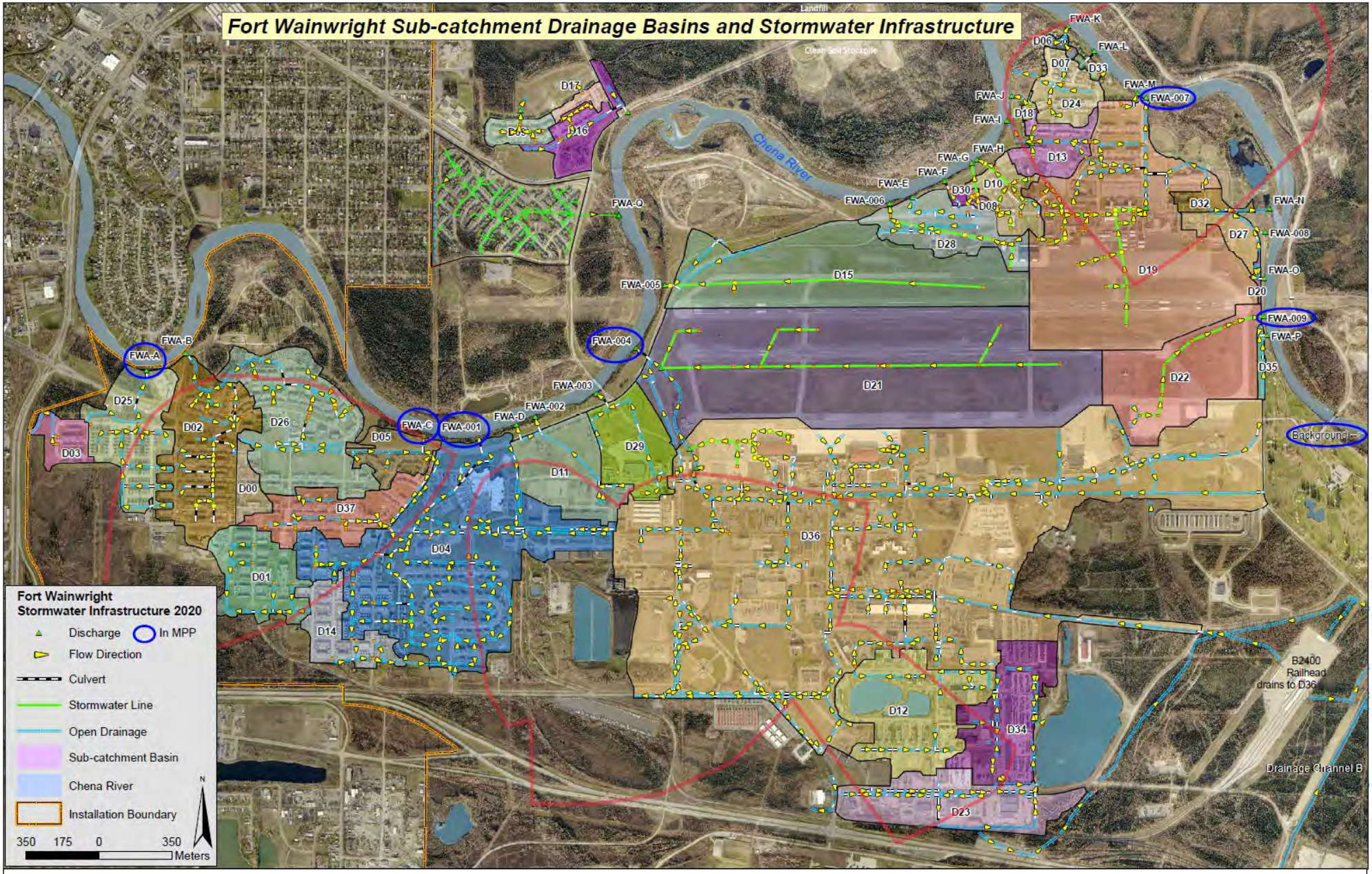

Figure 3. Fort Wainwright Outfall Location Map

4.2 Sampling Activities & Results

In 2021, storm water samples were attempted to be collected during four events and analytical samples were collected during three different event.

The subsections below describe the samples collected and a summary of notable results. A full record of results is submitted to ADEC via Discharge Monitoring Report.

Quarter 1

The Quarter 1 sampling event was performed during spring break up. Surface water samples from melting snow were collected between 22 and 28 April 2021 from 3 Outfalls: FWA-001, FWA-004, and FWA-009.

Compared to previous years, pH measurements were comparable to 2019 values and higher than the 2020 values, ranging from 6.3 to 7.21. At the time, there was no indication that the instrument calibration was off or that the standards used to calibrate the instrument were compromised.

COD and BOD were slightly higher during Quarter 1 2021 than in previous years with COD values ranging from 44.9 to 65 mg/L and BOD values ranging from 6.21 to 10.9 mg/L. Other parameters were within normal range.

The instrument used to measure DO in the field was malfunctioning while sampling at outfalls FWA-001 and FWA-004, so it was not recorded at those locations.

Fecal coliform and E. coli are only sampled at outfalls FWA-A and FWA-C, so there were no results for these bacteria during the first quarter.

Quarter 2

The Quarter 2 sampling event was performed during a rain storm on 17 June 2021. Measured at the FAI weather station, the total rainfall in the 24-hour period was 0.12 inches, and at the North Pole weather station the total rainfall was 0.36 inches. Two samples were collected during this event: one from outfall FWA-009, which comes directly off the airfield, and one from the background point at Drainage Channel B at the golf course.

The DO levels at both outfalls were lower than past years' data, both measured to be 1.8 mg/L. Compared to background, water from the airfield had slightly higher pH (8.28 compared to 7.94), higher COD (39.3 mg/L compared to 10.9 mg/L), and higher BOD (4.1 mg/L compared to non-detect). These readings are likely due to the industrial activities, pesticide use, and likelihood of leaks, drips, and spills of petroleum products on the airfield. With the exception of pH, all other sample results were within normal

ranges. It should be noted that total aqueous hydrocarbons were detected in the background sample, where they have not been detected in previous years.

Fecal coliform and E. coli are only sampled at outfalls FWA-A and FWA-C, so there were no results for these bacteria during the second quarter.

Quarter 3

The Quarter 3 sampling event was performed during a rain event on 09 August 2021. Measured at the FAI weather station, the total rainfall in the 24-hour period was 0.36 inches, and at the North Pole weather station the total rainfall was 0.80 inches. Again, the same two outfalls were samples as in the previous quarter: FWA-009 and the background outfall.

Sample results were comparable to Quarter 2, although the instrument used to measure turbidity in the field was malfunctioning so this parameter was not recorded. The DO measurement at outfall FWA-009 was once again lower than average at 3.4 mg/L. The pH measurement at outfall FWA-009 was also lower than the previous quarters at 5.4. All other measured results were within normal ranges.

Fecal coliform and E. coli are only sampled at outfalls FWA-A and FWA-C, so there were no results for these bacteria during the third quarter.

Quarter 4

A Quarter 4 sampling event was attempted during multiple rain events after Quarter 3. On 27 August 2021 the FAI weather station measured total rainfall in the 24-hour period at 0.37 inches, and at the North Pole weather station the total rainfall was 0.12 inches. Flow from the outfalls was nonexistent by the time samples were attempted to be collected, so no field measurements or analytical samples were collected.

Overall trends

In 2021, three trends were observed: higher than average COD and BOD during the spring breakup event, lower than average DO in general, and slightly more neutral pH levels. Only seven primary samples were collected in 2021, so analysis of trends should keep in mind the relatively small sample size.

Higher COD results and lower DO results are likely due to the use of man-made chemicals such as vehicle fluids, fertilizer, pesticides, and others. DPW ENV will continue to observe and collect data to determine specific sources. The low DO during Quarter 2 sampling is odd because both the background sample and the airfield sample from FWA-009, two very different sources of water, measured the exact same

value, so equipment malfunction is a potential cause. However, in Quarter 3 DO measurements at the same two locations were below average again, so environmental factors may well be the cause.

The source of low pH readings in 2020 remains unexplained, although measurements were generally less acidic as mentioned previously. During the 2022 monitoring season, DPW ENV staff will continue to watch for low pH measurements and if needed, measurements will be taken at other locations to trace a potential source.

In order to meet airfield safety regulations and for other pest management purposes, the Base Operations contractor applies weed control pesticides at Ladd Army Airfield and other nearby sites with oversight from the DPW ENV Installation Pest Manager. Records show that the use of pesticides on and around Ladd Army Airfield decreased dramatically in 2020 and again in 2021. A change in strategy to increase the use of mechanical removal and decrease the use of pesticides across the cantonment may be part of the changes in chemical properties measured in runoff.

In 2021, pesticides with relatively high pH were applied on the airfield from June 10 to 14, only a few days prior to storm water sampling, so the slight rise in pH measured at outfall FWA-009 may have been affected by this activity. In previous years, pesticides with an average lower pH were not applied until August or September. These products may have an effect on pH of snowmelt in the subsequent year. Because less product was applied and earlier in the summer in 2021 and because the chemicals used have a basic pH in solution, it will be informative to see any changes in snowmelt runoff in 2022.

Fecal coliform and E. coli, although not sampled for in 2021, are inferred based on observations in housing areas of the failure to clean up after dogs. At outfall FWA-A, this problem may also be added to with wild animal scat. It should be mentioned that dog and cat feces can contain other harmful bacteria, worms, and chemicals that can spread to other animals and disrupt the existing ecosystem.

4.3 Evaluation of Overall Program Effectiveness

This is the fourth reporting cycle under the FWA MS4 Permit, accounting for the 12-month period from January through December 2021.

Annual Effectiveness Assessment by evaluating compliance with the permit conditions, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals for each of the MCMs.

The annual effectiveness assessment must:

4.2.1 Use the monitoring and assessment data described in Part 4.1 to specifically assess the effectiveness of each of the following:

4.2.1.1 Each significant activity/control measure or type of activity/control measure implemented;

4.2.1.2 Implementation of each major component of the SWMP (Public Education/Involvement, Illicit Discharges, Construction, Post-Construction, Pollution Prevention and Good Housekeeping); and

4.2.1.3 Implementation of the SWMP as a whole.

.2.2 Identify and use measurable goals, assessment indicators, and assessment methods for each of the items listed in Part 4.2.1.

4.2.3 Document the permittee's compliance with permit conditions.

4.2.4 Based on the results of the effectiveness assessment, the permittee must annually review their activities or control measures to identify modifications and improvements needed to maximize SWMP effectiveness, as necessary to achieve compliance with this permit. The permittee must develop and implement a plan and schedule to address the identified modifications and improvements. FWA activities/control measures that are ineffective or less effective than other comparable FWA activities/control measures must be replaced or improved upon by implementation of more effective FWA activities/control measures.

Activity/Control Measure Effectiveness

MCM	**MCM 1: Public Education and Outreach**
Primary audience	Soldiers, Families, Civilians, contractors and other community members
Primary focus	The primary focus of the MCM 1 program is to provide information and guidance to help individuals reduce pollution in their personal lives. Several brochures are aimed at pollution reduction in the workplace, but most of the flyers, brochures, articles, and outreach is targeted at choices at home and off the clock.

Key methods	Brochures and flyers, newspaper articles, social media posts, website
Sample results	No samples were collected for fecal coliform and E. coli in 2022, but elevated COD and BOD results from outfall FWA-001, which drains Tanana Trails and Taku Gardens neighborhoods, may be linked to pet waste and fertilizers/pesticides. Observations from NHC indicate that pet waste is still a major issue in housing areas.
Compliance discussion	USAG Alaska has met the measureable goals outlined for 2021. Pet Waste flyers and a roll of dog poo baggies are given to each new family moving on Post through NHC. NHC also has enforcement policies spelled out in the rental agreement to inspect yards, issue warnings, and impose fees as necessary. The new brochure on Lawn and Garden Care includes sections on pet waste proper use of lawn chemicals and this brochure was distributed to new residents in 2021.
Look ahead	Pet Waste and Lawn and Garden Care flyers will continue to be distributed. NHC will continue to provide reminders to residents via Facebook and enforcement policies. DPW ENV is working with PAO to identify other methods of encouraging residents to scoop the poop. Additional signage will be installed in Spring/Summer 2022 once the ground has thawed.

MCM	**MCM 2: Public Involvement and Participation**
Primary audience	Soldiers, Families, Civilians, contractors and other community members
Primary focus	The primary focus of the MCM 2 program is to provide information and guidance to help individuals reduce pollution in their personal lives. Several activities are executed through the workplace or mission, such as military unit assignments for Spring Clean Up.

Key methods	Public knowledge/attitude survey, Storm Water Steering Committee and meetings, community events, storm drain stenciling
Sample results	Pet Waste
Compliance discussion	The target of marking 100% of storm drain inlets was not met.
Look ahead	Storm drain inlet marking will be performed in 2022. DPW ENV will work with Birchwood Homes to complete inlet marking and inspection requirements in this subdivision. Routine tasks such as posting the SWMP and Annual Report online, the community trash pickup day, and Storm Water Steering Committee meetings are scheduled for 2022.

MCM	**MCM 3: Illicit Discharge Detection and Elimination**
Primary audience	Soldiers, Civilians, contractors and other tenants
Primary focus	Awareness if IDDE and reporting illicit discharges and spills while on the job and off.
Key methods	Training, outreach materials, inspections/monitoring, illicit discharge tracking, investigation and cleanup
Sample results	Results of elevated COD and lowered pH are likely due to factors from commercial and industrial work like application of fertilizer, vehicle leaks, spills, or pesticide use.
Compliance discussion	Garrison Policy #35 has been updated to specifically discuss illicit discharges. The new Spills Program Manager has been assisting in executing the IDDE program.
Look ahead	Construction Training scheduled for Spring 2022 will be helpful in educating the construction/design/engineering audience about illicit discharge concerns on construction sites.

MCM	MCM 4: Construction Site Storm Water Runoff Control
Primary audience	Soldiers, Civilians, contractors and other tenants engaging in construction activities
Primary focus	Preparing functional plans and BMPs, following construction SWPPPs and ESCPs while on the job
Key methods	Training, outreach materials, site plan reviews, inspections/monitoring
Sample results	Sample results, spill reports, and inspection observations suggest that deleterious levels of construction site pollutants are not reaching receiving waters.
Compliance discussion	Not all construction sites less than 1 acre in size were inspected in 2021. Construction Training was not completed in 2021.
Look ahead	Another construction training will be shared with the primary audience. There are key topics to address with the construction audience that can reduce the risk of erosion or sediment in runoff. There were multiple findings at each construction site inspected in 2021, including one instance of an illicit discharge of sediment into the MS4. A greater emphasis will be placed on future work order and SWPPP reviews to set the expectation for an MS4 inspection. A new ESCP template in development includes a field for documenting MS4 inspections so there is accountability written into these plans. Additional staff with Alaska Construction Erosion and Sediment Control Lead training have been tapped to help conduct inspections on behalf of the MS4.

MCM	MCM 5: Post-Construction Storm Water Management in New Development and Redevelopment
Primary audience	Soldiers, Civilians, contractors and other tenants engaging in design, construction, and maintenance activities
Primary focus	Preparing functional plans and BMPs, following construction and design guidance, ongoing maintenance

Key methods	Design manual, plan reviews, training,
Sample results	Sample results are not directly linked to post-construction storm water BMPs
Compliance discussion	MCM 5 training was not conducted in 2021.
Look ahead	The post-construction training will be shared with the primary audience. DPW Engineering and DPW Master Planning are helping to ensure Army Low Impact Development policies are followed.

MCM	**MCM 6: Pollution Prevention and Good Housekeeping**
Primary audience	Soldiers, Civilians, contractors, and other tenants engaging in commercial, industrial, and maintenance activities
Primary focus	To prevent or reduce pollutant runoff from FWA operations, including infrastructure maintenance, snow management, industrial activities, and other public utility operation
Key methods	Inspections, training, support and enforcement under the Solid Waste, Spills, Pest Management, and Hazardous Waste programs
Sample results	Results of elevated COD and lowered pH are likely due to factors from commercial and industrial work like application of fertilizer, vehicle leaks, spills, or pesticide use.
Compliance discussion	Catch basin inspections completed in 2021, but storm drain stenciling was not.
Look ahead	Storm drain stenciling will be completed in 2022. Training and inspections will continue as in past years. DPW ENV will continue to work with operations & maintenance contractors and staff to collect street and storm drain cleaning data.

The SWMP includes the separate program plans such as the IDDE Program Manual, the O&M Program Document, the Implementing Guidance and Army LID Technical User Guide, and the MPP and QAPP. As a whole, these plans are appropriate for the Fort

Wainwright MS4. In order to increase the effectiveness of the SWMP and associated documents, PWE plans to emphasize the need for agencies and individuals across the organizations to follow the programs and integrate MS4 concerns in future contracts and procedures.

Compliance with Permit Conditions

Training for construction and post-construction has been delayed. Due to the complex nature of contracts, tenant agreements, and Federal, DoD, and Army regulations and requirements, the training has gone through multiple revisions. COVID-19 restrictions and technological roadblocks with video conferencing have also been challenges to providing a finalized training program. Throughout the development of training materials, DPW ENV has identified both concerns and best practices that have strengthened the MCM 4 and 5 programs and relationships with the DPW, USACE, NHC/LendLease, and military personnel involved in construction and design. There have been benefits to the MS4 Program by having repeated discussions with other stakeholders, even though the training requirements were not met at the time. Examples include expanding the Environmental Work Order Review process to include more projects, education provided during construction inspections, and increased MS4 Program involvement in the initial project planning stages. These relationship-building and informal education efforts will provide a more applicable and robust training for a broader audience that can be formally documented.

Measureable Goal	pH measurement
Description	Collecting additional pH measurements during storm water sampling.
Dates to achieve goals	Concurrent with outfall sampling events.
Person(s) responsible	Environmental contractor, DPW ENV Water Program Manager

Measureable Goal	Update MPP and QAPP
Description	Updates to the MPP & QAPP to include the new Outfall FWA-Q and to remove the former outfalls to the gravel pit (FWA-010) will be made in 2022.
Dates to achieve goals	Target date 30 May 2022

Person(s) responsible	DPW ENV Water Program Manager and environmental contractor

In general, getting more people on board with MS4 program requirements will improve compliance and storm water quality. It is unclear whether some activities or control measures are ineffective or less effective than others. One piece of anecdotal feedback is that people pay attention less when the same information, in the same format, is given out year after year in educational materials and training. Through the Sergeant Salmon School of Environmental Basics, development of new educational materials, and engaging new voices, USAG Alaska is trying to keep storm water concerns relevant to the people and organizations who are responsible for maintaining the environment.

5.0 Certification

Appendix A, Part 1.12.3 of the FWA MS4 Permit states the following:

> Any report required by an APDES permit, and a submittal with any other information requested by the Department, must be signed by a person described in Appendix A, Part 1.12.2, or by a duly authorized representative of that person.

I certify under penalty of law that this Annual Report, and all attachments, were prepared under my supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Authorized Representative: BOB LARIMORE

Title: ENVIRONMENTAL DIVISION CHIEF

Signature: Erin Deck For Bob Larimore

Date Signed: 15-FEB-22

Email: robert.k.larimore.civ@army.mil

Appendix A: Summary Annual Report

ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
MS4 – Summary Annual Report Form

1. MS4 Information

U.S. Army Garrison Alaska; Fort Wainwright, AK — Name of MS4

AKS055859 — Permit Number

Robert — Name of Contact Person (First)

Larimore — (Last)

Chief, Environmental Division — (Title)

(907) 361-4213 — Telephone (including area code)

robert.k.larimore.civ@mail.mil — Email

IMFW-PWE (Larimore), 1046 Marks Road — Mailing Address

Fort Wainwright — City

Alaska — State

99703 — Zip Code

What size population does your MS4 serve? 17,850

What is the reporting period for this report? (mm/dd/yyyy) From 01/01/2021 to 12/31/2021

2. Water Quality Priorities

A. Does your MS4 discharge to waters listed as impaired on a state 303(d) list? ☐ Yes ☑ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4. Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

C. What specific sources contributing to the impairment(s) are you targeting in your storm water program?

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☑ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☑ No

3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☑ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

Oil and sheen-causing petroleum, oil, and lubricants, loose trash and litter, pet waste, household chemicals, vehicle washing, industrial SWPP, general urban runoff, and sediment.

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

During inspections at industrial facilities (MSGP), worked with SWPP Team and other staff to correct dozens of control measures, such as spill kits, drip pans, spill reporting, HAZWASTE storage, secondary containments, and others.
Approximately 40 people used the Household Hazardous Waste Program to pick up and drop off household chemicals and divert potential pollutants. Facebook statistics showed that the multiple pieces of content shared on the Fort Wainwright page received approximately 1,500 views.

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your storm water program? ☑ Yes ☐ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

- Erosion and sediment control requirements? ☑ Yes ☐ No
- Other construction waste control requirements? ☑ Yes ☐ No
- Requirement to submit construction plans for review? ☑ Yes ☐ No
- MS4 enforcement authority? ☑ Yes ☐ No

B. Do you have written procedures for:

- Reviewing construction plans? ☑ Yes ☐ No
- Performing inspections? ☑ Yes ☐ No
- Responding to violations? ☑ Yes ☐ No

C. Identify the total number of active construction sites ≥ 1 acre in operation in your jurisdiction during the reporting period. 7

D. How many of the sites identified in 4.C did you inspect during this reporting period? 7

E. Describe, on average, the frequency with which your program conducts construction site inspections.

Formal inspections performed once per year. Site visits ranged from 1 to 3 visits/season.

F. Do you prioritize certain construction sites for more frequent inspections? ☑ Yes ☐ No
If Yes, based on what criteria?
Re-inspection may be performed based on findings during routine inspection. Inspection or additional inspection may be performed based on complaints received. Additional inspections performed on projects contracted by the USACE per project manager request.

G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☐ Yes	Notice Of Violation	#		No Authority ☐
☐ Yes	Administrative Fines	#		No Authority ☐
☐ Yes	Stop Work Orders	#		No Authority ☐
☐ Yes	Civil Penalties	#		No Authority ☐
☐ Yes	Criminal Actions	#		No Authority ☐
☐ Yes	Administrative Orders	#		No Authority ☐
☑ Yes	Other Identified corrective actions required during inspections	#	15	

H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☑ Yes ☐ No

I. What are the 3 most common types of violations documented during this reporting period?
a. Proper BMP installation & maintenance b. SWPPP Signage & SWPPP amendments c. Construction exits and track-out

J. How often do municipal employees receive training on the construction program? Twice during permit cycle, next planned for Spring 2022

5. Illicit Discharge Elimination

A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☑ Yes ☐ No

B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☑ Yes ☐ No

C. Identify the number of outfalls in your storm sewer system. 26

D. Do you have documented procedures, including frequency, for screening outfalls? ☑ Yes ☐ No

E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period? 26

F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? 26

G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type. MSGP & MPP outfalls inspected quarterly. Else, at least annually.

H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☑ Yes ☐ No

I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☑ Yes ☐ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered?

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated?

L. How often do municipal employees receive training on the illicit discharge program? Annually

6. Storm Water Management for Municipal Operations

A. Have storm water pollution prevention plans (or an equivalent plan) been developed for:

- All public parks, ball fields, other recreational facilities and other open spaces ☐ Yes ☑ No
- All municipal fleet and building maintenance activities ☑ Yes ☐ No
- All municipal construction activities, including those disturbing greater than 1 acre ☑ Yes ☐ No
- All municipal storm water system maintenance ☑ Yes ☐ No
- All municipal snow disposal site operation and maintenance activities ☑ Yes ☐ No
- Other:

B. Are storm water inspections conducted at these facilities? ☑ Yes ☐ No

C. If Yes, at what frequency are inspections conducted? Quarterly for active facilities under the MSGP permit and snow disposal sites, annually for all else

D. List activities for which operating procedures or management practices specific to storm water management have been developed (e.g., road repairs, catch basin cleaning).

Operations at Industrial facilities have specific control measures in the MSGP SWPPP. The O&M Program Document provides description for MCM 6 Pollution Prevention and Good Housekeeping activities.

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☑ Yes ☐ No

F. If Yes, which activities and/or facilities receive most frequent inspections?

Snow stockpile areas receive inspections at least quarterly. Housing areas are inspected more frequently by North Haven Communities.

G. Do all municipal employees and contractors overseeing planning and implementation of storm water-related activities receive comprehensive training on storm water management? ☑ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☑ Yes ☐ No

I. If so, how frequently and/or under what circumstances? Annual training typically provided concurrent with other storm water training or by request for new staff.

7. Long-term (Post-Construction) Storm Water Measures

A. Do you have an ordinance or other regulatory mechanism to require:

- Site plan reviews for storm water/water quality of all new and re-development projects? ☑ Yes ☐ No
- Long-term operation and maintenance of storm water management controls? ☑ Yes ☐ No
- Retrofitting to incorporate long-term storm water management controls? ☐ Yes ☑ No

B. If you have retrofit requirements, what are the circumstances/criteria?
N/A

C. What are your criteria for determining which new/re-development storm water plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.)

All new/re-development projects are reviewed by DPW ENV program managers as applicable, including the Water Program. The USACE & DPW Engineering review for compliance with standard contract inclusion Appendix CC, LEED requirements, ADEC Engineering Plan review, and EISA Section 438.

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☑ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes	☑ Yes	☐ No
Peak discharge rates	☑ Yes	☐ No
Discharge frequency	☑ Yes	☐ No
Flow duration	☑ Yes	☐ No

F. Please provide the URL/reference where all post-construction storm water management standards can be found.
https://mrsi.erdc.dren.mil/sustain/cx/lid/ "2017 Implementing Guidance, Army Stormwater Management Using Low Impact Development" and Standard Contract Appendix CC

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection?

H. How many of the plans identified in 7.G were approved?

I. How many privately owned permanent storm water management practices/facilities were inspected during the reporting period? 0

J. How many of the practices/facilities identified in 7.I were found to have inadequate maintenance? n/a

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections? n/a

L. Do you have authority to take enforcement action for failure to properly operate and maintain storm water practices/facilities? ☑ Yes ☐ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain storm water management practices? 0

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? Yes, in development

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☐ Yes ☑ No

P. How often do municipal employees receive training on the post-construction program? TBD, once per permit cycle and annually thereafter

8. Additional Information

Please include any additional information on the performance of your MS4 program. If providing clarification to any of the questions on this form, please provide the question number (e.g., 2C) in your response.

On May 3, 2021 USAG Alaska submitted a new permit application to APDES; however, because of time, resource, and other constraints, but through no fault of the permittee, a new permit was not able to be issued before the expiration date. On October 29, 2021 ADEC notified the Army that the previous permit has been administratively continued and will remain fully effective and enforceable until a new permit is issued. At the time of writing this report, a new permit has not been issued by ADEC.

Certification Statement and Signature

☐ Yes

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Per Appendix A, Part 1.12.2 This report to be signed as follows: **For a municipal, State, Federal, or other public facility**: by either a principal executive or ranking elected official; **for a corporation**, a responsible corporate officer.

Signature

15 Feb 22
Date

FOR Robert K. Larimore, DPW Environmental Division Chief

Name of Certifying Official, Title

Appendix B: MCM 1 Documentation

See Appendix H for Garrison Policy Letter

Appendix C: MCM 2 Documentation

See Appendix H for Garrison Policy Letter

Appendix D: MCM 3 Documentation

See Appendix B for outreach material
See Appendix H for Garrison Policy Letter

Appendix E: MCM 4 Documentation

See Appendix B for outreach material
See Appendix H for Garrison Policy Letter

Appendix F: MCM 5 Documentation

See Appendix H for Garrison Policy Letter

Appendix G: MCM 6 Documentation

See Appendix H for Garrison Policy Letter

U.S. Army Garrison Alaska

Fort Wainwright MS4

Street Sweeping and Storm Drain Cleaning Operations

February 2022

Part I: Study Methods

An initial analysis of storm drain conditions was performed in 2011 by Colorado State University (CSU) Center for Environmental Management of Military Lands (CEMML) through a cooperative agreement with the Army. CSU-CEMML used a combination of historical document review, field surveys, remote sensing, and computer modeling to generate the report and storm water flow direction mapbook. In 2011, only nine out of 216 inlets were identified to be impacted with sediment.

Information was collected through interviews with the Contracting Officer's Representative for the Base Operations contractor, Bering Straits Technical Services (BSTS) and the Senior Environmental Health & Safety Officer for North Haven Communities (NHC). Ida Petersen, Water Program Manager for USAG Alaska DPW Environmental, and William Favitta, Water Quality Subject Matter Expert for the environmental contractor, Brice Environmental Services, collected this information.

Part II: Current Practices

In general, anecdotal evidence suggests that much of the road traction materials used on Fort Wainwright is reclaimed or accumulates on the road shoulder without significant deposit of gravel or sand into the storm sewer. The vast majority of roads on the cantonment rely on open drainage ditches and swales to collect storm water. Gravel can be seen accumulated on the shoulders of roads, but because coarse E-chip gravel (3/8-inch crushed gravel without fines) has historically been used instead of sand, accumulation of sediment has not been a major issue in maintaining drainage as the larger particle size resists transport better than sand or finer particles. Where older open drainages and culverts exist along the east, west, and north sides of Ladd Army Airfield, there is evidence of organic material building up over time and reducing the hydraulic capacity of culverts. There is also evidence of some damage to culvert inlets from lawn mowing equipment. At this time, there are no plans to remove this material as no flooding hazard has been identified. If future flooding issues are identified by the Airfield Manager, Base Operations, or DPW Environmental, a service order or work order will be put together to either perform maintenance or replace old/damaged culverts.

Flooding is an issue in several residential areas of the post after spring breakup or an especially large rain event, but the CSU-CEMML report and operations & maintenance staff interviewed attribute these issues primarily to flat topography. It should be noted that new housing projects for NHC are including higher elevations for roadways and houses to mitigate flooding problems.

North of Ladd Army Airfield, coinciding with the older and historic construction, catch basins at the edge of the pavement direct storm water and debris into underground drainages. More information is needed to characterize the accumulation of sediment or gravel in these areas. A project to repair part of Freeman Road will include the replacement of damaged catch basins is schedule for Summer 2022. Observations from this project will help guide decisions for maintenance of other catch basins on Post.

Although most of the airfield is drained via underground storm water lines, no sand or gravel is used to prevent aircraft safety hazards. A study performed by the U.S. Army Corps of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL) in 2018 of the airfield drainage system titled *Deicing and Anti-Icing Study of the Fort Wainwright Airfield Area* concluded that sediment or other debris was not preventing drainage. The report identified further issues to study to better understand the flow of storm water during snowmelt and extreme we precipitation events. Past projects on and in the vicinity of the airfield have identified degrading quality of historical wood stave pipe drainages.

Much of South Post and Housing areas are newer construction with open drainages and culverts. Accumulation of sediment has not been a major issue for operators, but thawing culverts in the spring time, slight shifting of ground levels from the freeze-thaw cycle, and the relatively flat hydraulic gradient over much of the Post have been the primary drainage issues.

Operators: BSTS is the main street sweeping contractor on Fort Wainwright (FWA). NHC manages street sweeping for residential areas on post executed by their subcontractor, Mainscape.

Types & Quantities: DPW Base Operations controls the type of material BSTS uses on roadways. Currently no sand is used on the main post roads. E-chip gravel, and gravel used for traction is swept up in the spring and summer and recycled for paving. The chip barn at Building 3584 is utilized for storage. At select times and at the discretion of DPW Base Operations, magnesium chloride deicer is mixed in with gravel. This is typically done at temperatures from 0 to 30°F.

NHC estimates using 300 tons/ year of E-chip gravel in housing areas. NHC is pursuing the use of traction sand in the future, but no sand has been applied to the roads to date.

Schedule: Street sweeping typically occurs during the period of 20 April – 30 September. Most of the sweeping takes place immediately after spring break-up to collect gravel (“chip”) and other road debris; however, street sweeping also occurs on a monthly basis throughout the summer months until winter freeze-up with the objective of collecting trash, grass clippings, sediment, and leaves.

Note: The Garrison assigns a color-coded road rating, clearly posted at each entrance gate to the cantonment that warns drivers about conditions and dictates when motorcycles can be driven on Post. Only once ice has melted and roads have been sufficiently swept the roads can be updated to “green.” This safety protocol ensures that all roads are swept and maintained.

Equipment: Street sweeping is accomplished using Timco and Elgin crosswind Sweeper technology on FWA’s airfield, street, parking lot, and sidewalk surfaces. Wet sweep methods are used when necessary to control fugitive dust. Shindaiwa power brooms are also utilized when required.

Disposal: BSTS stockpiles E-chip gravel at the “chip barn” Building 3584, which is an unheated structure with roof and three walls to protect the material from storm water.

Material swept up from FWA’s roads and parking lots are screened to remove garbage and other foreign material, after which it is stock piled for use on roads and for grounds crew maintenance. It is also utilized for road maintenance as needed to repair damaged road surfaces.

NHC and Mainscape dispose of the used material off-post each year.

Effectiveness: An estimated 60% of gravel applied to FWA's airfield, street, parking lot, and sidewalk surfaces is recovered by street sweeping; this recovery is partly attributed to the fact that chip applied to road surfaces can be pushed off when plowing occurs throughout the winter. Some of this displaced gravel is recoverable, depending on how far it has been moved.

Part III: Ongoing Data Collection

BSTS and NHC will provide the following information on an annual basis for tracking under the MS4 Program:

- Quantity and type of gravel or sand used
- Quantity and type of deicer used
- Recovery of traction material
- Culvert or catch basin maintenance performed
- Disposal of waste

Appendix H: Garrison Policy Letter

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON FORT WAINWRIGHT
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

OCT 2 6 2021

AMIM-AKP-E

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Municipal Separate Storm Sewer System Permit (MS4) Requirements (USAG Fort Wainwright Policy #35)

1. References:

a. 40 CFR 122.26, Code of Federal Regulations, Storm Water Discharges.

b. Army Regulation (AR) 200-1, Environmental Protection and Enhancement, 13 December 2007.

c. Municipal Separate Storm Sewer System (MS4): Guide to Storm Water Management Plans, U.S. Army Environmental Command, March 2014.

d. Memorandum, Office of the Assistant Chief of Staff for Installation Management, subject: 2017 Implementing Guidance, Army Storm Water Management Using Low Impact Development, 27 October 2017.

2. Purpose: The requirement for a military installation to obtain a Municipal Separate Storm Sewer System (MS4) Permit is established and defined in 40 CFR 122.26 and AR 200-1. This guidance is to set forth policy, procedures, and responsibilities for implementation of the US Army Garrison (USAG) Alaska's Storm Water Management Plan for the Fort Wainwright, Alaska MS4. Ensuring environmental compliance with storm water regulations at the installation is ultimately the USAG Alaska Commander's responsibility. The methods to achieve that goal at the Fort Wainwright MS4 are outlined in the USAG Alaska Storm Water Management Plan.

3. Applicability: This policy applies to all individuals, units, directorates, activities, organizations, partners, and tenants which include the U.S. Army Corps of Engineers (USACE), all Prime and Sub-Contractors and Consultants; all personnel working for contractor owned, contractor operated facilities and operations; Government owned, Contractor Operated facilities and operations; and personnel living, working or conducting other authorized activities on USAG Alaska controlled lands.

4. General: The Storm Water Regulations and MS4 permit require that USAG Alaska develop, implement and enforce a Storm Water Management Program designed to reduce the discharge of pollutants from the Fort Wainwright MS4 to the maximum

extent feasible to protect water quality. The USAG Fort Wainwright must meet the requirements through six Minimum Control Measures (MCMs) mandated by the MS4 permit. Each of the MCMs are detailed in the USAG Fort Wainwright Storm Water Management Plan, including specifics on how they must be implemented. The six MCMs include:

a. MCM 1: Public Education and Outreach.

b. MCM 2: Public Involvement and Participation.

c. MCM 3: Illicit Discharge Detection and Elimination.

d. MCM 4: Construction Site Storm Water Runoff Control.

e. MCM 5: Post-Construction Storm Water Management.

f. MCM 6: Pollution Prevention and Good Housekeeping.

5. Policy:

a. Failure to comply with all aspects of Storm Water Regulations and MS4 permit requirements may place the USAG Alaska in violation with state and/or federal regulations. Therefore, to ensure full compliance, the USAG Alaska Commander will implement enforcement procedures against individuals; units; tenants; and contractors whose actions violate the MS4 permit. Enforcement procedures will vary depending upon the individual(s) associated with the violation, the contract (if any) with the government, the nature of the violation, past enforcement issues, and the potential to discharge to the installation conveyance system. Potential actions that can be taken for violations include, but are not limited to:

(1) For individual personnel living and/or working at the USAG Alaska penalties may include notification to supervisor, citations, loss of access to the USAG Alaska, and disclosure of violation(s) to state/federal agencies for prosecution.

(2) For military personnel penalties may include admonition/reprimand, extra duties, restrictions, reduction, forfeiture, and restrictions in accordance with Army Regulation 27-10 and the uniform code of military justice.

(3) For contractors and their subcontractors penalties may include payment withholding and/or liquidated damages, stop-work orders until the violation(s) have been rectified to the satisfaction of the government, disclosure of violation(s) to state/federal agencies, and disciplinary actions(s).

b. Illicit discharges that are a source of pollutants to the Fort Wainwright MS4 are prohibited. Illicit discharges are defined in 40 CFR 122.26 as any discharge to an MS4 that is not composed entirely of storm water, except those covered by a permit and discharges resulting from firefighting activities. This includes discharges of sediment from construction sites, spills of oil and other hazardous substances, litter, and others.

c. The following activities are permitted, so long as they do not contribute pollutants to the MS4: uncontaminated water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensate, irrigation water, springs, water from crawlspace pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water, residential building wash waters without detergents, and flows from emergency firefighting activities. Discharges of water to the MS4 not described in this paragraph must be reported to the DPW Environmental Division as illicit discharges.

6. Procedures and Responsibilities:

a. Installation Storm Water Discharge Responsibilities: The USAG Alaska Commander has ultimate responsibility for all regulatory compliance on the USAG Fort Wainwright and the USAG Alaska chain of command below the USAG Alaska Commander has compliance responsibilities as dictated by their position. The USAG Alaska Storm Water Manager has direct responsibility for day-to-day compliance with the industrial Multi-Sector General Permit and associated Storm Water Pollutant Prevention Plan in addition to the MS4 permit and Storm Water Management Plan. The Storm Water Manager will provide training to facility-level storm water leads, receive reports of illicit discharges, investigate reports, and ensure that they are addressed. Where coordination with adjacent municipalities is required, the Storm Water Manager will work through the chain of command to ensure that each unique case is handled at the appropriate level.

b. Tenant Storm Water Discharge Permit Responsibilities: Responsibilities of the tenants of USAG FWA (to include government and contractor owned and operated operations, privatized utility and service providers, installation businesses, military units, and residents) include complying with all published and posted requirements within the MS4 permit for which they are exposed during their day-to-day activities on the USAG Alaska as well as notifying the USAG Alaska Storm Water Manager if they observe a potential violation or illicit discharge. Facilities identified as "industrial" under the Multi-Sector General Permit and those identified as having potential to pollute storm water in the MS4 Operations and Maintenance Program will provide primary and secondary Storm Water Leads to receive annual training and perform regular inspections at their facilities.

c. Construction Storm Water Discharge Permit Responsibilities: When construction affecting one or more acres is performed on the installation, an Alaska Construction General Permit will be obtained and the associated Storm Water Pollutant Prevention Plan will be submitted to the USAG Alaska Storm Water Manager for review and approval. Construction projects smaller than one acre but larger than 5,000 square feet will develop an Erosion and Sediment Control Plan. In either case, the individual(s) conducting the construction are responsible for compliance with their permit, including practicing appropriate erosion, sediment, and waste control. All illicit discharges must be reported to the USAG Alaska Storm Water Manager.

d. Post-Construction Storm Water Discharge Permit Responsibilities: Construction and re-development of Federal Facilities with a footprint greater than 5,000 square feet are subject to the Low Impact Development (LID) requirements under the Energy Independence and Security Act (EISA) Section 438. In addition, all construction and renovation projects on Army installations greater than 5,000 square feet must follow the guidance titled "2017 Implementing Guidance, Army Stormwater Management Using Low Impact Development" available at the USACE Hydrology and Low Impact Development website https://mrsi.erdc.dren.mil/sustain/cx/lid/. Where privatization initiatives and certain medical facilities in the MS4 qualify for an exception to this policy, project proponents are encouraged to incorporate this guidance to the greatest extent practicable.

7. This policy supersedes Garrison Policy #35, subject: US Army Garrison Fort Wainwright, Alaska's (USAG-FWA) Municipal Separate Storm Sewer System Permit (MS4) Requirements, dated 25 Sep 17.

8. Proponent for this policy letter is the Directorate of Public Works, Environmental Division, (907) 361-9686/6220.

NATHAN S. SURREY
COL, AV
Commanding

DISTRIBUTION:
A (FWA)

Appendix I: Sample Results

Appendix J: Delegation Forms

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

February 15, 2022

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, Alaska 99501-2617

To Whom This Concerns:

In accordance with the Fort Wainwright Municipal Separate Storm Sewer System Permit number AKS055859, U.S. Army Garrison (USAG) Alaska notifies the Department of Environmental Conservation (DEC) of the Change of Command from Colonel Christopher J. Ruga to Colonel Nathan S. Surrey. On July 22, 2021, Colonel Nathan S. Surrey assumed command of USAG Alaska.

Contact information for Colonel Nathan S. Surrey is (907) 361-4213 and nathan.s.surrey.mil@army.mil. The facility address is 1046 Marks Road, Fort Wainwright, Alaska 99703.

If you desire further information, please contact Ida Petersen, U.S. Army Garrison Alaska, Water Quality Program Manager at (907) 361-6220 or at ida.r.petersen.civ@army.mil.

Sincerely,

POR

Robert Larimore
Directorate of Public Works, Environmental
Division Chief

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

AMIM-AKP-E

FEB 11 2022

MEMORANDUM FOR Directorate of Public Works, Environmental Division Chief

SUBJECT: Delegation of Authority to Sign the Alaska Pollutant Discharge Elimination System (APDES) Permit Applications and Reports

1. References:

a. Headquarters, Department of the Army (HQDA), Army Regulation (AR) 200-1, Environmental Protection and Enhancement.

b. APDES Permit # AKS055859 – Fort Wainwright Municipal Separate Storm Sewer System (MS4), November 2016.

c. APDES Permit #AKR06AC73 – Fort Wainwright Multi-Sector General Permit (MSGP), July 2021.

d. APDES Permit #AKR100000 – Alaska Construction General Permit (CGP), February 2021

2. The U.S. Army Garrison Alaska (USAG Alaska) at Fort Wainwright is subject to permitting requirements pursuant to the Clean Water Act (CWA). The installation must submit permit applications to the Alaska Department of Environmental Conservation and the Environmental Protection Agency that include the following:

a. MS4 Permit Application

b. MSGP Permit Application

c. CGP Notice of Intent and Notice of Termination

3. USAG Alaska is subject to reporting requirements pursuant to the Clean Water Act (CWA) and associated permits. The installation must submit several reports to the Alaska Department of Environmental Conservation and the Environmental Protection Agency that include the following:

a. MS4 Annual Report

b. Quarterly MS4 Discharge Monitoring Reports

c. MSGP Annual Report

d. MSGP Discharge Monitoring Reports

4. Pursuant to current Department of Defense and Army policy (Ref a), I delegate the Director of Public Works, Deputy Director of Public Works, and Directorate of Public Works, Environmental Division Chief the authority to sign the USAG Alaska Fort Wainwright's CWA permit applications and reports.

5. This delegation is valid until further notice and can be rescinded upon written notice.

6. Point of contact for this Memorandum is Robert K. Larimore, Directorate of Public Works, Environmental Division Chief, robert.k.larimore.civ@army.mil or (907) 361-4213.

NATHAN S. SURREY
COL, AV
Commanding

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

AMIM-AKP-E 10 February 2022

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Delegation of Authority, Directorate of Public Works Environmental Division

1. I will be on leave 11-18 February 2022

2. During my absence, Mr. Eric Dick is appointed Acting Chief. He can be reached at (907) 361-3006 or eric.m.dick2.civ@army.mil.

3. Eric Dick will have all authority associated with this position.

4. I will return to the office on 22 February 2022.

5. Point of contact for this action is the undersigned at (907) 361-4213.

ROBERT K. LARIMORE
Chief, Environmental Division

Alaska Department of Environmental Conservation

Division of Water, Compliance and Enforcement Program

555 Cordova Street, Anchorage, AK 99501

Toll Free: 1-877-569-4114 Anchorage/International: 907-269-4114 Fax: 907-269-4604 E-mail: dec-wqreporting@alaska.gov

DELEGATION OF SIGNATORY AUTHORITY

for APDES Permit Applications and Reports

Select the delegation below (A) or (B) that applies and enter name(s) of duly authorized representative(s).

☐ **Delegated Authority – 18 AAC 83.385(b)(2)(A)** In accordance with 18 AAC 83.385, I certify that the following individual(s) has responsibility for the overall operation of the regulated facility or activity and authorize him/her to act as signatory official for purposes of signing Alaska Pollutant Discharge Elimination System (APDES) permits and reports.

Or

☑ **Delegated Authority – 18 AAC 83.385(b)(2)(B)** In accordance with 18 AAC 83.385, I certify that the following individual(s) has overall responsibility for the company and authorize him/her to act as signatory official for purposes of signing Alaska Pollutant Discharge Elimination System (APDES) permits and reports.

Duly Authorized Representative(s):

Name	Title	Phone	Email
Robert K. Larimore	Chief, Environmental Division	(907)361-4213	robert.k.larimore.civ@army.mil
Tim A. Sponseller	Director of Public Works	(907)361-7287	tim.a.sponseller.civ@army.mil
Dorothy Pender	Deputy Director of Public Works	(907)361-6403	dorothy.a.pender.civ@army.mil

Delegator/Certifying Official:

An Alaska Pollutant Discharge Elimination System (APDES) permit application or report must be signed by an individual with the appropriate authority per 18 AAC 83.385. For additional information, please refer to 18 AAC 83.385 at the following link: http://www.legis.state.ak.us/basis/aac.asp#18.83.385.

Corporate Executive Officer 18 AAC 83.385(a)(1)(A)	For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation.
Corporate Operations Manager 18 AAC 83.385 (a)(1)(B)	For a corporation, the manager of one or more manufacturing, production, or operating facilities, if (i) the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations; (ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and (iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
Sole Proprietor or General Partner 18 AAC 83.385 (a)(2)	For a partnership or sole proprietorship, the general partner or the proprietor respectively.
Public Agency, Chief Executive Officer 18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, the chief executive officer of the agency.
Public Agency, Senior Executive Officer 18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Organization:	Name:	Title:
U.S. Army Garrison Alaska	Colonel Nathan S. Surrey	Garrison Commander

Phone:	Fax (optional)	Email:
(907)353-7660		nathan.s.surrey.mil@army.mil

Mailing Address:

Street (PO Box):	City:	State:	Zip:
1046 Marks Road #6000	Fort Wainwright	Alaska	99703-6000

Signature / Delegator-Certifying Official

11 FEB 22

Date

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

FEB 1 4 2020

IMFW-PWE

MEMORANDUM FOR Directorate of Public Works, Environmental Division Chief

SUBJECT: Delegation of Authority to Sign the Alaska Pollutant Discharge Elimination System (APDES) Permit Reports

1. References:

a. Headquarters, Department of the Army (HQDA), Army Regulation (AR) 200-1, Environmental Protection and Enhancement, December 2007.

b. APDES Permit # AKS055859 – Fort Wainwright Municipal Separate Storm Sewer System (MS4), November 2016.

c. APDES Permit #AKR06AC73 – Fort Wainwright Multi-Sector General Permit (MSGP), August 2015.

2. The U.S. Army Garrison Alaska (USAG Alaska) Fort Wainwright is subject to reporting requirements pursuant to the Clean Water Act (CWA), MSGP and MS4. The installation must submit several reports to the Alaska Department of Environmental Conservation and the Environmental Protection Agency that include the following:

a. MS4 Annual Report

b. Quarterly MS4 Discharge Monitoring Reports

c. MSGP Annual Report

d. Quarterly MSGP Discharge Monitoring Reports.

3. Pursuant to current Department of Defense and Army policy (Ref a), I delegate the Directorate of Public Works, Environmental Division Chief the authority to sign the USAG Alaska Fort Wainwright's CWA reports.

4. This delegation is valid until further notice and can be rescinded upon written notice.

5. Point of contact for this Memorandum is Robert K. Larimore, Directorate of Public Works, Environmental Division Chief, robert.k.larimore.civ@mail.mil or (907) 361-4213.

CHRISTOPHER J. RUGA
COL, AG
Commanding

DELEGATION OF SIGNATORY AUTHORITY
for APDES Permit Applications and Reports

Select the delegation below (A) or (B) that applies and enter name(s) of duly authorized representative(s).

☐ **Delegated Authority – 18 AAC 83.385(b)(2)(A)** In accordance with 18 AAC 83.385, I certify that the following individual(s) has responsibility for the overall operation of the regulated facility or activity and authorize him/her to act as signatory official for purposes of signing Alaska Pollutant Discharge Elimination System (APDES) permits and reports.

Or

☑ **Delegated Authority – 18 AAC 83.385(b)(2)(B)** In accordance with 18 AAC 83.385, I certify that the following individual(s) has overall responsibility for the company and authorize him/her to act as signatory official for purposes of signing Alaska Pollutant Discharge Elimination System (APDES) permits and reports.

Duly Authorized Representative(s):

Name	Title	Phone	Email
Robert K. Larimore	Chief, Environmental Division	(907) 361-4213	robert.k.larimore.civ@
			mail.mil

Delegator/Certifying Official:

An Alaska Pollutant Discharge Elimination System (APDES) permit application or report must be signed by an individual with the appropriate authority per 18 AAC 83.385. For additional information, please refer to 18 AAC 83.385 at the following link: http://www.legis.state.ak.us/basis/aac.asp#18.83.385.

Corporate Executive Officer 18 AAC 83.385 (a)(1)(A)	For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation.
Corporate Operations Manager 18 AAC 83.385 (a)(1)(B)	For a corporation, the manager of one or more manufacturing, production, or operating facilities, if (i) the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations; (ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and (iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
Sole Proprietor or General Partner 18 AAC 83.385 (a)(2)	For a partnership or sole proprietorship, the general partner or the proprietor respectively.
Public Agency, Chief Executive Officer 18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, the chief executive officer of the agency.
Public Agency, Senior Executive Officer 18 AAC 83.385 (a)(3)(B)	For a municipality, state, or other public agency, a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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14 FEB 20
Date