U.S. Army Garrison Alaska

Fort Wainwright, Alaska

# 2020 Storm Water Annual Report

MS4 Permit Year 4

**APDES Permit No. AKS055859**

3/23/2021

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# Acronyms and Abbreviations

| | |
|---|---|
| ADEC | Alaska Department of Environmental Conservation |
| APDES | Alaska Pollutant Discharge Elimination System |
| BOD | biochemical oxygen demand |
| BMP | best management practice |
| Brice | Brice Environmental, Inc. |
| °C | degrees Celsius |
| cfs | cubic feet per second |
| CFU/100mL | colony forming units per 100 milliliters |
| CGP | Construction General Permit |
| COD | chemical oxygen demand |
| COR | Contracting Officer's Representative |
| CWA | Clean Water Act |
| DMR | discharge monitoring report |
| DO | dissolved oxygen |
| DPW | Directorate of Public Works |
| E. coli | Escherichia coli |
| FAI | Fairbanks International Airport |
| FWA | Fort Wainwright, Alaska |
| 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 |
| MEP | maximum extent practicable |
| mg/L | milligrams per liter |
| MPP | Monitoring Program Plan |
| MS4 | Municipal Separate Storm Sewer System |
| MSGP | Multi-Sector General Permit |
| µg/L | micrograms per liter |
| NHC | North Haven Communities LLC |
| NPDES | National Pollutant Discharge Elimination System |
| NTU | nephelometric turbidity units |
| O&M | Operations and Maintenance |
| PAO | Public Affairs Office |
| POL | petroleum, oils, and lubricants |
| PWE | Directorate of Public Works, Environmental Division |
| 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 |
| TAH | total aromatic hydrocarbons |
| TaqH | total aqueous hydrocarbons |

| | |
|---|---|
| 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 Fort Greely and Fort Wainwright. Fort Wainwright, Alaska (FWA) was previously named as a separate garrison, however, leadership is now routed through a will continue to represent the physical location of the installation; however, USAG Alaska is the organization tasked with maintaining the garrison.

This document has been prepared to satisfy the annual reporting requirements for the FWA Municipal Separate Storm Sewer System (MS4) Permit. USAG Alaska was issued the MS4 Permit on September 26, 2016 with an effective implementation date of November 1, 2016. MS4 Permit conditions are managed and maintained through the development and use of the Storm Water Management Plan (SWMP).

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).

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 in the northern part of the cantonment area. Much of the cantonment area is unpaved, except for roads, parking areas, airfield runways and ramps.

The Garrison is also required to be covered under the APDES Multi-Sector General Permit (MSGP) for industrial storm water discharges. Within or adjacent to the UA,

there is an airfield (Sector S), warehousing and vehicle maintenance (Sector P), and an inactive gravel pit (Sector J). Outside of the UA, USAG operates a landfill (Sector L). Storm water concerns pertaining to these activities are additionally managed under the MSGP Storm Water Pollution Prevention Plan (SWPPP).

Regarding MS4 Permit coverage, only a portion of the FWA installation is included within the Fairbanks UA. This portion consists mainly of the developed area of FWA known as the cantonment area (Figure 2). Where activities have a potential to run-on to the FWA MS4, these activities are treated as if they are within the UA. Receiving waters are identified as the Chena River and wetlands. In previous years, the gravel pit known as Badger Pit was identified as a receiving water, however 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 subject to the CWA requirements that outfalls leading to waters of the U.S. would be.

More information about each of these 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 has ultimate responsibility for all regulatory compliance at Fort Wainwright, but tasks for maintaining the installation's environmental compliance has been delegated to the Directorate of Public Works, Environmental Division (PWE). The Directorate of Public Works (DPW) encompasses PWE, and also contains the divisions that oversee contracts, engineering, housing, and others. The Water Program Manager (WPM) is part of PWE and has direct responsibility for day-to-day compliance in coordinating and implementing the MS4 Permit tasks at FWA. The PWE Chief has responsibility for overseeing the WPM, assisted by the PWE Compliance Branch Chief, and has been delegated authority by the Garrison Commander to sign and submit documents related to the MS4 Permit and Multi-Sector General Permit (MSGP) for industrial storm water discharges.

**COVID-19 Considerations**

The USAG Alaska Garrison Commander limited the activities for Army Soldiers, Families, Civilians, and contractors on Post and off, and imposed public health measures to prevent the spread of COVID-19. In order to support mission readiness, policies were often stricter than State of Alaska public health mandates. The EPA

issued a Temporary Enforcement Policy in March 2020, effective through 31 August 2020, which outlined enforcement discretion for certain activities that might be affected by the pandemic. The State of Alaska issued a memorandum for COVID-19 caused Non-Compliance Concerns, No Action Assurance in March 2020, valid through 1 June 2020.

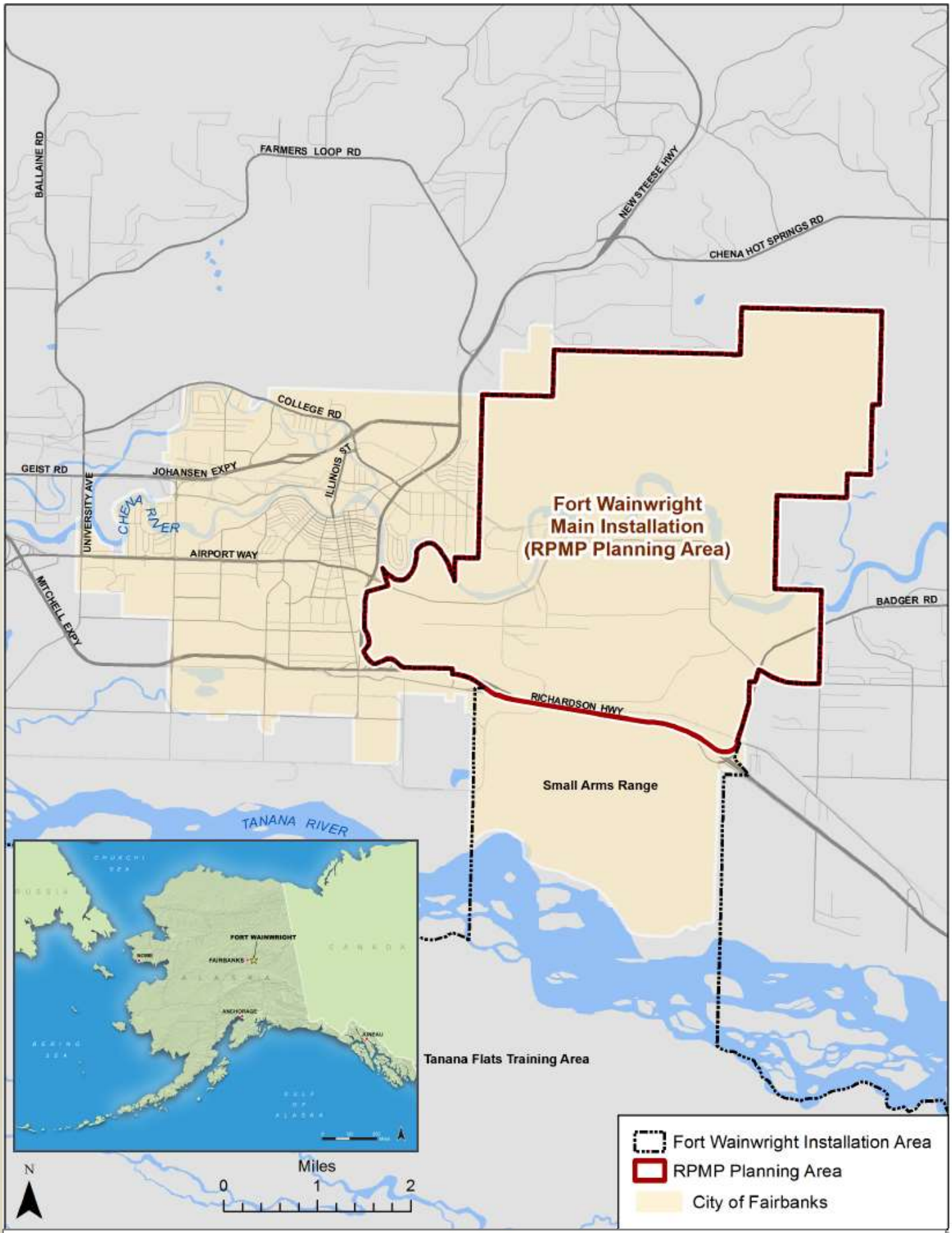


**Figure 1. Fort Wainwright Location Map**

Map prepared for the Fort Wainwright Master Plan

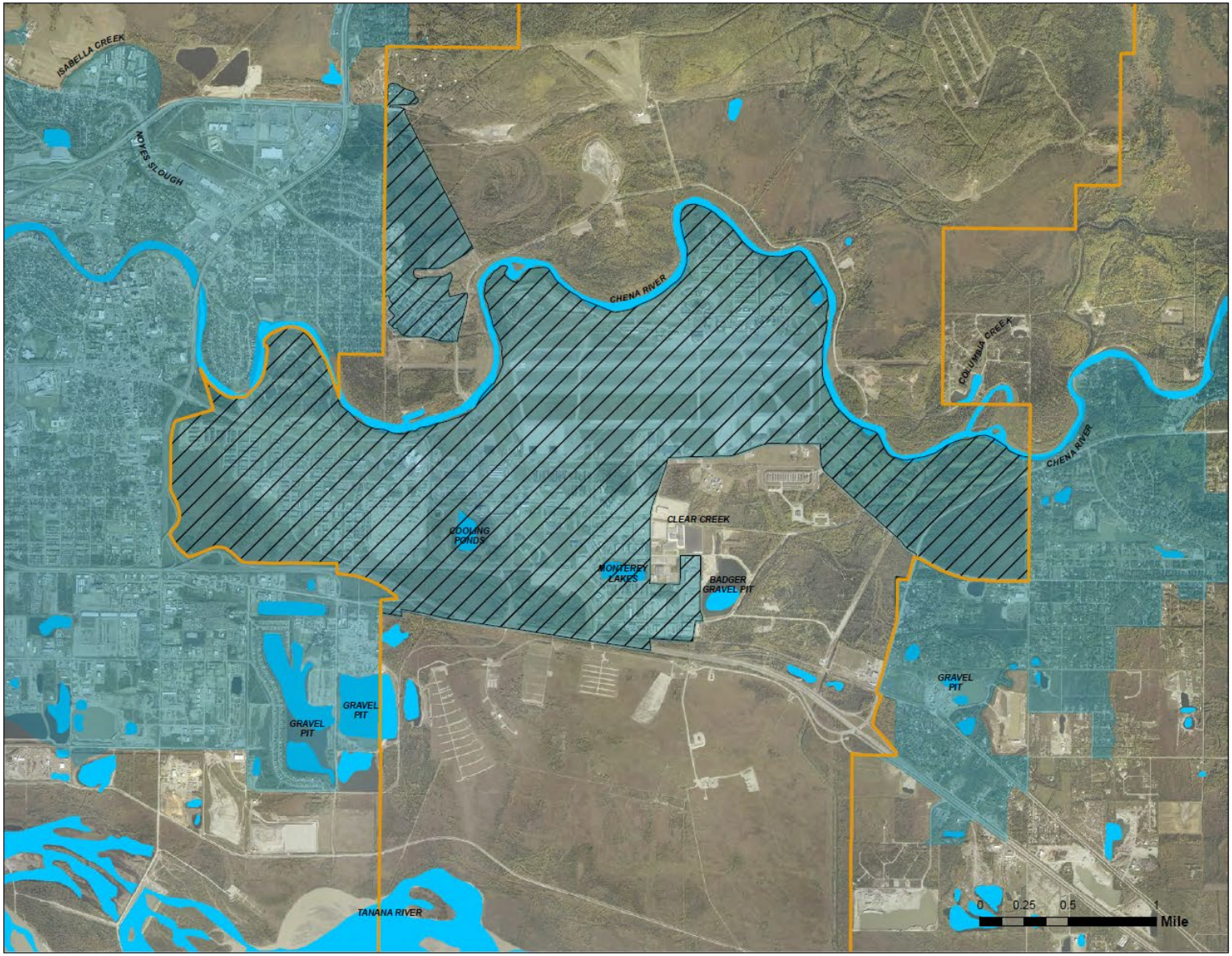


**Figure 2.**

**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. ADEC was notified that this report would be submitted after the 15 February deadline, and this report accounts for the 2020 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 (MEP).
- 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 as in previous years, but newspaper and social media outreach is being combined with a broader initiative for the entire Environmental Division to do public outreach. An ongoing Facebook and Alaska Post series titled "Sergeant Salmon's School of Environmental Basics" was created to spotlight each environmental program, including storm water, to educate readers about environmental concerns, and to advertise services and resources provided by USAG Alaska.

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. The PWE Water Program Manager is responsible for overseeing the day-to-day requirements of the MS4 Permit and MSGP. The current environmental contractor tasked with assisting PWE in storm water, hazardous waste, spill response, and other environmental tasks, is Brice Environmental, Inc. (Brice). The garrison's Public Affairs Office (PAO) is instrumental in communication and publishing of PWE'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 2020.

| Activity | **Newspaper Article** |
|---|---|
| Description | Sergeant Salmon's School of Environmental Basics:<br>• Intro Articles 1, 2, and 3<br>• Ecology<br>• Salmon e-DNA |
| Method | Alaska Post newspaper, Fort Wainwright Facebook page |
| Frequency | Once each |
| Target Audience | Soldiers, Families, Civilians, Veterans, and contractors; People in the community; Those interested in Fort Wainwright activities |
| Pollutants/ Sources | Pesticides, fertilizer, pet waste, spills |
| Reason for selection | The Sergeant Salmon's School articles are chosen to represent a broad spectrum of environmental issues and services at Fort Wainwright. |
| People reached | Estimated 2,000, based on Facebook statistics and Alaska Post distribution. |
| Discussion | The first articles were written to give readers an idea of how our environment is impacted by our activities and where to learn more. As "school" goes on, keep an eye on the Fort Wainwright Facebook page for more neat stuff. |

| Activity | **National Night Out materials** |
|---|---|
| Description | DIY Up-cycled Dog Bag Dispenser Kits |
| Method | Pick-up booth with display |
| Frequency | Once, between 18 August and 1 September 2020 |
| Target Audience | Residents |
| 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** | 20 individuals/families |
| **Discussion** | In-person events were cancelled due to the COVID-19 pandemic. In lieu of the normal celebration for National Night Out, a decentralized scavenger hunt was created where participants could come and see displays and pick up materials spread out over two weeks. Most people who visited the PWE booth picked up doggie bag kits, but only a handful picked up other storm water handouts. |

| **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<br>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** | Approximately 800 families |
| **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 |
| **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.<br>Reviewed both materials and determined to be accurate and useful. |
| **People reached** | Approximately 700 |
| **Discussion** | The booklets were distributed between January and June 2020 |

| **Activity** | **Small Construction Sites Brochure** |
|---|---|
| **Description** | Best Management Practices for Small Construction Sites on Fort Wainwright trifold brochure |
| **Method** | Digital, with PWE 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 23 different construction projects |

| Activity | **Be the Solution to Storm Water Pollution signage** |
|---|---|
| **Description** | Posters displayed in 3 kiosks along walking/bike trail |
| **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.<br>Reviewed in 2020 and determined to still be useful. |
| **People reached** | Estimated greater than 100 people |

| 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. This brochure was reviewed and determined that it met the requirements of household hazardous products, but not |

| | |
|---|---|
| | necessarily lawn chemicals. A brochure specific to lawn chemicals and gardening was developed, but has not been distributed at the time this report was written. |
| **People reached** | Approximately 800 families |
| **Discussion** | The HHW Program was paused for a period during 2020, then re-opened on a limited basis with COVID-19 precautions in place. |

| **Activity** | **Website** |
|---|---|
| **Description** | Updating Storm Water Website |
| **Method** | Online |
| **Frequency** | Updated February and October 2020 |
| **Target Audience** | General public, Soldiers, Families, Civilians, Veterans, contractors |
| **Pollutants/ Sources** | See each resource posted on the website |
| **Reason for selection** | Updated MS4 Survey advertisement in February<br>Updated Annual Report in October |
| **People reached** | Unknown |
| **Discussion** | The Storm Water website was updated with the MS4 Storm Water Opinion Survey, outreach materials and maps.<br>The MS4 Annual Report was submitted late and the website was updated with the Year 3 (2019) Annual Report in October 2020. |

**Measureable Goals, Dates, and Person(s) responsible**

The following tables present the FWA measureable goals for Public Education and Outreach 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 | Newspaper Article |
|---|---|
| Description | Publish an article in the local newspaper regarding storm water pollution prevention |
| Dates to achieve goals | 31 October 2021 |
| Person(s) responsible | PWE Water Program Manager will submit the article to Fort Wainwright Public Affairs Office for publication and dissemination. |

| Measureable Goal | Review, Update, or Produce Educational Materials |
|---|---|
| Description | Review current handouts (brochures and flyers)<br>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 2021 |
| Person(s) responsible | PWE 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 2021 |
| Person(s) responsible | PWE Water Program Manager and environmental contractor |

| Measureable Goal | Review, Update, or Produce Educational Materials |
|---|---|
| Description | Develop and install signage describing storm water pollution prevention and pet waste management for recreational parks. |
| Dates to achieve goals | 31 October 2021 |
| Person(s) responsible | PWE Water Program Manager and environmental contractor will develop and install signage. The Water Program will cooperate with the Natural Resources Program to ensure that storm water signage agrees with interpretive signs currently being developed under the latter program. |

| Measureable Goal | Brochure on Lawn Chemicals and Household Hazardous Products |
|---|---|
| Description | To complement the current brochure on Household Hazardous Waste, print and distribute brochure on Lawn and Garden Care to distribute to on-Post residents. The importance of picking up pet waste will be reiterated in this new brochure. |
| Dates to achieve goals | 31 December 2021 |
| Person(s) responsible | PWE Water Program Manager and environmental contractor will develop and print brochures, then work with NHC to distribute. |

| 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 2021<br>31 December 2021 |
| **Person(s) responsible** | PWE 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.

**Activities and Target Audiences**

Each MCM 2 Activity performed in 2020, 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. |
| 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 | PWE 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 week. 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 1-5 June 2020. |
| **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 Storm Water Opinion Survey was prolonged to obtain more responses. |
| **Target Audience** | Soldiers, Families, Civilians, Veterans, and contractors; People in the community |
| **Results** | 82 individuals competed the Storm Water Opinion Survey<br>16 of these surveys were completed in 2019. The remaining 66 surveys were completed in 2020. |
| **Discussion** | The Storm Water Opinion Survey that had been developed and distributed to a small audience in 2019 via paper form and online PDF format. In 2020, the survey was put into a Microsoft Forms format that would be easier for respondents to complete. Advertising on the Fort Wainwright Facebook page, on flyers handed out to new residents, and in the Alaska Post, as well as a prize drawing, helped to garner more participation. |

| **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** | Due to staffing and weather constraints, no additional storm drain inlets were marked during 2020. |
| **Discussion** | The target of marking 100% of storm drain inlets was not met. This activity will be continued in Permit Year 5/2021. |

| 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 2020 |
| **Discussion** | Because of the COVID-19 pandemic, the last 3 meetings were virtual by telephone and later also by Microsoft Teams video conference. |

**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 PWE

Comments will be reviewed by the PWE WPM and shared with project management staff. The Storm Water Program Manager voicemail has been updated to specifically ask if the caller is reporting a storm water complaint or illicit discharge. 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.

*Attitude:* Overwhelmingly, respondents agreed that the environment has a large impact on their quality of life, recognize that they have an impact on the environment, and that the environment on Fort Wainwright could be 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. When asked about specific consequences of pollution, again the majority of respondents viewed the impacts to each ecosystem as medium or high.

*Knowledge:* Respondents who received storm water training as part of their job had generally more accurate answers to knowledge questions than those who did not receive training. Respondents who received information from the Environmental Program in any form generally had more accurate answers than those who did not, or did not say.

*Effectiveness:* Approximately 70% of respondents received information from PWE. Of those respondents who received information from PWE in any form, about two-thirds recognized Sergeant Salmon and were 3 1/2 times more likely to get questions right about storm water and pollution prevention. These positive correlations are partially due to the self-selection of respondents filling out the survey as part of job-related environmental training.

*Other Findings*: Several comments left by survey respondents are presented below.

> "I think an increased effort to spread awareness about our environmental impact would be great. In addition to water contamination, I would love to see the garrison run a campaign expressing the importance of respecting the land in and around Wainwright. I often visit remote areas and there is a lot of trash or environmental disruption that should not exist."

> "…There needs to be a better system in place to have residents pick up their [dog] feces to avoid such pollution."

> "We have a big problem in our neighborhood about water not draining fast enough after raining. A lot of days pass before large amounts of retained water drains down the sewer or evaporates…"

### Measureable Goals, Dates, and Person(s) responsible

The following tables present the FWA measureable goals for public involvement and participation 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 | 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 2021 |
| Person(s) responsible | PWE 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 2021 |
| Person(s) responsible | The USAG Alaska Garrison Commander will issue an Operations Order to perform the community cleanup event in spring 2021. Organizations will participate in the cleanup during these dates. |

| Measureable Goal | Public Knowledge/Attitude Survey for Storm Water |
|---|---|
| Description | Perform a second Public Knowledge/Attitude Survey |
| Dates to achieve goals | 31 December 2021 |

| | |
|---|---|
| **Person(s) responsible** | PWE Water Program Manager and environmental contractor, PAO will assist in advertising the survey |

| **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 2021 |
| **Person(s) responsible** | PWE 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 2020. |
| **Dates to achieve goals** | 31 October 2021 |
| **Person(s) responsible** | PWE Water Program Manager and environmental contractor |

| **Measureable Goal** | **Earth Day** |
|---|---|
| **Description** | PWE is planning outreach activities for Earth Day. Storm water information and activities for participation are to be included in the event. |
| **Dates to achieve goals** | Target date: 22 April 2021<br>31 October 2021 |
| **Person(s) responsible** | PWE Water Program Manager and environmental contractor |

## 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 PWE office. This document can be provided upon request to the PWE Water Program Manager by phone or e-mail at: (907) 361-

9686 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 PWE 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 2020, illicit discharges investigated which were result of spills, outdoor vehicle washing and fire suppression system discharge, identified as "obvious". One illicit discharge was a result of a sewer backup classified as "obvious." There were several illicit discharge investigations in 2020 categorized as "suspect" as they were the result of multiple vehicle fluid leaks in a parking lot. Typically, the PWE Spills Program investigates and tracks illicit discharges that are also ADEC-reportable spills of oil and hazardous substances. The PWE 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, PWE now has a 24-hour spill hotline that is also available for illicit discharges. The phone number is (907) 482-7267. Reports may still be made to the PWE office at (907) 361-9686.

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 2020, 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. PWE will visit this location in the spring/summer of 2021 to monitor the characteristics of the outflow.

**Activity to Remove Illicit Discharges**

Twelve 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 public complaints and a resulting MS4 Construction Site Inspection. The construction site access/exit points were not stabilized and furthermore, efforts to clean out the access/exit points caused more water and sediment to exit the site, bypass the inlet protection measures, and enter the nearby open drainage. Steps were taken to provide additional inlet protection, clean up accumulated sediment outside of the access/exit points, and to reduce the traffic, so this illicit discharge was eliminated. However, PWE will monitor this construction site during spring breakup to identify any new problems due to snowmelt.

One Illicit Discharge was reported by the utility provider, DU, as an emergency sewage overflow. After the incident, a vacuum truck was used to collect standing water in the area. Lime was then spread over the ground surface. DU developed standard operating procedure to address this type of situation in the future.

**Copy of Ordinance and Enforcement Policy**

Garrison Policy #35 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 next iteration of Garrison Policy #35, expected in 2021 or early 2022 will be modified to include specific information about notification to ADEC.

**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 PWE 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 has been updated to reflect the removal of outfalls FWA-010 and FWA-011, which drain to a gravel pit. The U.S. Army Corps of Engineers (USACE) Regulatory division issued a jurisdictional determination that this gravel pit is not a water of the United States in 2020. The map has also been updated to include outfall FWA-Q which drains the Birchwood Homes subdivision, a privately operated housing area located outside of the FWA fenceline.

### 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 | PWE will ensure that IDDE tracking forms are updated. PWE 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 2021 |
| Person(s) responsible | PWE Water Program Manager, environmental contractor, PWE 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 December 2021 |
| Person(s) responsible | PWE 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 2021 |
| Person(s) responsible | PWE Water Program Manager, environmental contractor |

| Measureable Goal | Dry Weather Testing |
|---|---|
| Description | If dry weather flows are observed during inspections or otherwise discovered, the PWE 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 October 2021 |
| Person(s) responsible | PWE Water Program Manager, environmental contractor |

| Measureable Goal | Update Maps |
|---|---|
| Description | As infrastructure on FWA changes, PWE 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 2021 |
| Person(s) responsible | PWE 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 2021 |
| Person(s) responsible | PWE WPM, with assistance from PWE Hazardous Waste Program, environmental contractor and PAO |

| Measureable Goal | Garrison Policy |
|---|---|

| | |
|---|---|
| **Description** | The next iteration of Garrison Policy #35, expected in 2021 or early 2022 will be modified to include specific information about when ADEC will be notified of illicit discharges. |
| **Dates to achieve goals** | 31 December 2021 |
| **Person(s) responsible** | PWE WPM |

## 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 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: 3 construction project sites were identified for re-inspection based on the routine inspection findings. Of these 3 sites, 2 were resolved by the second inspection. One site required escalation to the project managers (this project was not an Army project overseen by a COR) before action was taken. 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 Structural 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 PWE Hazardous Waste Program, Solid Waste Program, and Spills Program.

**Site Plan Reviews**

Thirteen storm water plans were reviewed in 2020. 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 2020 frequently pertained to project schedule, site map, spill response and reporting procedures, and BMP selection.

**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 PWE

Comments will be reviewed by the PWE 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.

**Site Inspections**

*Inspection procedures:* PWE 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 PWE Water Program Manager, or a trained individual designated by the PWE 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, PWE 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 PWE 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, PWE 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 PWE.

*Number of sites inspected:* In 2020 there were a total of 6 active construction sites with greater than 1 acre of soil disturbance and covered under the CGP. Four of these construction sites were inspected by PWE following the MS4 Construction Site Inspection procedure. Two project sites were inspected multiple times by formal inspection and multiple times by site visit at the request of the project.

Two projects with SWPPPs located within the MS4 were not inspected in 2020. One project site not inspected was closed out in spring after final stabilization was confirmed; However, DU environmental staff overseeing the contractor's storm water lead performed an inspection. The other project site not inspected was missed because it was completed earlier than expected.

In 2020 there were a total of 7 active construction sites with 5,000 square feet to 1 acre of soil disturbance that were required to write and follow an ESCP. Of these projects, PWE performed two formal inspections and two site visits.

**Measureable Goals, Dates, and Person(s) responsible**

The following tables present the FWA measureable goals for construction site storm water runoff control in 2020, 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, PWE believes an additional training would be helpful for changing contractors and staff.<br>The 2018 Annual Report identified a goal for PWE 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. However, this goal was not completed in 2019 and will remain as an open goal for 2020. 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 | Target date: 30 April 2021<br>31 October 2021 |

| | |
|---|---|
| **Person(s) responsible** | PWE 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 2021 |
| **Person(s) responsible** | The PWE Water Program Manager, trained PWE 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 2021 |
| **Person(s) responsible** | The PWE Water Program Manager, trained PWE 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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>Generally low cost and low maintenance with high winter performance.<br>Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement.<br>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.<br>Generally low-to-medium cost and low-to-medium maintenance with high winter performance.<br>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.<br>Generally medium cost and medium maintenance with medium winter performance.<br>Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement.<br>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.<br>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.<br>Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement.<br>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.<br>Generally low-to-medium cost and low-to-medium maintenance with high winter performance.<br>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.<br>Generally low cost and low maintenance with high winter performance.<br>Effective for hydrologic objectives of: peak flow control, volume reduction, and water quality improvement.<br>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.<br>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.<br>Effective for hydrologic objectives of: peak flow control, volume reduction, and water conservation.<br>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.<br>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.<br>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.<br>Acceptable for residential and industrial applications.<br>Cost and maintenance vary by type and generally medium-to-high winter performance.<br>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.<br>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.<br>Generally low cost and low maintenance with medium winter performance.<br>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.<br>Generally medium-to-high cost and high maintenance with medium winter performance.<br>Effective for hydrologic objectives of: peak flow control and water quality improvement.<br>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.<br>Generally medium cost and low maintenance with high winter performance.<br><br>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.<br>Generally low-to-medium cost and low maintenance with medium winter performance.<br>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.<br>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 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.

**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 is being developed to be administered in conjunction with the MS4 Construction training for the FWA construction/design/ engineering audience. 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 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 | Distribute Design Manual |
|---|---|
| Description | 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 2021, 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.<br>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 | Target date: 30 April 2021<br>31 October 2021 |
| Person(s) responsible | PWE 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** | PWE 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** | PWE Water Program, PWE 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** | PWE 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** | PWE 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 PWE 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 spring time, 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** | PWE 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<br>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 PWE 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.<br>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 PWE 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.<br>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** | PWE Water Program, PWE Natural Resources, training area managers, project managers, designers, and contractors |
| **References** | FNSB Flood Plain Program<br>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, PWE requests a decision from the FNSB Flood Plain Program. |

**Industrial Facilities**

Currently, two MSGP facilities exist at Fort Wainwright. The US Army Garrison Fort Wainwright tracking number is AKR06AC73. At the time this report was prepared, the facility is operating off of the 2015 MSGP, however a new SWPPP and NOI were submitted for the 2020 MSGP and are pending approval from ADEC.

The facilities included in the newest MSGP SWPPP are presented in the table below, taken from the 2020 MSGP Storm Water Pollution Prevention Plan.

**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 | |
| 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 | |

| 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 |
| 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 | |

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.

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 |

| 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 | |
| 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 annually 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 |
| 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 |

| 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 | |
| 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 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 | 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 December 2021 |
| Person(s) responsible | PWE 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. |
| Dates to achieve goals | 31 December 2021 |
| Person(s) responsible | PWE 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 2021 |
| **Person(s) responsible** | PWE Water Program Manager, environmental contractor |

| **Measureable Goal** | **Street & Storm Drain Cleaning Study** |
|---|---|
| **Description** | USAG Alaska must 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. |
| **Dates to achieve goals** | 31 December 2021 |
| **Person(s) responsible** | PWE Water Program Manager, environmental contractor, with assistance from PWE 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 2021 |
| **Person(s) responsible** | PWE 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 PWE 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. BOD is expected to be observed in most outfalls, especially those that run through open drainage ditches and swales, as there is organic matter present. | Less than 1.0 [4]<br><br>Past background sample results have been less than 2.0 |
| **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]<br><br>Past background sample results range from 7.9 to 11.2 |
| **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. The source of TaqH is most likely from human sources such as vehicle fluid leaks, drips, and spills. | 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.

The tables below summarize the measurements and sample results from each of the 4 Quarters in 2020. Where measurements or samples weren't collected, the cell contains two dashes (--). Results are further discussed later in this section.

| Parameter: | Discharge | | | | Sampled | | | | Flow Rate | | | | pH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit / Option | YES / NO / ** | | | | YES / NO | | | | cfs | | | | S.U. | | | |
| Outfall | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| FWA-A | No | No | No | Yes | -- | No | No | Yes | -- | -- | -- | 0.001 | -- | -- | -- | 4.8 |
| FWA-C | Yes | No | No | Yes | Yes | No | No | Yes | 0.007 | -- | -- | 0.003 | 5.4 | -- | -- | 5.9 |
| FWA-001 | Yes | No | No | No | Yes | No | No | No | 0.053 | -- | -- | -- | 5.7 | -- | -- | -- |
| FWA-004 | Yes | No | No | No | Yes | No | No | No | 0.053 | -- | -- | -- | 5.2 | -- | -- | -- |
| FWA-007 | No | No | No | No | No | No | No | No | -- | -- | -- | -- | -- | -- | -- | -- |
| FWA-009 | Yes | Yes | Yes | No | Yes | Yes | Yes | No | 0.025 | 0.027 | -- | -- | 5.7 | 6 | -- | -- |
| FWA-010 | No | No | No | No | No | No | No | No | -- | -- | -- | -- | -- | -- | -- | -- |
| Background | No | Yes | Yes | No | No | Yes | Yes | No | -- | >1 | -- | -- | -- | 7 | -- | -- |

| Parameter: | Turbidity | | | | Temperature | | | | DO | | | | COD | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit / Option | NTU | | | | °C | | | | mg/L | | | | mg/L | | | |
| Outfall | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| FWA-A | -- | -- | -- | 2.1 | -- | -- | -- | 15 | -- | -- | -- | 8.1 | -- | -- | -- | 48 |
| FWA-C | 9.2 | -- | -- | 4.2 | 3.2 | -- | -- | 15 | 7.3 | -- | -- | 7.6 | 38 | -- | -- | 27 |
| FWA-001 | 0.1 | -- | -- | -- | 1.3 | -- | -- | -- | 8.4 | -- | -- | -- | 32 | -- | -- | -- |
| FWA-004 | 1.5 | -- | -- | -- | 3.2 | -- | -- | -- | 7.9 | -- | -- | -- | 21 | -- | -- | -- |
| FWA-007 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FWA-009 | 0 | 0.7 | 0.9 | -- | 3.5 | 15 | -- | -- | 9.1 | 5.4 | -- | -- | 26 | 25 | 15 | -- |
| FWA-010 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Background | -- | 1 | 37 | -- | -- | 8.7 | -- | -- | -- | 7.1 | -- | -- | -- | 7.9 | 11 | -- |

| Parameter: | BOD, 5-day | | | | TSS | | | | TAH | | | | TaqH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit / Option | mg/L | | | | mg/L | | | | µg/L | | | | µg/L | | | |
| Outfall | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| FWA-A | -- | -- | -- | 3.2 | -- | -- | -- | 7.1 | -- | -- | -- | <DL | -- | -- | -- | 0.1 |
| FWA-C | 8.1 | -- | -- | <DL | 5.5 | -- | -- | 2.8 | <DL | -- | -- | <DL | <DL | -- | -- | 0.1 |
| FWA-001 | 5.2 | -- | -- | -- | 2.2 | -- | -- | -- | <DL | -- | -- | -- | 7.5 | -- | -- | -- |
| FWA-004 | 4.4 | -- | -- | -- | 3 | -- | -- | -- | <DL | -- | -- | -- | 2.9 | -- | -- | -- |
| FWA-007 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FWA-009 | 2.8 | <DL | 2.1 | -- | 0.9 | <DL | 1.2 | -- | <DL | <DL | <DL | -- | 2.9 | 3.9 | 6.1 | -- |
| FWA-010 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Background | -- | <DL | <DL | -- | -- | 0.9 | 5.1 | -- | -- | <DL | <DL | -- | -- | <DL | <DL | -- |

| Parameter: | Fecal Coliform | | | | E. Coli | | | |
|---|---|---|---|---|---|---|---|---|
| Unit / Option | Present/Absent | | | | Present/Absent | | | |
| Outfall | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| FWA-A | -- | -- | -- | P | -- | -- | -- | P |
| FWA-C | P | -- | -- | P | P | -- | -- | P |

A map of outfall locations is provided on the next page. Outfalls that are part of the MPP and QAPP are circled in blue, however, former Outfall FWA-010 is not shown on this map.

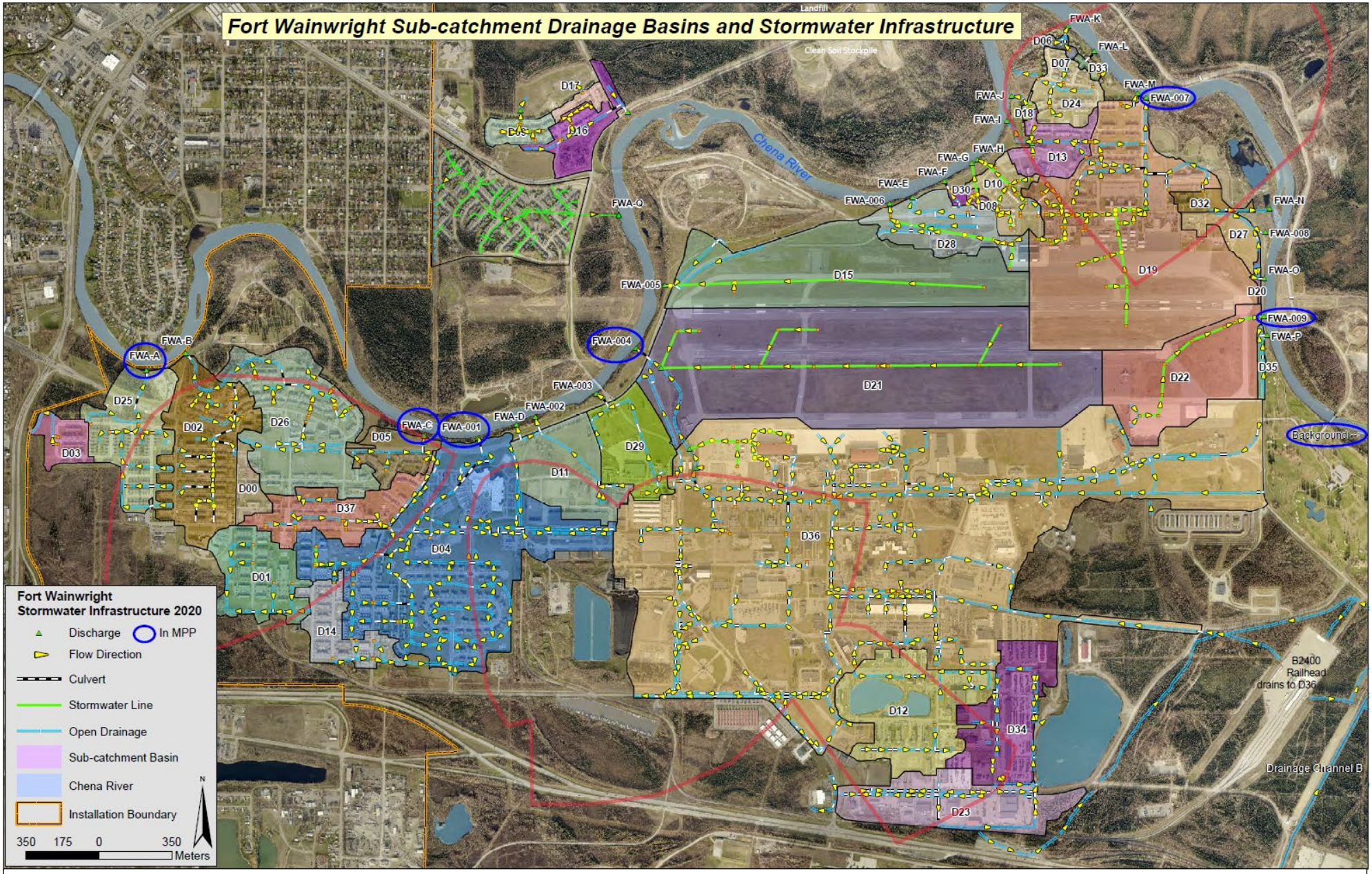


**Figure 3. Fort Wainwright Outfall Location Map**

## 4.2 Sampling Activities & Results

In 2020, storm water samples were collected during four different events.

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 21 and 22 April from 4 Outfalls: FWA-C, FWA-001, FWA-004, and FWA-009.

A notable feature of the snowmelt during this event was that samples were more acidic than in previous years, with measured pH values of 5.23 to 4.71. At the time, there was no indication that the instrument calibration was off or that the standards used to calibrate the instrument were compromised; however, this drop in pH at all sampling locations is suspicious considering previous years' results, which ranged from 6.37 to 7.8 pH units.

All other sample results were within normal ranges. COD and BOD were generally higher during Quarter 1 than subsequent quarters. This trend is consistent with the additive effect of breakup – leaks/drips/spills of vehicle fluids, pet waste, deicing salts, and other chemicals from an entire winter are combined and discharged within a short amount of time.

The most telling results from snowmelt sampling were significant detections of fecal coliform and E. coli in runoff from outfall FWA-C. This outfall drains storm water from the Bear Paw neighborhood. Many families at FWA have dogs and picking up pet waste is a recurring environmental and safety issue.

**Quarter 2**

The Quarter 2 sampling event was performed during a rain storm on 13 July 2020. Measured at the FAI weather station, the total rainfall in the 24-hour period was 0.63 inches, and at the North Pole weather station the total rainfall was 0.18 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.

Compared to background, water from the airfield had a slightly lower pH (5.99 compared to 7.02), a higher COD (25.4 mg/L compared to 7.9 mg/L), and detectable TaqH (3.9 mg/L compared to non-detect). With the exception of pH, all other sample

results were within normal ranges. These readings are likely due to the industrial activities and likelihood of leaks, drips, and spills of petroleum products on the airfield.

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 minor rain event on 27 July 2020. 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 0.02 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 temperature, pH, and DO in the field was malfunctioning so these parameters were not recorded. All measured results were within normal ranges.

**Quarter 4**

The Quarter 4 sampling event was performed during a rain event on 3 August 2020. Measured at the FAI weather station, the total rainfall in the 24-hour period was 0.74 inches, and at the North Pole weather station the total rainfall was a trace amount. Over a 3-day period, 1.22 inches of rain fell as measured at the FAI weather station.

Two outfalls were able to be sampled during this event: FWA-A and FWA-C. The field instrument used to measure temperature, pH, and DO was serviced by a professional vendor. The pH was once again low, with a reading of 4.83 at FWA-A and 5.92 at FWA-C. COD at FWA-A was slightly greater than the typical range of the Chena River, with a result of 48.2 mg/L. COD at FWA-C was within normal range at 26.5 mg/L.

Fecal coliform and E.coli were detected at both outfalls FWA-A and FWA-C. Outfall FWA-A drains water from the Gertsch Heights and part of the Northern Lights neighborhoods, so pet waste is also suspected to be a major contributor to the results.

**Overall trends**

In 2020, three trends were observed: low pH, slightly elevated COD, and presence of fecal coliform & E. coli.

The source of low pH readings remains unexplained. During the 2021 monitoring season, extra scrutiny will be placed on pH measurements and if needed, measurements will be taken at other locations to trace a potential source.

Higher COD results are likely due to the use of man-made chemicals such as vehicle fluids, fertilizer, pesticides, and others. However, continued observation and data collection will be needed to determine specific sources.

Fecal coliform and E. coli are primarily due to animal waste. In housing areas on Post, this is almost exclusively due to pet waste and 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 2020.

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:

- Use the monitoring and assessment data described in Part 4.1 of the MS4 Permit to specifically assess the effectiveness of each of the following:
    - Each significant activity/control measure or type of activity/control measure implemented;
    - Implementation of each major component of the SWMP (Public Education/Involvement, Illicit Discharges, Construction, Post-Construction, Pollution Prevention and Good Housekeeping); and
    - Implementation of the SWMP as a whole.
- Identify and use measurable goals, assessment indicators, and assessment methods for each of the items.
- Document the permittee's compliance with permit conditions.
- 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 | Detections of fecal coliform and E. coli are linked to pet waste. |
| Compliance discussion | USAG Alaska has met the measureable goals outlined for 2020. 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. |
| Look ahead | Pet Waste flyers and baggies will continue to be distributed. The PWE will look into purchasing scoopers or other materials to encourage picking up pet waste.<br>The new brochure on Lawn and Garden Care includes a section on pet waste and this brochure will be distributed to residents in 2021. |

| 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** | Detections of fecal coliform and E. coli are linked to pet waste. |
| **Compliance discussion** | The target of marking 100% of storm drain inlets was not met. |
| **Look ahead** | Storm drain inlet marking and inspections will be performed in 2021. Opinion survey results showed that only about 1/3rd of respondents had noticed stencils on Fort Wainwright. PWE will work with Birchwood Homes to complete inlet marking and inspection requirements in this subdivision.<br>A second Opinion survey will be conducted in 2021.<br>Pet waste and other sampling results will be discussed at the USAG Alaska Storm Water Steering Committee meetings. Committee members will be encouraged to find ways to improve pet waste compliance. |

| 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** | The Garrison policy does not include specific information about notification to ADEC. |
| **Look ahead** | The next iteration of Garrison Policy #35, expected in 2021 or early 2022 will be modified to include specific information about when ADEC will be notified of illicit discharges.<br>A new Spills Program Manager for PWE is on board and will be participating in the IDDE program. |

| 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 were inspected in 2020. |
| **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 2020, including one instance of an illicit discharge of sediment into the MS4. Training and proactive inspections will be a highlight of the 2021 effort. |

| | |
|---|---|
| | 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 2020. |
| **Look ahead** | The post-construction training will be shared with the primary audience.<br>DPW Master Planning is being pulled in to help 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 were not completed in 2020. |
| **Look ahead** | Catch basin inspections and storm drain stenciling will be completed in 2021.<br>Training and inspections will continue as in past years. The Street & Storm Drain Cleaning Study will be completed in 2021. |

The SWMP includes the separate program plans such as the IDDE Program Manual, the O&M Program Document, and the Implementing Guidance and Army LID Technical User Guide. 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**

The point of failure during 2019 and 2020 was the delay of reporting. A major factor contributing to this is personnel. The limits and turnover of staff, competing priorities, ineffective tracking, and physical constraints due to the COVID-19 pandemic have each played a part in delaying timely submittals. The modifications needed are to train staff and delegate tasks, update the tracking and feedback protocols, and include reporting in the field procedures. These tasks are beginning to be implemented at the time this report was prepared and will be ongoing.

| **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, PWE 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 outfall to the gravel pit (FWA-010) will be made in 2021. |
| **Dates to achieve goals** | Target date 30 May 2021 |
| **Person(s) responsible** | PWE 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: Robert K. Larimore

Title: DPW, Environmental Division Chief

Signature: 

Date Signed: March 29, 2021

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

# Appendix A: Summary Annual Report

# 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

# Appendix H: Garrison Policy Letter

# Appendix I: Sample Results

# Appendix J: Delegation Forms