FINAL MS4 PROGRAM PLAN

STORMWATER MS4 PROGRAM SUPPORT

MARINE CORPS INSTALLATIONS NATIONAL CAPITAL
REGION MARINE CORPS BASE QUANTICO (MCINCR-MCBQ)
VIRGINIA

FEBRUARY 2024

Prepared by

Christopher Yeager, Water Program Assistant

Benjamin Foster, Water Program Manager

This page intentionally left blank.

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AE	Architect-Engineering
AST	Aboveground Storage Tank
BMP	Best Management Practice
BX	Base Exchange
CBPA	Chesapeake Bay Preservation Act
CFR	Code of Federal Regulations
CNMP	Certified Nutrient Management Planner
CSCE	Comprehensive Site Compliance Evaluation
CSWMP	Comprehensive Storm Water Management Action Plan
CVP	Conservation Volunteer Program
DCR	Virginia Department of Conservation and Recreation
DoD	Department of Defense (United States)
DOJ	Department of Justice (United States)
DON	Department of Navy
E&SC	Erosion and Sediment Control
EC	Environmental Coordinator
ECPSOP	Environmental Compliance & Protection Standard Operating Procedure
EISA	Energy Independence and Security Act
EML	Electronic Metrology Laboratory
EPA	Environmental Protection Agency (United States)
FEAD	Facilities Engineering Acquisitions Division
FMS	Facilities Maintenance Section
FY	Fiscal Year
GIS	Geographic Information Systems
HMMP	Hazardous Material Management Program
HMX-1	Marine Helicopter One Squadron
HUC	Hydrologic Unit Code
I-95	Interstate 95
IDA	Intensely Developed Acres
IDDE	Illicit Discharge Detection and Elimination
IPMC	Integrated Pest Management Coordinator
IPMP	Integrated Pest Management Plan
LID	Low Impact Development
MCAF	Marine Corps Air Facility
MCBO	Marine Corps Base Order
MCCDC	Marine Corps Combat Development Command
MCCS	Marine Corps Community Service
MCINCR-MCBQ	Marine Corps Installations National Capital Region Marine Corps Base Quantico
MCIOC	Marine Corps Information Operations Center
MCM	Minimum Control Measure
MCNOSC	Marine Corps Network Operations and Security Center
MCO	Marine Corps Order
MCSC	Marine Corps Systems Command

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

MFCU	Marine Federal Credit Union
MS4	Municipal Separate Storm Sewer System
NEPA	National Environmental Policy Act
NMP	Nutrient Management Plan
NOT	Notice of Termination
NOV	Notice of Violation
NREA	Natural Resources and Environmental Affairs
PAO	Public Affairs Office
PEOP	Public Education Outreach Plan
POL	Petroleum, Oil, Lubricant
PSTMP	*Petroleum Storage Tank Management Plan*
PWB	Public Works Branch
RLD	Responsible Land Disturber
RMA	Resource Management Areas
ROICC	Resident Officer in Charge of Construction
RPA	Resource Protection Areas
Small MS4 Permit	General Permit for Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasure
SPR	Spill Prevention and Response
SWMP	Stormwater Management Plan
SWPP	Stormwater Pollution Prevention
SWPPP	Stormwater Pollution Prevention Plan
SWPPT	Stormwater Pollution Prevention Team
TBS	The Basic School
TMDL	Total Maximum Daily Load
UFC	Unified Facilities Criteria
UST	Underground Storage Tank
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VESCH	Virginia Erosion and Sediment Control Handbook
VESCL	Virginia Erosion and Sediment Control Law
VESCP	Virginia Erosion and Sediment Control Program
VPDES	Virginia Pollution Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WPM	Water Program Manager
WTB	Weapons Training Battalion

FACILITY INFORMATION

Name of Facility Marine Corps Base Quantico

Street Address 3250 Caitlin Ave

City Quantico **State** VA **Zip Code** 22134

County Stafford, Prince William, Fauquier (MS4 in Prince William County only)

This page intentionally left blank.

1.0 INTRODUCTION

The Virginia Administrative Code (VAC) under 9VAC25-890[1] provides the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) (Small MS4 Permit). Small MS4 permittees in urbanized areas as defined by the Decennial Census, such as Marine Corps Installations National Capital Region – Marine Corps Base Quantico (MCINCR-MCBQ), are subject to the requirements of the Small MS4 Permit. Due to the installation's location within an urbanized area, MCINCR-MCBQ is regulated by the Small MS4 Permit under Permit Number VAR040069.[2,3]

According to Section I B of the Small MS4 Permit, "the permittee shall develop, implement, and enforce a MS4 program designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP) in accordance with this permit, to protect water quality, and to satisfy the appropriate water quality requirements of the State Water Control Law and its attendant regulations. The permittee shall utilize the legal authority provided by the laws and regulations of the Commonwealth of Virginia to control discharges to and from the MS4. This legal authority may be a combination of statute, ordinance, permit, policy, specific contract language, order, or interjurisdictional agreements. The MS4 program shall include the minimum control measures (MCM) described in Part I E [of the Small MS4 Permit]."

MCINCR-MCBQ's MS4 Program Plan addresses all six (6) MCMs and the Special Conditions regarding approved Total Maximum Daily Loads (TMDLs) outlined in Sections I and II of the Small MS4 Permit. In addition to detailing the best management practices (BMPs) for each MCM, MCINCR-MCBQ has incorporated an additional Administration/Special Conditions section with associated BMPs crafted to facilitate program updates and TMDL implementation.

To arrive at appropriate and cost-effective BMPs, MCINCR-MCBQ reviewed existing stormwater management operations, procedures, and programming as they relate to the compliance requirements of the Small MS4 Permit. For each selected BMP, MCINCR-MCBQ has identified measurable goals, responsible parties, timelines, and evaluation methods. Sections 4 through 11 of this MS4 Program Plan cover each of the six (6) MCMs, Administration/Special Conditions related to TMDLs, and annual reporting requirements set forth in the Small MS4 Permit.

An older version of MCINCR-MCBQ's MS4 Program Plan is included in the 2011 Comprehensive Storm Water Management Action Plan (CSWMP), and updates were developed in 2016, 2018, and 2020. Updates to the MS4 Program Plan in 2024 (this

[1] 9VAC25-890, *General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems*. Effective November 1, 2018.
[2] General Permit No. VAR040069, *General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems; Authorization to Discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act*. Effective Date: November 1, 2018. Expiration Date: October 31, 2023.
[3] General Permit No. VAR040069 was reissued on November 1, 2018 and refers to the Small MS4 Permit under 9VAC25-890.

update) serve as a revised version of the MS4 Program Plan, which is to be updated annually, as needed, as required by the Small MS4 Permit.

This document provides a MS4 Program Plan update for MCINCR-MCBQ. More specifically, BMP descriptions and metrics have been updated to accurately reflect the MS4 program and processes; new BMPs have been identified to meet requirements of the Small MS4 Permit; and select BMPs that were redundant or not required have been removed from this update.

2.0 FACILITY DESCRIPTION

This section provides a general description of MCINCR-MCBQ. The installation is located in northern Virginia, roughly 35 miles south of the District of Columbia. MCINCR-MCBQ encompasses approximately 59,000 acres, extending from the west bank of the Potomac River through portions of Fauquier, Prince William, and Stafford Counties. All stormwater runoff from the installation eventually discharges into the Potomac River, which drains into the Chesapeake Bay.

The installation consists of two (2) major areas divided by Interstate 95 (I-95): Mainside and Westside. Mainside, located east of I-95, provides numerous administrative services and support functions and includes the majority of the developed areas at MCINCR-MCBQ. Mainside is the home of the Marine Corps Combat Development Command (MCCDC) and several tenant commands, including the Marine Corps University, Marine Corps Systems Command (MCSC), Marine Helicopter One Squadron (HMX-1), and the Marine Corps Air Facility (MCAF).

Westside, west of I-95, is used primarily for military training and includes four (4) concentrated areas of development: the United States Department of Justice (DOJ) campus, consisting of the Federal Bureau of Investigation Academy and Drug Enforcement Agency functions; Camp Barrett (also known as The Basic School or TBS); Weapons Training Battalion (WTB); and Camp Upshur. The remainder of Westside has been divided into training areas. Activities within training areas have specific functions, which are centrally regulated by the Range Management Branch and/or WTB.

This page intentionally left blank.

3.0 MINIMUM CONTROL MEASURES

This section introduces the six (6) MCMs required by the Small MS4 Permit. This section also describes how the MCM descriptions and evaluations contained within this MS4 Program Plan update were developed. Lastly, this section provides an overview of the detailed best management practice (BMP) descriptions implemented for each MCM provided in Sections 4-9 of this document.

The six (6) MCMs required by the Small MS4 Permit, Section I E, are as follows:

- MCM 1: Public Education and Outreach
- MCM 2: Public Involvement and Participation
- MCM 3: Illicit Discharge Detection and Elimination
- MCM 4: Construction Site Stormwater Runoff Control
- MCM 5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands
- MCM 6: Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by the Permittee

Sections 4-9 describe the BMPs that MCINCR-MCBQ is implementing to meet the six (6) MCMs required by the Small MS4 Permit based on the information received from MCINCR-MCBQ. Included in each section is:

- Each requirement as listed in Section I E for each MCM.
- A brief description of each BMP.
- The objective and measurable goals by which the BMP will be evaluated.
- Standard operating procedures or policies used to implement the BMPs.
- The BMP implementation schedule, including any interim goals where appropriate or necessary.
- The parties and/or divisions responsible for implementing the BMPs.
- The implementation procedures for each BMP, including a discussion of the documents MCINCR-MCBQ uses during BMP implementation, if applicable.

This page intentionally left blank.

4.0 MCM 1: PUBLIC EDUCATION AND OUTREACH

The first MCM in the Small MS4 Permit (Section I E 1) requires MCINCR-MCBQ to provide public education and outreach on stormwater impacts.

Table 4-1. Summary of MCM 1 Requirements and BMPs

#	MCM 1 Requirement	Permit Section	Fulfilled by BMPs
1	Identify high-priority stormwater issues with rationale for selection and an explanation of positive impact on stormwater discharges.	Section I E 1 b Section I E 1 f (2)	BMP 1.a: Develop a Public Education Outreach Plan (PEOP) BMP 1.h: Identify High Priority Stormwater Issues
2	The high-priority public education and outreach program, as a whole, shall: (1) Identify and explain the important of the high-priority issues; (2) Include measures or actions the public can take to minimize the impact of the high-priority stormwater issues; and (3) Provide a contact and telephone number, website or location where the public can find out more information.	Section I E 1 c	BMP 1.a: Develop a PPEOP
3	Identify the public audience to receive each high-priority stormwater message.	Section I E 1 f (3)	BMP 1.h: Identify High Priority Stormwater Issues
4	Develop strategies to communicate each high-priority stormwater message and when communicated to public.	Section I E 1 d Section I E 1 f (4) Section I E 1 f (5)	BMP 1.a: Develop a PEOP BMP 1.h: Identify High Priority Stormwater Issues

Sections 4.1-4.8 present the BMPs that MCINCR-MCBQ currently implements to address MCM 1, Public Education and Outreach.

4.1 BMP 1.a: Develop a Public Education Outreach Plan (PEOP)

BMP Description: Develop and implement a Public Education Outreach Plan (PEOP).

Objective/ Measurable Goals/ Expected Results: The PEOP should identify the goals, strategies, and planned implementation of the MCINCR-MCBQ public education and outreach program, including the requirements listed in Section I E 1 a-e of the Small MS4 Permit. These requirements are called out in the implementation procedures below.

Method to Determine BMP Effectiveness: Evaluate compliance with Section I E 1 a-e of the Small MS4 Permit, accurate reflection of the MCINCR-MCBQ public education outreach program, and how successful the outreach strategies are at reaching the public audience.

Implementation Schedule: Update the PEOP as needed to reflect changes to the high-priority stormwater issues and the MCINCR-MCBQ public education and outreach program.

Responsible Party: NREA

Implementation Procedures:
The following implementation procedures are a summary of the Small MS4 Permit requirements for a public education and outreach program (Section I E 1 a-e):

- Increase public's knowledge of how to reduce stormwater pollution, placing priority on reducing impacts to impaired waters and other local water pollution concerns.
- Increase public's knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implication.
- Implement a diverse program with strategies that are targeted toward individuals or groups most likely to have significant stormwater impacts.
- Clearly identify and explain the importance of no less than three (3) high-priority stormwater issues to meet the goal of educating the public.
- Include measures or actions the public can take to minimize the impact of the high-priority stormwater issues.
- Provide a contact name and telephone number or location where the public can find out more information.
- Use two or more of the strategies listed in Table 1 of the Small MS4 Permit (Section I E 1 d) per year to communicate to the public the high-priority stormwater issues identified in accordance with Section I E 1 b of the Small MS4 Permit including how to reduce stormwater pollution.

4.2 BMP 1.b: Charity Car Wash Handouts

BMP Description: Distribute car wash brochures and guidelines at charity car wash events.

Objective / Measurable Goals / Expected Results: Increase public's knowledge of the hazards associated with illegal discharges and improper disposal of wastes as well as reducing stormwater pollution during car washing activities.

Method to Determine BMP Effectiveness: Document the number of car wash brochures handed out for each charity car wash on the Car Wash Report Form, provided by NREA to MCCS and car wash sponsors.

Implementation Schedule: Annually. Provide updates in the annual report.

Responsible Party: NREA and Marine Corps Community Service (MCCS)

Implementation Procedures:
Charity car wash events are conducted at the Marine Federal Credit Union (MFCU) during the summer months with an average of eight (8) charity car wash events conducted per year. Car wash events are scheduled by various car wash sponsors in coordination with the MFCU and MCCS. MCCS is also required to contact the NREA WPM prior to each car wash to obtain approval and receive car washing guidelines and car wash brochures. The car washing guidelines detail the proper procedures the car wash sponsors should follow to prohibit runoff from car washing activities. Each car wash patron receives a brochure distributed by the sponsor. The brochure summarizes the steps taken during car washing to prohibit runoff into MCINCR-MCBQ's waterways. The car washing guidelines and car wash brochures are also posted on the NREA website for the public.

Following completion of each car wash event, the car wash sponsors or MCCS personnel provide a complete Car Wash Report Form to the NREA WPM, which reports the name of the charity, date and location of car wash, number of cars washed, type of detergent used, and the number of brochures distributed.

4.3 BMP 1.c: Earth Day / Kid Fest Information Booth

BMP Description: Distribute stormwater handouts and educate the public on the effects of runoff using the EnviroScape® model during Earth Day activities.

Objective / Measurable Goals / Expected Results: Increase public awareness of stormwater issues. Stormwater-related information is distributed and discussed at the Earth Day Information Booth in an effort to educate the public.

Method to Determine BMP Effectiveness: Document the number of stormwater handouts distributed at the Earth Day Information Booth.

Implementation Schedule: Annually. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
During annual Earth Day activities, an information booth is set-up at the Base Exchange (BX). Stormwater education is provided at the booth using an EnviroScape® model, which is a visual tool that demonstrates the effects of precipitation and runoff on erosion and stormwater management. Additionally, handouts are provided to visitors that provide stormwater, solid waste, and recycling information. The information booth is operated by NREA civilian employees, and booth visitors typically consist of residents on base and other BX shoppers who may live or work on the installation. Earth Day activities are typically advertised using a banner, flyers posted at the Commissary, and on the MCCS Facebook page.

4.4 BMP 1.d: Roadside/Stream Cleanup

BMP Description: Coordinate a roadside or stream cleanup day with local community members to clean up and prevent pollution/litter. Educate the public on the effects of litter on water quality.

Objective / Measurable Goals / Expected Results: Increase public awareness of stormwater issues. Reduce and prevent litter within the MS4 area.

Method to Determine BMP Effectiveness: Document the number of attendees to each clean up event.

Implementation Schedule: Annually. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
During Earth Day or other times of the year. MCINCR_MCBQ will conduct a litter collection event. These events will usually involve removing litter from a streambed or collecting litter from the side of the road. Local community members from base housing and school division will be encouraged to participate; civilian employees and Marines will also be engaged to maximize public participation and education. Events will be advertised using banners, flyers, emails, and posts on social media. During the cleanup event, NREA staff will talk with attendees to provide education on the effects of litter on the Bay and overall increase the publics education on pollution prevent. Various brochures and fliers will also be given to attendees. NREA staff will coordinate the event.

4.5 BMP 1.e: Recycling Center Cleanup Days

BMP Description: Coordinate events to clean up trash and litter around the recycling center. Assist with sorting overflow materials to the proper waste streams among other recycling activities.

Objective / Measurable Goals / Expected Results: Increase public awareness of stormwater issues. Reduce the amount of litter within the MS4 area.

Method to Determine BMP Effectiveness: Document the number of attendees to each clean up event.

Implementation Schedule: Quarterly or as needed. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
The recycling center is where all recyclable materials are brought on base to be sorted and recycled. Unauthorized dumping and materials blown away is an issue this facility faces. Multiple signs have been put up to prevent members of the public from illegally dumping trash on the property. Existing staffing cannot always keep up with the amount of materials that need to be sorted or keep up with litter at the facility, MCINCR_MCBQ hosts clean up days at the recycling center to assist with litter control and sorting backlogs. These events are advertised to civilians, marines, and local community members depending on the amount of assistance that is needed. Attendees are educated on the benefits of recycling snd the differing recycling waste streams and the issues with not properly securing trash and dumping. They are also educated on the effects of litter. Attendees will collect litter around the facility and help facility staff with sorting recyclables.

4.6 BMP 1.f: Household Hazardous Chemicals Collection Day

BMP Description: Conduct an event where members of the public can drop off their household hazardous waste and chemicals for the base to properly dispose of.

Objective / Measurable Goals / Expected Results: Increase public awareness of stormwater issues. Reduce the amount of hazardous materials disposed of through the trash (or other means) from residential properties on base. Increase public knowledge of the effects of improper disposal of hazardous waste.

Method to Determine BMP Effectiveness: Document the amount of waste collected from the public.

Implementation Schedule: Annually. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
During annual Earth Day activities, MCINCR-MCBQ will also host an event to collect household hazardous waste from residents of the base. These events are run by NREA staff, which includes civilians and marines. The event will be advertised using banners, flyers, emails, and posts on social media. Base residents from the base housing area and barracks are the target audience for this event, but hazardous materials from civilian employees and veterans will also be accepted. The amount of materials collected will be weighed and documented. All materials collected will be disposed as hazardous waste, universal waste, or regulated waste depending on the requirements set forth in RCRA. Flyers and educational material will be distributed to the public on hazardous waste and pollution prevention.

4.7 BMP 1.g: Animal Waste Stations

BMP Description: Maintain and operate animal waste stations.

Objective / Measurable Goals / Expected Results: Increase public awareness of stormwater issues. Reduce the amount of pollution generated from animal waste.

Method to Determine BMP Effectiveness: Document the number of animal waste stations maintained throughout the year

Implementation Schedule: As needed. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
Throughout the base housing area and in public places such as parks, animal waste collection station have been installed. These animal waste collection stations feature a trash can and a trash bag dispenser. Signs have also been installed to remind members of the public to clean up after their animals. Fines and other actions can be taken against those who do not clean up after their pets. Members from the Private Public Partnership maintenance team maintain these stations on a as needed basis. They empty the trash can when it becomes full and will also provide more individual bags once out. These stations have resulted in animal waste being cleaned up and less pollution reaching the MS4 stormwater system. MCINCR_MCBQ staff will continue to observe the grounds around base for animal waste collection issues and take appropriate action where necessary to install further animal waste collection stations or signage.

4.8 BMP 1.h: Identify High Priority Stormwater Issues and Public Audience

BMP Description: Document high priority stormwater issues, public audience, communication strategies, and time periods.

Objective / Measurable Goals / Expected Results: Include all MS4 Program Plan documentation required by the Small MS4 Permit Section I E 1 f.

Method to Determine BMP Effectiveness: Ensure that the MS4 Program Plan accurately reflects the high priority stormwater issues, rationale for selection, identification of public audience, strategies to communicate each high-priority stormwater message, and the time periods that they will be communicated or made available to the public.

Implementation Schedule: Complete. Provide updates in the annual report and MS4 Program Plan revisions.

Responsible Party: NREA

Implementation Procedures:
This BMP is considered complete based on the information found in this section of the MS4 Program Plan. MCINCR-MCBQ has identified the following three high-priority stormwater issues for outreach and education:

1. Nutrient overloading in waterways (Chesapeake Bay TMDL),
2. Importance of adequate ground cover to prevent soil erosion, and
3. Litter prevention.

Table 4-2 identifies the public audience as well as the rationale for selection of each of the three high-priority stormwater issues.

Table 4-2. Selection of High-Priority Stormwater Issues

High-Priority Stormwater Issue	Rationale for Selection	Public Audience
Nutrient overloading in waterways (Chesapeake Bay TMDL).	Nitrogen and phosphorus are pollutants of concern (POCs) for the MCINCR-MCBQ MS4, the Mainside wastewater treatment plant (WWTP), and Camp Upshur WWTP.	Marines, civilian employees, contractors, and residents that work or live on base.
Importance of adequate ground cover to prevent soil erosion.	Construction is perpetually ongoing at MCINCR-MCBQ, and adequate ground cover during and following land disturbing activities is an opportunity to reduce erosion and sediment runoff.	Construction Contractors, MCINCR-MCBQ Plan Reviewers and Inspectors.
Litter control/prevention.	The MCINCR-MCBQ MS4 area is highly urbanized with heavy foot traffic and numerous convenience stores and take-out dining options resulting in litter accumulation at roadsides, parking lots, streambanks, and wooded areas.	Marines, civilian employees, contractors, and residents that work or live on base.

Table 4-3 identifies the strategies from Table 1 of the Small MS4 Permit (Part I E 1 d) to be used to communicate each high-priority stormwater message; an explanation of how each education or outreach strategy is intended to have a positive impact on stormwater discharges; and the anticipated time periods the messages will be communicated or made available to the public.

Table 4-3. Communication Strategies and Positive Impact on Stormwater

Communication Strategies	Corresponding High-Priority Stormwater Issue	Positive Impact on Stormwater	Time Period for Outreach
Media Materials	Nutrient overloading in waterways. Litter prevention.	Engage the public to participate in future Earth Day,and other events. Increase awareness of litter accumulation on base and proper car wash guidelines to minimize impacts to stormwater.	Annual Marine Corps Base Quantico Facebook coverage of Earth Day and other events. Consistent availability of car wash brochures on the MCINCR-MCBQ website.
Training Materials	Nutrient overloading in waterways. Importance of adequate ground cover to prevent soil erosion. Litter prevention.	Reduce the instances of erosion, sediment runoff, and exposed materials at construction sites. Increase awareness of water quality impacts at the installation by training construction contractors and installation staff.	Twice per year.
Signage	Nutrient overloading in waterways. Litter prevention.	Improve public behaviors concerning car washing, proper maintenance, mowing the lawn, cleaning up brush, raking leaves, preventing illicit discharges, etc.	Annually at Earth Day event displays.
Traditional Written Materials	Nutrient overloading in waterways. Importance of adequate ground cover to prevent soil erosion. Litter prevention.	Provide newsletter to inform public pertaining to nutrient runoff, litter prevention and other environmental areas of concern. Provide stormwater brochures at charity car washing events to educate the public on environmentally sensitive car washing techniques. Provide coloring books, brochures, information sheets, among other methods to communicate high importance stormwater information at events such as Earth Day.	Annual summer newsletter Brochures distributed at each charity car wash event Annually at Earth Day events, including Kid Fest.

Public Education Activities	Nutrient overloading in waterways. Importance of adequate ground cover to prevent soil erosion. Litter prevention.	Increase awareness of stormwater pollution challenges at MCINCR-MCBQ and how the public can take action. Engage the public through an interactive display demonstrating the effects of precipitation and runoff on erosion and stormwater quality.	Annually at Earth Day events, including Kid Fest.

5.0 MCM 2: PUBLIC INVOLVEMENT AND PARTICIPATION

The second MCM in the Small MS4 Permit focuses on providing public involvement and participation opportunities related to MS4 Program implementation. The Small MS4 Permit provides additional detail of this MCM in Section I E 2. Sections 5.1-5.3 present the BMPs that MCINCR-MCBQ currently implements to address MCM 2, Public Involvement/ Participation.

Table 5-1. Summary of MCM 2 Requirements and BMPs

#	MCM 2 Requirement	Permit Section	Fulfilled by BMPs
1	Maintain an updated Small MS4 Program Plan and post copies of the plan on permittee's webpage.	Section I E 2 b	BMP 2.b: Maintain Stormwater Documents on NREA Website
2	Maintain a webpage where mechanisms for the public to report potential illicit discharges, complaints, or other stormwater pollution concerns.	Section I E 2 e 1	BMP 2.a: Facilitate Public Reporting of Stormwater Concerns; BMP 2.b: Maintain Stormwater Documents on NREA Website
3	The following additional information shall be posted on the webpage: (1) MS4 permit and coverage letter; (2) Annual reports; (3) Mechanism for the public to report potential illicit discharges, complaints, and other stormwater pollution concerns; and (4) Methods for how the public can provide input on the MS4 program.	Section I E 2 b	
4	Implement no less than four activities per year to provide an opportunity for public involvement to improve water quality and support local restoration and clean-up projects.	Section I E 2 c	BMP 2.c: Implement Public Involvement Activities

5.1 BMP 2.a: Facilitate Public Reporting of Stormwater Concerns

BMP Description: Develop and implement procedures for the public to report stormwater pollution concerns and comments to the MS4 Program Plan. Including:

- Mechanism for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns
- Method on how the public can comment on the MS4 Program Plan or TMDL.

Objective / Measurable Goals / Expected Results: The NREA webpage provides a means for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns. As well as comment/feedback for the MS4 program plan and/or TMDL.

Method to Determine BMP Effectiveness: Evaluate the public's input regarding the permittee's MS4 program from the maintained documentation.

Implementation Schedule: Reporting method is active on NREA website. Update this reporting method as needed.

Responsible Party: NREA and Public Affairs Office (PAO) Webmaster

Implementation Procedures:
Maintain the NREA webpage section to direct members of the public for where they can:

- Report potential illicit discharges, improper disposal, or spills to the MS4, and complaints regarding land disturbing activities, and other potential stormwater pollution concerns.
- Provide comments to the MS4 Program Plan or TMDL Action Plan.

Within the main page of the NREA webpage, it directs individuals that they can report any issues by calling the NREA number. It states, "To report illicit discharges, improper disposals, complaints regarding land disturbing activities, MS4 concerns/questions, or provide input to the stormwater program, please contact the NREA Water Program Manager at (703) 784-4030 or email MCBQ_NREA@USMC.MIL. To provide feedback or comments on the MS4 Program Plan or Chesapeake Bay TMDL Action Plan please contact the NREA Water Program Manager at (703) 784-4030 or email MCBQ_NREA@USMC.MIL." Website: https://www.quantico.marines.mil/Offices-Staff/G-F-Installation-and-Environment/Natural-Resources-Environmental-Affairs/

Quantico will maintain documentation of public input received and the response.

5.2 BMP 2.b: Maintain Stormwater Documents on NREA Website

BMP Description: Maintain stormwater documents on the NREA Documents website. Including:

- Ms4 permit and coverage letter
- The most recent MS4 Program Plan
- Annual reports for each year of permit coverage posted no later than 30 days after submittal to department.

The most recent Chesapeake Bay TMDL Action PlanObjective/Measurable Goals/Expected Results: Post the documents specified in permit for the public's knowledge of the MS4 program and stormwater pollution prevention plan.

Method to Determine BMP Effectiveness: Ensure that all updated documents are posted to the webpage.

Implementation Schedule: Post documents within 30 days of completion or submittal to VDEQ.

Responsible Party: NREA

Implementation Procedures:

Post the following documents to the Storm Water Documents section of the NREA Documents website, located here: https://www.quantico.marines.mil/Offices-Staff/G-F-Installation-and-Environment/Natural-Resources-Environmental-Affairs/NREA-Documents/

- The effective Small MS4 permit and coverage letter;
- The most current MS4 Program Plan and Chesapeake Bay TMDL Action Plan
- The annual report for each year of the term covered by this permit;
- A mechanism for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concern is listed in Section 5.1; and
- A method for how the public can provide input on the MS4 program and TMDL.

5.3 BMP 2.c: Implement Public Involvement Activities

BMP Description: Implement no less than four public involvement activities per year.

Objective / Measurable Goals / Expected Results: Conduct at least four activities each year from two or more of the categories listed in Table 2 of the Small MS4 Permit (Section I E 2 c) to provide an opportunity for public involvement to improve water quality and support local restoration and clean-up projects.

Method to Determine BMP Effectiveness: Document the number of public involvement activities and evaluate engagement based on the identified metrics (e.g., number of participants, pounds of material collected).

Implementation Schedule: Annually. Provide updates in the annual report and on the webpage.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ will implement at least 4 public involvement activities annually. Table 5-2 provides examples of public involvement activities that the installation regularly conducts; the anticipated time period the activities occur; and metrics to determine if the activities are beneficial to water quality.

Table 5-2. Public Involvement Activities at MCINCR-MCBQ

Public Involvement Activity (Category[1])	Anticipated Time Period	Metric
Roadside/Stream Cleanup (Restoration)	Annually, during the week of Earth Day activities.	Number of Participants
Recycling Center Cleanup Volunteer Days (Restoration)	Quaterly or as needed	Number of Participants
Kid Fest/Earth Day (Educational Event)	Annually, during the week of Earth Day activities.	Number of Participants
Household Hazardous Materials Collection and Disposal (Disposal or Collection)	Annually, during the week of Earth Day activities.	Pounds of Material or Number of Items Collected
Animal Waste Stations (Pollution Prevention)	Year round maintenance and upkeep	Number of Stations Maintained
Charity Car Washes (Educational Event or Pollution Prevention)	About 8 events happen each year	Number of Cars washed

Note:
1. Categories are identified in Table 2, Section I E 2 c of the Small MS4 Permit. MS4 permittees must implement at least four activities from two or more of these categories each year.

6.0 MCM 3: ILLICIT DISCHARGE DETECTION AND ELIMINATION

The third MCM in the Small MS4 Permit focuses on illicit discharge[4] detection and elimination (IDDE). The Small MS4 Permit provides additional detail of this MCM in Section I E 3. Sections 6.1-6.3 present the BMPs that MCINCR-MCBQ is currently implementing to address MCM 3, Illicit Discharge Detection and Elimination.

Table 6-1. Summary of MCM 3 Requirements and BMPs

#	MCM 3 Requirement	Permit Section	Fulfilled by BMPs
1	Maintain an accurate storm sewer system map and information table.	Section I E 3 a	BMP 3.a: MS4 Map and Information Table
2	Provide written notification to downstream MS4 of known physical interconnection.	Section I E 3 a 5	BMP 3.c: Notification of Downstream MS4 Permittees of any Physical Interconnections
3	Maintain, implement, and enforce IDDE written procedures designed to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the small MS4 to effectively eliminate the unauthorized discharge.	Section I E 3 c	BMP 3.b: Written Procedures for Nonstormwater Discharges

6.1 BMP 3.a: MS4 Map and Information Table

BMP Description: Develop and maintain an accurate MS4 map including the MS4 outfall locations and storm sewer conveyance. Maintain an outfall information table for the outfalls. Submit updated GIS Geodatabase and shapefiles to VDEQ by October 31, 2025.

Objective / Measurable Goals / Expected Results: Maintain mapping and geospatial data on MS4 outfalls and storm sewer conveyance owned and operated by MCINCR-MCBQ within the Census Urbanized Area identified by the 2020 decennial census. Update the geospatial information systems (GIS) database with any newly identified MS4 outfalls. Continue to maintain an outfall information table for MS4 outfalls and update the table to

[4] "Illicit discharge" is defined by the Small MS4 Permit as any discharge to a municipal separate storm sewer that is not composed entirely of stormwater, except discharges pursuant to a VPDES or state permit (other than the state permit for discharges from the MS4, such as the Small MS4 Permit), discharges resulting from fire-fighting activities, and discharges identified by and in compliance with 9VAC25-890.

include new outfalls constructed and/or TMDLs approved. Provide a copy of the outfall maps and outfall information table for review upon request by VDEQ. This data will be maintained in the following parameters:
As required by Part I.E.3.a.(1)(a)-(e), the map includes/shows:
1. MS4 outfalls discharging to surface waters,
2. A unique identifier for each mapped item,
3. The name and location of receiving waters to which the MS4 outfall or point of discharge discharges,
4. MS4 regulated service area, and
5. Stormwater management facilities owned by MCINCR_MCBQ

Per Part I.E.3.a.(2)(a)-(g), MCINCR_MCBQ maintains an information table associated with the MS4 map that includes the following information for each outfall or point of discharge:
1. A unique identifier as specified on the MS4 map,
2. Latitude and Longitude of the outfall or point of discharge,
3. Estimated regulated acreage draining to the outfall or point of discharge,
4. The name of the receiving water,
5. The 6th order Hydrologic Unit Code of the receiving water,
6. An indication as to whether the receiving water is listed as impaired in the Virginia 2022 305(b)/303(d) Water Quality Assessment Integrated Report
7. The name of the EPA approved TMDL that assigns a wasteload allocation to Fort Belvoir.

Within 24 months of permit issuance, MCINCR-MCBQ will submit to VDEQ a Geodatabase or two shapefiles that contain:

- A point feature class or shapefile for outfalls with an attribute table containing outfall data elements listed above
- A polygon feature class or shapefile for the MS4 service area with an attribute table containing the MS4 operator name, MS4 permit number, and MS4 service area total acreage rounded to the nearest hundredth

Method to Determine BMP Effectiveness: Ensure that the GIS database is updated with any newly identified outfalls and/or if permitted industrial and MS4 outfalls change in the next permit cycle. Ensure that the outfall information table for outfalls is updated to include new MS4 outfalls constructed and/or TMDLs approved during the immediate preceding reporting period. Maintain these in compliance with permit sections Part I.E.3.a.(1)(a)-(e) and Part I.E.3.a.(2)(a)-(g).

Implementation Schedule: Submit updated GIS data to VDEQ by October 31, 2025. Develop a new MS4 map by October 31,2025. Ongoing updates to the listed materials. Provide updates in the annual report of any changes made to outfall information in installation maps, the MCINCR-MCBQ GIS database, or the outfall information table.

No later than October 1 every year, MCINCR-MCBQ shall update the storm sewer system map and outfall information table to include any new outfalls constructed or TMDLs approved or both during the immediate preceding reporting period.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ maintains maps of all permitted stormwater outfalls associated with MS4 activities under the Small MS4 Permit No. VAR040069. These maps illustrate the outfalls discharging to surface waters. In cases where the MS4 outfall discharges to receiving water channelized underground, MCINCR-MCBQ may map the point downstream at which the receiving water emerges aboveground as a point of discharge. As new MS4 and industrial outfalls are identified during field activities, MCINCR-MCBQ incorporates new MS4 outfall locations into the MCINCR-MCBQ GIS database. All maps are secured at the NREA office due to the sensitive nature of the information contained on the maps; however, copies are available upon request.

MCINCR-MCBQ has identified the water bodies receiving stormwater runoff from the MCINCR-MCBQ MS4 area as the following:

- PL52 Quantico Creek
- PL53 Chopawamsic Creek
- PL54 Potomac River-Tank Creek
- PL55 Beaverdam Run

6.2 BMP 3.b: Written Procedures for Nonstormwater Discharges

BMP Description: Maintain and implement IDDE written procedures to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the MS4. Conduct a minimum of at least 50 dry weather screenings each year.

Objective / Measurable Goals / Expected Results: Eliminate unauthorized discharges to the MS4.

Method to Determine BMP Effectiveness: Ensure that the written procedures include a description of the legal authorities, policies, standard operating procedures or other legal mechanisms available to the eliminate sources of ongoing illicit discharges, including procedures for using legal enforcement authorities. Ensure that the dry weather field screening protocols as specified in the permit are also included in the written procedures.

Implementation Schedule: Document results and findings annually. Report those results within yearly MS4 report.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ conducts annual dry weather screening and conducts source investigations and disconnection or elimination in accordance with its Illicit Discharge Detection and Elimination Procedures, dated November 2019, and Dry Weather Field Screening Protocol, dated November 2019. These documents are located in Appendix A of this MS4 Program Plan and include the following written procedures for nonstormwater discharges:

- A prioritized schedule of field screening activities and rationale for prioritization based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping or cross connections.
- Since the total number of MS4 outfalls is greater than 50, a schedule to screen a minimum of 50 outfalls annually.
- A mechanism to track information such as the outfall unique identifier, time since the last precipitation event and the associated quantity, site descriptions, whether or not a discharge was observed, the estimated discharge rate, and the visual observations.
- A timeframe to conduct an investigation to identify and locate the source of any observed unauthorized nonstormwater discharge. Priority of investigations will be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety. Discharges authorized under a separate Virginia Pollution Discharge Elimination System (VPDES) or state permit require no further action under this permit.
- Methodologies to determine the source of all illicit discharges. If the source of an illicit discharge is not able to be identified within six (6) months of beginning the investigation, then NREA will document that the source remains unidentified. If the observed discharge is intermittent, NREA will document that attempts to

observe the discharge flowing were unsuccessful.

6.3 BMP 3.c: Notification of Downstream MS4 Permittees of any Physical Interconnections

BMP Description: Notify downstream MS4 permittees, in writing, of any physical interconnections to MCINCR-MCBQ's MS4 established or discovered after the effect date of the Permit (November 1, 2023).

Objective / Measurable Goals / Expected Results: Notification of any applicable downstream MS4 permittees.

Method to Determine BMP Effectiveness: Successful notification of any applicable downstream MS4 permittees.

Implementation Schedule: As interconnections are discovered. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:

No known downstream MS4 permittees are known at this time, in the event that a downstream interconnection is identified in future, the following steps will be taken:

- Update the current storm sewer system maps when personnel discover new MS4 outfalls.
- Map and confirm interconnections prior to identifying neighboring MS4s.
- Notify downstream MS4s of the interconnection in writing as these interconnections are identified and confirmed.
- Provide a summary of any action taken in a given reporting year in that year's annual report.

7.0 MCM 4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

The fourth MCM in the Small MS4 Permit focuses on implementing construction site and stormwater runoff controls. The Small MS4 Permit provides additional detail of this MCM in Section I E 4.

MCINCR-MCBQ is not required to operate an approved Virginia Erosion and Sediment (VESCP) and in accordance with Department of Navy guidance has not developed standards and specifications for VDEQ review and approval. Therefore, VDEQ is the VESCP authority for MCINCR-MCBQ. MCINCR-MCBQ implements a program as per permit Section IE.4.a.(4), where all projects are submitted to VDEQ for review and approval for land disturbing activities of 10,000 square feet or greater.

MCINCR-MCBQ NREA Water Program provides plan reviews on all projects with land disturbance equal to or greater than 2,500 square feet to mitigate the impacts to the MS4 and industrial stormwater outfalls. These plan reviews help maintain compliance with the Chesapeake Bay TMDLs. In general, a review process as followed has been implemented:

- Land disturbance resulting in between 2,500 square feet and less than 10,000 square feet requires a "Short Form" approval from the NREA Water Program Manager for ESC and/or SWM. The following documents are required:
  - Short Form Permit Application
  - Responsible Land Disturber Certification
  - ESC and/or SWM Plans
- Land disturbance of equal to or greater than 10,000 square feet are required to develop an erosion and sediment control plan to comply with the 19 Virginia minimum standards (9VAC25-840-40) and be submitted to VDEQ for review and approval. The Following documents are required
  - Registration Statement
  - ESC and/or SWM plan
  - Responsible Land Disturber certification
  - Provide a VADEQ permit (before work is allowed to commence)
- Land disturbance of 1 acre or greater are required to obtain a Construction General Permit (CGP) from VDEQ prior to start of construction. The following documents are required:
  - ESC and SWM plans
  - Registration Statement
  - SWPPP
  - Pollution Prevention Plan
  - Responsible Land Disturber certification
  - Provide a VADEQ permit (before work is allowed to commence)

Sections 7.1-7.4 present the BMPs that MCINCR-MCBQ currently implements to address MCM 4, Construction Site and Stormwater Runoff Control. Sections 7.1-7.4 also provide information on MCINCR-MCBQ's plan review procedures, written inspection procedures, procedures for compliance and enforcement, and the roles and

responsibilities of each of MCINCR-MCBQ's departments and divisions in implementing the various BMPs discussed below.

Table 7-1. Summary of MCM 4 Requirements and BMPs

#	MCM 4 Requirement	Permit Section	Fulfilled by BMPs
1	Utilize and describe the legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to address discharges entering the MS4 from regulated construction site stormwater runoff.	Section I E 4 a Section I E 4 c (3)	BMP 4.a: Legal Authorities for Construction Site Runoff Control
2	If the permittee is a federal entity and has not developed standards and specifications in accordance with Virginia Erosion and Sediment Control Law and Virginia Erosion and Sediment Control Regulations, the permittee shall inspect all land disturbing activities that result in the disturbance of 10,000 square feet or greater, or 2,500 square feet or greater in accordance with areas designated under the Chesapeake Bay Preservation Act	Section I E 4 c (2)	BMP 4.b: Design Standards and Specifications
3	Require implementation of controls to prevent nonstormwater discharges to the MS4. Maintain written inspection procedures to ensure erosion and sediment controls are properly implemented and utilized during the inspection including the inspection schedule.	Section I E 4 b Section I E 4 c (4)	BMP 4.c: Construction Site Compliance Inspections and Enforcement

Table 7-1. Summary of MCM 4 Requirements and BMPs (continued)

#	MCM 4 Requirement	Permit Section	Fulfilled by BMPs
4	Written procedures for requiring compliance through corrective action or enforcement action.	Section I E 4 c (5)	BMP 4.c: Construction Site Compliance Inspections and Enforcement
5	Identify roles and responsibilities in implementing the construction site stormwater runoff control requirements.	Section I E 4 c (6)	BMP 4.d: Roles and Responsibilities Implementing MCM 4

7.1 BMP 4.a: Legal Authorities for Construction Site Runoff Control

BMP Description: Utilize and describe legal authorities to address discharges entering the Small MS4 from construction activities.

Objective / Measurable Goals / Expected Results: Ensure that legal authorities are documented to address discharges entering the Small MS4 from construction activities. In addition, ensure that documented legal authorities are consistent with the most recent Commonwealth of Virginia regulations concerning construction site runoff control.

Method to Determine BMP Effectiveness: Annually check that all legal authorities are appropriately documented in ordinances, permits, orders, specific contract language, policies and interjurisdictional agreements and are consistent with the most recent Commonwealth of Virginia regulations concerning construction site runoff control. Make any updates as appropriate. Ensure that construction contractors have implemented appropriate controls.

Implementation Schedule: Annually. Provide updates in the annual report.

Responsible Party: NREA and FEAD Director

Implementation Procedures:
MCINCR-MCBQ is a DoD facility and, therefore, owns and operates the property inside its legal boundaries (except for the DOJ campus as discussed in Section 2, the DOJ campus is not within the MS4 area). As a result, MCINCR-MCBQ has direct legal authority over use and condition of the land and infrastructure it owns and operates within its legal boundaries. MCINCR-MCBQ works with outside contractors to conduct a variety of construction projects at the facility. MCINCR-MCBQ incorporates requirements into contracting language for construction projects to implement controls for preventing nonstormwater discharges to the MS4. All construction contractors are

required to implement appropriate controls and comply with regulations even if the construction activity does not require a stormwater discharge permit.
The contract language, as well as other legal authorities at MCINCR-MCBQ, incorporates requirements stipulated in various Virginia laws and regulations for addressing stormwater discharges from construction activities. Applicable Virginia laws and regulations to construction site runoff control at MCINCR-MCBQ include, but are not limited to, the Virginia Erosion and Sediment Control Law (VESCL);[5] the Virginia Erosion and Sediment Control Regulation;[6] Virginia Stormwater Management Program (VSMP) Regulations;[7] General Permit for Discharges from Construction Activities;[8] and VPDES General Permit VAR040069. MCINCR-MCBQ is also subject to the Chesapeake Bay Preservation Area Designation and Management Regulations[9] adopted pursuant to the Chesapeake Bay Preservation Act (CBPA) due to its location in the Chesapeake Bay Watershed.

7.3 BMP 4.b+c: Construction Site Compliance Inspections and Enforcement

BMP Description: MCINCR-MCBQ must inspect construction sites with 2,500 sq ft of disturbance or greater 1. during or immediately following initial installation of erosion and sediment controls. 2. At least once per every two-week period 3. Within 48 hours following any runoff producing storm event. 4. At the completion of the project prior to the release of any performance bonding.

Objective / Measurable Goals / Expected Results: Inspect land-disturbing activities for compliance with an approved E&SC plan following the appropriate implementation schedule and using the "Inspection Report for E&SC and Stormwater Pollution Prevention (SWPP) at Construction Sites" form provided in the Application & Design Guidance (Appendix B).

Method to Determine BMP Effectiveness: Monthly track the regulated land-disturbing activities at MCINCR-MCBQ. Confirm that MCINCR-MCBQ has addressed and resolved enforcement actions in order to prevent pollution related to land disturbance from entering the stormwater.

Implementation Schedule: Conduct construction site inspections upon initial installation of E&SC, once every fourteen (14) days, within 48 hours of a storm event resulting in 0.5 inches of rainfall or greater; and upon completion of the project for final acceptance by the Government. Provide updates in the annual report.

---

[5] Virginia Erosion and Sediment Control Program. §62.1-44.15:51 et seq. of the Code of Virginia. Revised 23 March 2015. Available at https://law.lis.virginia.gov/vacode/title62.1/chapter3.1/section62.1-44.15:54/
[6] Erosion and Sediment Control Regulations. 9VAC25-840. Effective date: 23 October 2013. Available at https://law.lis.virginia.gov/admincode/title9/agency25/chapter840/
[7] Virginia Stormwater Management Program (VSMP) Regulations. 9VAC25-890. Effective date: 23 October 2013. Available at http://lis.virginia.gov/cgi-bin/legp604.exe?000+reg+9VAC25-870
[8] General Permit for Discharges of Stormwater from Construction Activities. 9VAC25-880. Effective date: 30 June 2014. Available at https://law.lis.virginia.gov/admincode/title9/agency25/chapter880/
[9] Chesapeake Bay Preservation Area Designation and Management Regulations. 9VAC25-830. Effective date: 23 October 2013. Available at https://law.lis.virginia.gov/admincode/title9/agency25/chapter830/

Responsible Party: NREA and FEAD Director

Implementation Procedures:
Since MCINCR-MCBQ is located entirely within a CBPA, all land disturbance of 2,500 square feet or greater must receive an approval to conduct land disturbance. Land disturbance 2,500 square feet to 10,000 square feet goes through the "Short Form" process through the NREA Water Program. Land disturbance that is 10,000 square feet to 1 acre goes through an ESC plan review through VDEQ. Disturbance greater than 1 acre requires coverage under the Construction General Permit, and an associated SWPPP must be developed and approved by VDEQ. All construction sites are inspected throughout the duration of the project by the NREA WPM to ensure activities are conducted in compliance with the approved E&SC Plan for the site. Inspections are conducted upon initial installation of E&SC, once every fourteen (14) days, within 48 hours of a storm event resulting in 0.5 inches of rainfall or greater; and upon completion of the project for final acceptance by the Government. Once the construction project is complete, the site is also inspected every 30 to 45 days until site stabilization is complete. MCINCR-MCBQ defines stabilization as 90% uniform coverage of vegetation (grass) and two (2), three-inch cuttings.
Construction sites without E&SC Plans (disturbance of less than 2,500 square feet) are not formally inspected; however, the NREA WPM conducts visual (drive-by) inspections of these sites while performing other construction site inspections.

When completing an inspection, the NREA utilizes the "Inspection Report for E&SC and SWPP at Construction Sites" form provided in the Application & Design Guidance.

Construction site inspection procedures are documented in MCINCR-MCBQ's *SOP Tier 3: Construction Site Inspections*[10] with the purpose of "[ensuring] that construction activities across MCB Quantico that require an Erosion & Sediment Control Plan or a VSMP permit, comply with storm water and E&SC requirements." This SOP, as well as the Environmental Compliance and FEAD SOPs, list the roles and responsibilities of MCINCR-MCBQ personnel in relation to construction site inspections. The NREA WPM is responsible for:

- Conducting construction site inspections;
- Ensuring that the responsible parties (base representatives and contractors) receive copies of the inspection forms;
- Maintaining completed stormwater pollution prevention and E&SC inspection forms; and
- Sending Notice of Violations (NOVs)/Warning Letters to the FEAD Director, if violations are found.

According to the *SOP Tier 2 FEAD*, the FEAD Director is responsible for the following activities related to construction site inspections:

[10] Marine Corps Base Quantico, *Standard Operating Procedure Tier 3: Construction Site Inspections, Comprehensive Stormwater Management Action Plan*. April 2011.

- Ensuring contractors correct any deficiencies;
- Supplying the NREA with any documentation needed from the contractors, including contractor's internal inspection reports;
- Issuing NOVs/Warning Letters to contractors, if applicable; and,
- Routinely inspecting construction sites for possible E&SC or stormwater pollution prevention issues.

If an issue is detected during a construction site inspection, the NREA WPM coordinates with the FEAD Director to review inspection findings and to notify that an NOV or Warning Letter will be issued and/or if the E&SC Plan requires revisions.

Table 7-2 lists common construction site violations and the typical MCINCR-MCBQ response.

Table 7-2. Construction Site Violations

Violation	MCINCR-MCBQ Response
Failure to obtain a VSMP General Permit for Construction Activities	NOV
Failure to obtain NREA approval for E&SC Plan, SWPPP, or SWMP prior to commencement of land disturbing activities	NOV
Failure to install E&SC measures before land disturbance	NOV
Improper maintenance of E&SC structures	1st violation: E-mail warning 2nd violation: E-mail warning 3rd or continuing violations: NOV
Release of any substance causing a reportable spill (including concrete wash down, paint runoff, or excess sediment)	NOV
Absence of an assigned and certified RLD at the site	NOV
Failure to maintain complete inspection records	1st violation: E-mail warning 2nd violation: NOV
Other violations	At the discretion of the inspector

When the FEAD Director issues a NOV to the contractor, a timeframe is also stipulated for addressing the detected issue. The specified timeframe is based on the severity of the issue; however, most timeframes range from seven (7) to ten (10) days. If the issue has not been addressed or the E&SC Plan has not been revised within the appropriate timeframe, the NREA WPM issues a "stop work" notice, which is enforced by the FEAD Director. If necessary, the FEAD Director elevates the issue to the Command level.

Construction project contractors or RLDs are also responsible for conducting internal E&SC inspections on a regular basis. MCINCR-MCBQ's "E&SC Plan Review Checklist" is provided in the Application & Design Guidance and requires the contractor to "provide a schedule of regular inspections and repair of E&SC structures." Contractor/RLD inspections are to be conducted at least once every fourteen (14) days and within 48 hours of a storm event producing 0.5 inches of rainfall or greater, and as required in the Construction General Permit. According to the "Inspections" section of MCINCR-MCBQ's SWPPP Checklist (provided in the Application & Design Guidance), contractors/RLDs are required to submit an inspection report to the NREA WPM.

7.4 BMP 4.d: Roles and Responsibilities Implementing MCM 4

BMP Description: Identify the roles and responsibilities of each of the MCINCR-MCBQ departments or entities in implementing the construction site stormwater runoff control requirements in Section I E 4 of the Small MS4 Permit.

Objective / Measurable Goals / Expected Results: Successful execution of the construction site stormwater runoff control program. Plan review, inspections, and enforcement completed and conducted in a timely manner.

Method to Determine BMP Effectiveness: Annually track the regulated land-disturbing activities at MCINCR-MCBQ. Confirm that MCINCR-MCBQ has addressed and resolved enforcement actions in order to prevent pollution related to land disturbance from entering the stormwater.

Implementation Schedule: Ongoing, review annually.

Responsible Party: NREA, FEAD Director, PWD, Responsible Land Disturbers

Implementation Procedures:
The roles and responsibilities for inspections, corrective action, and enforcement to ensure erosion and sediment controls are properly implemented are provided in Section 7.3 above.

The following MCINCR-MCBQ standard operating procedures (SOPs) further define the roles and responsibilities in implementing construction site stormwater runoff control at the installation.

SOP Tier 2: Public Works Section[11]
This SOP "[formalizes] storm water procedures during construction project design." In addition to listing the responsibilities of the NREA WPM related to construction project design, the Engineering Section Supervisor shall:

- Submit copies of construction site plans to NREA for review.
- Complete E&SC Plans for all architect-engineering (AE) design contracts at MCINCR-MCBQ that disturb greater than 10,000 square feet (or greater than 2,500 square feet in an RPA or other sensitive area).
- Complete SWMPs for any AE design contract at MCINCR-MCBQ that disturbs greater than or equal to one (1) acre.
- Submit copies of completed E&SC Plans and SWMPs to the NREA WPM for review and approval no less than 45 days before construction commences.

SOP Tier 2: Resident Officer in Charge of Construction (ROICC)[12]
The purpose of this SOP is "to formalize storm water construction permitting and [E&SC] procedures during construction site activity." The SOP lists the responsibilities of the NREA WPM. In addition, the Resident Officer in Charge of Construction (ROICC), now referred to as the FEAD Director, is responsible for:

- Ensuring all relevant documents are submitted to the NREA WPM for land disturbing activities, including permit applications, E&SC Plans, SWPPPs, and SWMPs.

[11] Marine Corps Base Quantico, *Standard Operating Procedure Tier 2: Public Works Section, Comprehensive Stormwater Management Action Plan.* April 2011.
[12] Marine Corps Base Quantico, *Standard Operating Procedure Tier 2: Resident Officer in Charge of Construction, Comprehensive Stormwater Management Action Plan*. April 2011.

- Providing the NREA WPM with RLD certificates for each construction site where an E&SC Plan is required, and ensuring all RLDs have completed annual stormwater training.
- Providing the NREA WPM with copies of contractor's internal E&SC inspections.
- Identifying personnel who conduct E&SC inspections for training and certification through the DEQ every three (3) years.
- Providing NREA with NOTs and copies of final acceptance letters indicating construction project completion and acceptance by the Government (after final E&SC inspection of the site by the NREA WPM).

SOP Tier 3: Construction Site Inspections[13]

The purpose of this SOP is to ensure construction activities across MCINCR-MCBQ have an E&SC Plan and SWMP (for disturbance greater than 2,500 square feet) and a VSMP permit (for disturbance greater than 1 acre) to comply with storm water and E&SC requirements. These requirements apply to each individual construction site or each area under construction, regardless of its size, that is part of a larger common plan of development." According to the *SOP Tier 2: ROICC*, the ROICC (now referred to as the FEAD Director) is responsible for providing the NREA WPM with RLD certificates for each construction project requiring an E&SC Plan. The FEAD Director also must ensure that all RLDs take Storm Water Training conducted by NREA at least annually. Prior to issuing E&SC Plan approval, NREA confirms RLD certification and monitors the certification throughout the duration of the construction project to ensure it does not expire.

In addition to RLD certifications, the NREA WPM has a dual combined administrator certification that includes Virginia E&SC inspector certification.

[13] Marine Corps Base Quantico, *Standard Operating Procedure Tier 3: Construction Site Inspections, Comprehensive Stormwater Management Action Plan*. April 2011.

8.0 MCM 5: POST-CONSTRUCTION STORMWATER MANAGEMENT FOR NEW DEVELOPMENT AND DEVELOPMENT ON PRIOR DEVELOPED LANDS

The fifth MCM in the Small MS4 Permit focuses on implementing post-construction stormwater management in new development and development on prior developed lands. The Small MS4 Permit provides additional detail of this MCM in Section I E 5.

MCINCR-MCBQ is not required to operate an approved Virginia Stormwater Management Program (VSMP) and in accordance with Department of Navy guidance has not developed standards and specifications for Virginia Department of Environmental Quality review and approval. Therefore, VDEQ is the VSMP authority for MCINCR-MCBQ. MCINCR-MCBQ implements a program as per permit Section 5.a.(4) which MCINCR-MCBQ requires all project proponents to submit stormwater management plans to VDEQ for review and approval. Therefore, VDEQ inspects land disturbance sites one (1) acre or greater and implements a maintenance and inspection program for all installed Stormwater Management Facilities (SMFs). The following outline how MCINCR-MCBQ runs it MS4 post construction runoff control program:

MCINCR-MCBQ NREA Water Program reviews projects that result in land disturbance equal to or greater than 2,500 square feet to assess any cumulative impacts to MS4, stormwater management facilities, and Energy Independence and Security Act Section 435 (EISA 438). In general:

- Land disturbance equal to or greater than one acre are required to develop a SWM plan and SWPPP for submittal to VDEQ for review and approval. This submittal package is also required to be reviewed by NREA Water Program Manager.
- Land disturbances equal to or greater than 5,000 square feet are required to develop a SWM plan that demonstrated that the development or redevelopment project maintains or restores the predevelopment hydrology of the property regarding temperature, rate, volume, and duration of flow to the maximum extend technically feasible.
    - For determining whether EISA 438 has been adequately addressed, Water Program Manager uses the U.S. Environmental Protection Agency's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.*

Sections 8.1-8.3 present the BMPs that MCINCR-MCBQ currently implements to address MCM 5, Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands. MCINCR-MCBQ does not intend to utilize another entity to implement portions of the MS4 Program Plan; therefore, this MS4 Program Plan does not provide a copy of a written agreement in support of such of an arrangement.

Table 8-1. Summary of MCM 5 Requirements and BMPs

#	MCM 5 Requirement	Permit Section	Fulfilled by BMPs

1	Develop and maintain written inspection and maintenance procedures of stormwater management facilities.	Section I E 5 b (1)	BMP 5.b: Structural BMP Inspection and Maintenance
2	Inspect stormwater management facilities no less than once per year.	Section I E 5 b (2)	BMP 5.b: Structural BMP Inspection and Maintenance
3	Conduct maintenance if determined to be required during inspection.	Section I E 5 b (3)	BMP 5.b: Structural BMP Inspection and Maintenance
4	Maintain an electronic database or spreadsheet of all known permittee-owned or permittee-operated and privately owned stormwater management facilities that discharge into the MS4.	Section I E 5 d Section I E 5 e Section I E 5 h (6)	BMP 5.c: Electronic Database of Stormwater Management Facilities
5	Utilize legal authorities to ensure compliance with MCM 5.	Section I E 5 h (3)	BMP 5.a: Post-Construction Stormwater Runoff Control
6	Identify roles and responsibilities in implementing the requirements of MCM 5.	Section I E 5 h (5)	BMP 5.b: Structural BMP Inspection and Maintenance

8.1 BMP 5.a: Post-Construction Stormwater Runoff Control

BMP Description: Utilize legal authorities to require design and installation of post-construction stormwater runoff controls in accordance with VSMP Regulations (9VAC25-870).

Objective / Measurable Goals / Expected Results: Require design and installation of post-construction stormwater runoff controls in accordance with VSMP Regulations (9VAC25-870).

Method to Determine BMP Effectiveness: Evaluate incorporation of adequately designed post-construction stormwater runoff controls during plan review, construction, and post-construction inspections and maintenance.

Implementation Schedule: Ongoing. Update legal authorities listed in MS4 Program Plan as needed.

Responsible Party: NREA

Implementation Procedures:
The Small MS4 Permit requires MCINCR-MCBQ to utilize its legal authority, such as ordinances, permits, orders, policies specific contract language, and interjurisdictional agreements to require design and installation of post-construction stormwater runoff controls in accordance with various criteria specified in the permit. MCINCR-MCBQ has direct legal authority over use and condition of the land and infrastructure it owns and operates within its legal boundaries. MCINCR-MCBQ works with contractors to conduct a variety of construction projects at the facility. To ensure post-construction stormwater discharges entering the small MS4 are addressed, MCINCR-MCBQ incorporates standard stormwater compliance language into all construction designs and legal contracts signed by contractors. This contract language is in addition to the standardized contract language for construction projects outlined in Section 7.1, BMP 4.a (Legal Authorities for Construction Site Runoff Control).

In addition to contract language, MCINCR-MCBQ's primary legal authority for addressing post-construction stormwater runoff is the Application & Design Guidance (Appendix B). The Application & Design Guidance is MCINCR-MCBQ's most comprehensive document regarding the procedures for utilizing LID features to minimize post-construction stormwater runoff. It provides requirements for post-construction stormwater runoff that enters the MS4 from the following land-disturbing activities:

- New development and development on prior developed lands that are defined as large or small construction activities.
- New development and development on prior developed lands that disturb greater than or equal to 2,500 square feet.

Unified Facilities Criteria 3-210-10[14]
The DoD published *Unified Facilities Criteria: Low Impact Development* (UFC 3-210-10) as an LID design manual that incorporates LID information from a variety of sources, including the DON LID policy and EISA. The DoD requires that all installations use the UFC to incorporate LID into general construction requirements to ensure increased stormwater quantity and quality management, thus protecting rivers, streams, and water bodies.

Department of the Navy Low Impact Development Policy
The *Department of the Navy Low Impact Development Policy for Storm Water Management*, effective November 16, 2007, "sets a goal of no net increase in storm water volume and sediment or nutrient loading from major renovation and construction projects.[15] In order to support this goal, as well as reduce reliance on conventional storm water collection systems and treatment options, this policy directs that LID be considered in the design for all projects that have a storm water management element."

Energy Independence and Security Act[16]
Section 438 of the EISA, enacted in 2007, establishes strict stormwater runoff requirements for Federal development and redevelopment projects: "The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow." To ensure all construction projects are compliant with EISA Section 438, MCINCR-MCBQ provides a flowchart for implementation in the Application & Design Guidance.

NREA requires all construction projects at MCINCR-MCBQ to achieve compliance with UFC 3-210-10, the DON policy, and EISA Section 438. The selected LID feature(s) for a construction project must be designated in the site's SWPPP (if disturbing 1 acre or greater), E&SC Plan, and SWMP. The contractor should utilize the "Checklist for LID Plan Review" provided in the Application & Design Guidance (Appendix B) to ensure all LID requirements for the project have been addressed appropriately. When application packages are submitted for a construction project (as described in Section 7.1), the NREA and NEPA Sections evaluate these applications for compliance with MCINCR-MCBQ's LID policies during the review process. If appropriate LID features are not specified in the applications, the NREA and NEPA Sections do not approve the application materials; land disturbance cannot begin at the project site until the requirements are properly addressed in the application materials.

---

[14] Department of Defense *Unified Facilities Criteria: Low Impact Development*, UFC 3-210-10. Effective Date: June 1, 2015. Change 3: March 1, 2020. Document available at: https://www.wbdg.org/FFC/DOD/UFC/ufc_3_210_10_2015_c3.pdf.
[15] Major renovation projects are defined as having a stormwater component and exceeding $5 million when initially approved by Deputy Assistant Secretary of the Navy (Installations & Facilities). Major construction projects are defined as those exceeding $750,000.
[16] Public Law 110-140, *Energy Independence and Security Act of 2007*. Document available at: https://www.gpo.gov/fdsys/pkg/PLAW-110publ140/html/PLAW-110publ140.htm.

8.2 BMP 5.b: Structural BMP Inspection and Maintenance

BMP Description: Implement an inspection and maintenance program for stormwater management facilities owned or operated by MCINCR-MCBQ that discharges to the MS4.

Objective / Measurable Goals / Expected Results: Implement annual inspections and maintenance on stormwater management facilities no less than once per year. Document and maintain records of findings.

Method to Determine BMP Effectiveness: Confirm that inspections for structural BMPs occur annually. Confirm that all structural BMP inspections are documented and records are maintained.

Implementation Schedule: Annually. Include updates in annual report.

Responsible Party: NREA (inspection) and FMS (maintenance)

Implementation Procedures:
The NREA WPM maintains a contract through NAVFAC to inspects post-construction structural BMPs, including LID features, on an annual basis for new development and redevelopment construction projects as well as previously implemented BMPs. The purpose of the inspection is to ensure all site development is complete and that all BMPs are functioning as designed. To conduct the inspections, the NREA WPM directs the contractor to utilize a BMP Field Inspection Checklist form, included in Appendix C of this MS4 Program Plan). In the event that a contract is not awarded for yearly inspections of BMP's, the WPM will perform the inspections of all BMP's. If non-compliance issues are detected during the inspection that require minor repairs, the NREA WPM submits a repair ticket to the PWB. Once the repair ticket has been addressed by the FMS, the NREA WPM conducts a follow-up inspection to ensure the issue has been resolved. If the issue cannot be resolved easily by the PWB/FMS, the issue is documented by the NREA WPM to be addressed at a later date. Records of annual BMP inspections are maintained by the NREA WPM. The responsibilities of the NREA WPM and the PWB related to annual BMP inspections are documented in the 2024 CSMWP and *SOP Tier 2: Public Works Section.* According to these documents, the NREA WPM is responsible for:

- Monitoring and tracking all new stormwater management structures annually;
- Conducting inspections of completed construction sites to ensure BMPs are functioning properly;
- Submitting work orders to the PWB to repair stormwater management structures, as needed; and
- Maintaining records of completed annual BMP inspections.

The PWB is responsible for:

- Performing maintenance and repairs on stormwater system and management structures as specified in work orders submitted by the NREA WPM; and
- Notifying the NREA WPM when maintenance and repairs have been completed.

8.3 BMP 5.c: Electronic Database of Stormwater Management Facilities

BMP Description: Maintain an updated electronic database or spreadsheet of stormwater management facilities.

Objective / Measurable Goals / Expected Results: Regulation and management of stormwater management facilities that discharge into the MS4.

Method to Determine BMP Effectiveness: Annually track and report the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.

Implementation Schedule: Update the spreadsheet no later than 30 days after a new stormwater management facility is brought online or an existing stormwater management facility is discovered.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ conducts annual updates to its BMP Inventory, which is maintained in MS Excel format at NREA and includes all post-construction structural and nonstructural BMPs. The electronic database includes the following:

- The stormwater management facility type;
- The stormwater management facility or BMPs as latitude and longitude;
- The acres treated by stormwater management facility or BMP, including total acres, pervious acres, and impervious acres;
- The date the facility was brought online. If the date is not known, the permittee shall use 30 June 2005;
- The 6th Order Hydrologic Unit Code in which the stormwater management facility is located;
- Whether the stormwater management facility or BMP is owned or operated by the permittee or privately-owned;
- Whether or not the stormwater management facility is part of the permittee's Chesapeake Bay and/or local TMDL action plan;
- If the stormwater management facility is privately owned, whether a maintenance agreement exists, and
- The date of the permittee's most recent inspection of the stormwater management facility or BMP.

This page intentionally left blank.

9.0 MCM 6: POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR FACILITIES OWNED OR OPERATED BY THE PERMITTEE

This section discusses the sixth MCM in the Small MS4 Permit, which focuses on pollution prevention and good housekeeping measures for facilities owned or operated by the permittee. The Small MS4 Permit provides additional details for this MCM in Section I E 6. Sections 9.1-9.5 present the BMPs and other work that MCINCR-MCBQ is currently implementing to address MCM 6, Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by the Permittee.

Table 9-1. Summary of MCM 6 Requirements and BMPs

#	MCM 6 Requirement	Permit Section	Fulfilled by BMPs
1	Maintain and implement written procedures for pollution prevention and good housekeeping.	Section I E 6 a	BMP 6.a: Written Good Housekeeping Procedures
2	Identify high-priority facilities with a high potential of discharging pollutants.	Section I E 6 c	BMP 6.b: High-Priority Facilities
3	Maintain and implement turf and landscape nutrient management plans where nutrients are applied to a contiguous area greater than one acre.	Section I E 6 i	BMP 6.c: Nutrient Management Planning
4	Require that contractors engaging in activities with the potential to discharge pollutants use appropriate control measures to minimize the discharge of pollutants to the MS4.	Section I E 6 l	BMP 6.d: Ensure Contractors Use Control Measures and Procedures
5	Develop a written training plan for applicable staff that meets the requirements of MCM 6.	Section I E 6 m	BMP 6.e: Stormwater Training Plan

9.1 BMP 6.a: Written Good Housekeeping Procedures

BMP Description: Maintain and implement written pollution prevention and good housekeeping procedures for those activities at facilities owned or operated by the permittee.

Objective / Measurable Goals / Expected Results: Implement pollution prevention and good housekeeping procedures for facilities with daily operations such as road, street,

parking lot maintenance, equipment maintenance, and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers.

Method to Determine BMP Effectiveness: Confirm regular implementation of good housekeeping and pollution prevention procedures during quarterly visual inspections and annual Comprehensive Site Compliance Evaluations (CSCEs) as specified in the MCINCR-MCBQ MS4 SWPPP, dated August 2019.

Implementation Schedule: Ongoing. Provide updates in the annual report, if applicable.

Responsible Party: Westside Guad Maintenance Group (street sweeping) / Facility Environmental Coordinators (daily good housekeeping) / Westside Guad Maintenance, Lincoln Housing, Tenant Activities Branch, MCAF (deicing) / NREA (program oversight)

Implementation Procedures:
MCINCR-MCBQ conducts good housekeeping and pollution prevention procedures in accordance with its Good Housekeeping Procedures, dated February, 2024. This document is included as Appendix C of this MS4 Program Plan and if utilized as part of the employee training program. MCINCR-MCBQ requires through contract, language, and written procedure for contractors to follow good housekeeping procedures.

9.2 BMP 6.b: High-Priority Facilities

BMP Description: Maintain an updated list of high-priority facilities with a high potential of discharging pollutants to the MS4.

Objective / Measurable Goals / Expected Results: Identify new high-priority facilities with a high potential of discharging pollutants to the MS4 so that a SWPPP can be developed for each.

Method to Determine BMP Effectiveness: Confirm that high-priority facilities with high potential of discharging pollutants have been identified and evaluate whether a SWPPP has been completed for all of the facilities identified through this process.

Implementation Schedule: Ongoing. Provide updates in the annual report.

Responsible Party: NREA

Implementation Procedures:
The high-priority facilities with high potential to discharge pollutants to the MS4 within the MCINCR-MCBQ MS4 boundary are:

1. Medal of Honor Golf Course; and

2. Quantico Marina.

MCINCR-MCBQ developed an MS4 SWPPP, dated August 2019, which details the potential pollutant sources as well as the corresponding good housekeeping and pollution prevention BMPs conducted at these high-priority facilities.

No later than June 30 of each year, MCINCR-MCBQ will review any high-priority facility owned or operated by MCINCR-MCBQ for which a SWPPP has not been developed to determine if the facility has a high potential to discharge pollutants. If determined to be a high-priority facility with a high potential to discharge pollutants, MCINCR-MCBQ will add the facility to this list and will develop a SWPPP meeting the requirements specified in Section I E 6 d of the Permit no later than December 31 of that same year. If activities change at a facility so that it no longer meets the criteria of a high-priority facility, MCINCR-MCBQ will remove it from the list.

9.3 BMP 6.c: Nutrient Management Planning

BMP Description: Conduct nutrient management planning for all applicable lands where nutrients are applied to a contiguous area of more than one (1) acre.

Objective / Measurable Goals / Expected Results: Develop and maintain turf and landscape nutrient management plans (NMPs) for all identified lands where nutrients are applied to a contiguous area of more than one (1) acre.

Method to Determine BMP Effectiveness: Ensure that turf and landscape NMPs are updated in accordance with the identified lands where nutrients are applied to areas more than one (1) acre in size.

Implementation Schedule: Update existing NMPs prior to plan expiration. Develop NMPs for new areas on which nutrients are applied to more than one (1) acre in size as these areas are identified.

Responsible Party: NREA, MCCS, and Lincoln Housing

Implementation Procedures:
MCINCR-MCBQ has identified two locations at the installation to be applicable lands where nutrients are applied to a contiguous area of more than one (1) acre:

1. The Medal of Honor Golf Course turf and landscape areas, and
2. Lincoln Housing area managed turf.

Turf and landscape NMPs have been prepared by a certified nutrient management planner (CNMP) and approved by the Virginia Department of Conservation and Recreation (DCR) for both locations. The Golf Course NMP is located at the Golf Course Pro Shop, and the Lincoln Housing NMP is located at the Lincoln Housing office. Copies of both NMPs are also kept at NREA. Table 9-2 provides a summary of

the total acreages to which nutrients are applied, and the date that each of the NMPs were approved.

Table 9-2. Nutrient Management Tracking Table

Area where turf and landscape NMPs is required	Total Acreage of Nutrients Applied	Date of Approved NMP
Medal of Honor Golf Course	149 acres[1] (turf and landscape)	June 15, 2027
Lincoln Housing	186 acres (turf)	January 2, 2024
TOTAL	335 acres	

Note:
1. Although nutrients are only approved to approximately 26.5 acres at the Golf Course, the Golf Course may choose to fertilize the entire 149 acres in the future, so the NMP provided recommendations for nutrient application to the full 149 acres.

9.4 BMP 6.d: Ensure Contractors Use Control Measures and Procedures

BMP Description: Require that contractors use appropriate control measures and procedures for stormwater discharges to the MS4 system.

Objective / Measurable Goals / Expected Results: Document requirements for contractors use appropriate control measures and procedures for stormwater discharges to the MS4 system. Document oversight procedures.

Method to Determine BMP Effectiveness: Evaluate whether contractors are using appropriate control measures and procedures for stormwater discharges to the MS4 system.

Implementation Schedule: Ongoing. Update in the annual report.

Responsible Party: NREA and FEAD Director

Implementation Procedures:
MCINCR-MCBQ incorporates standard stormwater compliance language into all contracts to address appropriate control measures and procedures for stormwater discharges to the MS4 system. The following is example contract language that meets this requirement: "The Contractor shall provide and maintain during the life of the contract environmental protection measures that will control pollution which may develop during project activity. Any areas disturbed or damaged during the performance of the fieldwork shall be restored to original condition by the Contractor at no cost to the Government. Any digging or disturbance of soil requires a dig permit to be applied for and approved. NEPA documentation shall also be completed prior to any digging."

As detailed in Section 7.0 (MCM 4: Construction site and Stormwater Runoff Control), MCINCR-MCBQ requires contractors to utilize and describe appropriate control measures and procedures to address discharges to the MS4 system from construction site activities. MCINCR-MCBQ incorporates standard stormwater compliance language into all construction designs and construction-related contracts (Section 7.1). To ensure contractors are in compliance with this requirement, the NREA WPM conducts construction site inspections at least every fourteen (14) days and within 48 hours of the end of a storm event resulting in 0.5 inches of rainfall or greater. During the inspection, the NREA WPM ensures proper E&SC and stormwater pollution prevention measures and controls have been implemented at the site. Oversight procedures are documented throughout Section 7.0 and in the Application & Design Guidance (Appendix B).

9.5 BMP 6.e: Stormwater Training Plan

BMP Description: Develop a written training plan for applicable staff that meets the requirements of Section I E 6 m of the Small MS4 Permit.

Objective / Measurable Goals / Expected Results: Written good housekeeping and pollution prevention protocols for daily municipal operations and maintenance.

Method to Determine BMP Effectiveness: Ensure that good housekeeping and pollution prevention protocols are compliant with the Small MS4 Permit.

Implementation Schedule: Complete.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ maintains a written Stormwater Training Plan, dated December 2019, which provides a summary of required training activities and associated schedule. The training plan identifies MCINCR-MCBQ employees and contractors, by job title or job description, that need to be trained; the content of such training; certification requirements; frequency of training; regulatory requirements; and how training is documented. The Stormwater Training Plan is included as Appendix D of this MS4 Program Plan and is a key guidance document used in the employee and contractor training program.

This page intentionally left blank.

10.0 ADMINISTRATIVE SPECIAL CONDITIONS BMPS

10.1 Evaluate Effectiveness of Program and TMDL BMPs

BMP Description: Evaluate Effectiveness of the MS4 Program Plan and TMDL BMPs.

Objective / Measurable Goals / Expected Results: Ensure that all program and TMDL BMPs are achieving the objectives intended to correct identified deficiencies and/or inefficiencies.

Method to Determine BMP Effectiveness: Each program BMP will be evaluated annually via quantitative or qualitative methodologies, per the nature of the established BMP metric to determine its effectiveness in achieving its stated objective, with recommendations for continuance or revision provided.

Implementation Schedule: Completed by the end of Permit Year.

Responsible Party: NREA

Implementation Procedures:
Prior to preparation of the MS4 Annual Report, MCINCR-MCBQ conducts an evaluation of the effectiveness of BMPs identified for each MCM and the Small MS4 Permit Special Conditions. The results and changes associated with this annual evaluation are reported in the MS4 Annual Report.

10.2 Implement Chesapeake Bay TMDL Action Plan

BMP Description: Implement the Chesapeake Bay TMDL Action Plan.

Objective / Measurable Goals / Expected Results: Implement the measures identified in the Chesapeake Bay TMDL Action Plan, pursuant to the requirements of the Small MS4 Permit, for nitrogen, phosphorus, and sediment and reductions.

Method to Determine BMP Effectiveness: Assess progress during annual reporting. Determine effectiveness in reducing the pollutants identified in the reduction requirements as described in Action Plan.

Implementation Schedule: Implement all measures needed to offset 100% of the loads, as identified in the Chesapeake Bay TMDL Action Plan, by October 31, 2023.

Responsible Party: NREA

Implementation Procedures:
MCINCR-MCBQ developed and submitted to DEQ a Chesapeake Bay TMDL Action Plan to meet the 100% pollutant reduction of nitrogen and phosphorus. This plan was

submittedto VDEQ for review and was accepted with the Permit Reissuance. This Action Plan complies with requirements set forth in the Small MS4 Permit and the most recent version of the DEQ Guidance Memo No. 20-2003 Chesapeake Bay TMDL Special Condition Guidance, dated February 6, 2021.

10.3 Develop and Implement Local TMDL Action Plan(s)

BMP Description: Develop and implement a local TMDL Action Plan that meets requirements of the Small MS4 Permit.

Objective / Measurable Goals / Expected Results: Complete and submit Action Plan designed to reduce loadings for POCs for any WLAs assigned to MCINCR-MCBQ for which a TMDL Action Plan is required.

Method to Determine BMP Effectiveness: Assess effectiveness in reducing the pollutants identified in the WLAs as described in Action Plan.

Implementation Schedule: As of the date of this MS4 Program Plan, no EPA-approved TMDLs require MCINCR-MCBQ to develop a Local TMDL Action Plan. If an EPA-approved TMDL is published after the date of this MS4 Program Plan and requires MCINCR-MCBQ to develop a TMDL Action Plan, MCINCR-MCBQ will coordinate with DEQ to identify a deadline to submit a TMDL Action Plan. The Small MS4 Permit does not identify a deadline to submit Local TMDL Action Plans for TMDLs approved by EPA after October 31, 2023.

Responsible Party: NREA

Implementation Procedures:
As of the date of the MS4 Program Plan, only one local EPA-approved TMDL identifies the MCINCR-MCBQ MS4 as an entity discharging to the impaired water of concern: *Total Maximum Daily Loads of Polychlorinated Biphenyls (PCBs) for Tidal Portions of the Potomac and Anacostia Rivers in the District of Columbia, Maryland, and Virginia*, revised date October 31, 2007.

The MS4s identified in the Potomac River Watershed PCB TMDL (EPA approved 10/31/07 and SWCB approved 4/11/08), including the MCINCR-MCBQ MS4, are subject to a WLA and required to submit a local action plan if they are identified as having:

1. permitted jurisdictions within a direct drainage watershed; and
2. a WLA greater than a 5% reduction, as that 5% is the explicit margin of safety (MOS).

In 2015, DEQ identified permittees expected to submit a local TMDL action plan in accordance with the Small MS4 Permit requirements. During this review, DEQ identified that VAR040069 (US Marine Corps Base Quantico) was within a direct

drainage watershed but with a 5% reduction, which falls into the MOS. Consequently, MCINCR-MCBQ is not required to submit a Local TMDL Action Plan associated with this TMDL.

This page intentionally left blank.

11.0 MS4 ANNUAL REPORTING REQUIREMENTS

The Small MS4 Permit includes annual reporting requirements for each MCM and Special Condition. This section serves to consolidate and summarize the annual reporting requirements applicable to MCINCR-MCBQ to facilitate completeness of annual reports. Annual reports are required to address the reporting period of 1 July through 30 June and to be submitted to VDEQ by 1 October following the reporting period.

MCM 1: Public Education and Outreach

Section I E 1 g of the Small MS4 Permit states that "the annual report shall include the following information:

(1) A list of the high-priority stormwater issues the permittee addressed in the public education and outreach program; and
(2) A list of the strategies used to communicate each high-priority stormwater issue."

MCM 2: Public Involvement and Participation

Section I E 2 f of the Small MS4 Permit states that "annual report shall include the following information:

(1) Summary of any public input on the MS4 program received and how the permittee responded;
(2) A webpage link to the permittee's MS4 program and stormwater website;
(3) A description of the public involvement activities implemented by the permittee;
(4) A report of the metric as defined for each activity and an evaluation as to whether or not the activity is beneficial to improving water quality; and
(5) The name of other MS4 permittees who participated in the public involvement opportunities."

MCM 3: Illicit Discharge Detection and Elimination

Section I E 3 e of the Small MS4 Permit states that the "annual report shall include:

(1) A confirmation statement that the MS4 map and information table are up-to-date as of June 30 of the reporting year;
(2) The total number of outfalls screened during the reporting period as part of the dry weather screening program; and
(3) A list of discharges to the MS4 including spills reaching the MS4 with information as follows:
    - The source of illicit discharge;
    - The date that the discharge was observed, reported, or both;

- Whether the discharge was discovered by the permittee during dry weather screening, reported by the public, or other method (describe);
- How the investigation was resolved;
- A description of any follow-up activities; and
- The date the investigation was closed."

MCM 4: Construction Site Stormwater Runoff Control

Section I E 4 d of the Small MS4 Permit states that "the annual report shall include the following:

(1) If the permittee implements a construction site stormwater runoff program in accordance with Section I E 4 a (3);
   - A confirmation statement that land disturbing projects that occurred during the reporting period have been conducted in accordance with the current department approved standards and specifications for erosions and sediment control; and
   - If one or more of the land disturbing projects were not conducted with the department approved standards and specifications, an explanation as to why the projects did not conform to the approved standards and specifications.

(2) Total number of inspections conducted; and
(3) The total number and type of enforcement action implemented and the type of enforcement actions."

MCM 5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands

Section I E 5 i of the Small MS4 Permit states that "annual report shall include the following information:

(1) Total number of inspections conducted on stormwater management facilities owned or operated by the permittee;
(2) A description of the significant activities performed on the stormwater management facilities owned or operated by the permittee to ensure it continues to perform as designed. This does not include activities such as grass mowing or trash collection;
(3) A confirmation statement that the permittee submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which the permittee was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Section I E 5 f or a statement that the permittee did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities; and

(4) A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Section I E 5 g and the date on which the information was submitted."

MCM 6: Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by the Permittee

Section I E 6 q of the Small MS4 Permit provides annual reporting requirements, which consist of:

(1) A summary of any daily operational procedures developed or modified in accordance with Section I E 6 a during the reporting period;
(2) A summary of any new SWPPPs developed in accordance Section I E 6 c during the reporting period;
(3) A summary of any SWPPPs modified in accordance with Section I E 6 f during the reporting period;
(3) A summary of any new turf and landscape nutrient management plans developed that includes:
- Location and total acreage of each land area; and
- The date of the approved nutrient management plan; and

(4) A list of the training events conducted in accordance with Section I E 6 m, including the following information:
- The date of the training event;
- The number of employees who attended the training event; and
- The objective of the training event."

TMDL: Chesapeake Bay

Section II A of the Small MS4 Permit lists the following annual reporting requirements:

(1) A list of BMPs implemented during the reporting period but not reported to the DEQ BMP Warehouse in accordance with Section I E 5 g of the Small MS4 Permit and the estimated reduction of POCs achieved by each and reported in pounds per year;
(2) If the permittee acquired credits during the reporting period to meet all or a portion of the required reductions in Section II A 3, A 4, or A 5 of the Permit, a statement that credits were acquired; Each subsequent annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.
(3) The progress, using the final design efficiency of the BMPs, toward meeting the required cumulative reductions for total nitrogen, total phosphorus, and total suspended solids;
(4) A list of BMPs that are planned to be implemented during the next reporting period.

TMDL: Local

For each reporting period, each annual report shall include a summary of actions conducted to implement each local TMDL action plan, if any apply to MCINCR-MCBQ. As of the date of this MS4 Program Plan (May 2020), MCINCR-MCBQ is not required to develop any Local TMDL Action Plans.

APPENDIX A Illicit Discharge Detection and Elimination Written Procedures

This page intentionally left blank.

CDM - AECOM
Multimedia Joint Venture

ILLICIT DISCHARGE DETECTION AND ELIMINATION WRITTEN PROCEDURES

MARINE CORPS INSTALLATIONS NATIONAL CAPITAL REGION
MARINE CORP BASE QUANTICO (MCINCR-MCBQ)
STORMWATER SUPPORT FY2019
NAVFAC Contract Number: N62470-14-D-9016
Delivery/ Task Order Number: N4008019F4606

Prepared for

NAVFAC Washington
Environmental | Utilities & Energy Division
1314 Harwood Street SE, Building 212
Washington Navy Yard, DC 20374

November 2019 FINAL VERSION

This page intentionally left blank.

FINAL
Illicit Discharge Detection and Elimination Written Procedures

PREPARED FOR:

Marine Corps Installations National Capital Region
Marine Corps Base Quantico (MCINCR-MCBQ)
Quantico, VA

NAVFAC Washington
Environmental | Utilities & Energy Division
1314 Harwood St, SE, Bldg. 212
Washington Navy Yard, DC 20374

CONTRACT NO. N62470-14-D-9016
TASK ORDER NO. N4008019F4606

November 2019

PREPARED BY:

CDM - AECOM
Multimedia Joint Venture

AECOM
4800 Westfields Blvd, Suite 400
Chantilly, VA 20151

Telephone: 703-713-1500
Fax: 703-713-1512

www.aecom.com

This page intentionally left blank.

TABLE OF CONTENTS

PAGE

LIST OF TABLES

PAGE

LIST OF APPENDICES

This page intentionally left blank.

1.0 INTRODUCTION AND PURPOSE

The Virginia Administrative Code (VAC) under 9VAC25-890 provides the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) (Small MS4 Permit). Small MS4 permittees in urbanized areas as defined by the Decennial Census are subject to the requirements of the Small MS4 Permit. In accordance with 9VAC25-890, Marine Corps Installations National Capital Region Marine Corps Base Quantico (MCINCR-MCBQ) is regulated as a Small MS4 and has obtained coverage under the Virginia Department of Environmental Quality (VDEQ) Small MS4 Permit (Permit Number VAR040069) for the area identified as Mainside that generally includes the area of the base east of Interstate 95 and north of Chopawamsic Creek.

Part I.E.3.c of the Small MS4 Permit requires that permittees maintain, implement, and enforce illicit discharge detection and elimination (IDDE) written procedures. The IDDE written procedures are designed to detect, identify, and address unauthorized nonstormwater discharges into the small MS4.

An illicit discharge is defined as any discharge to the MS4 that is not composed entirely of stormwater with the exception of certain nonstormwater discharges that are authorized by the Small MS4 Permit. In accordance with 9VAC25-890-20.D, the following nonstormwater discharges are authorized under the Small MS4 Permit provided they have not been identified as significant contributors of pollutants to the MS4:

- Water line flushing, managed in a manner to avoid an instream impact;
- Landscape irrigation;
- Diverted stream flows;
- Rising groundwaters;
- Uncontaminated groundwater infiltration, as defined at 40 CFR 35.2005(20);
- Uncontaminated pumped groundwater;
- Discharges from potable water sources;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water;
- Springs;
- Water from crawl space pumps;
- Footing drains;
- Lawn watering;
- Individual residential car washing;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Street wash water;
- Discharges from firefighting activities;

- Discharges from noncommercial fundraising car washes if the washing uses only biodegradable, phosphate-free, water-based cleaners; or
- Other activities generating discharges identified by the Virginia Department of Environmental Quality as not requiring permit authorization.

Table 1 presents the IDDE-related permit requirements and their locations within the written procedures.

Table 1. Small MS4 Permit Cross-Reference Guide			
Permit Section	**Procedures Section**	**Section Title**	**Page**
Part IE3c(1)	2.0; Table 2	Legal Authority	1
Part IE3c(2)	3.0; 3.2; Attachment 1	Dry Weather Field Screening Protocols; Screening Procedures	4; 5; Attachment 1
Part IE3c(2)(a)	3.1	Prioritization and Schedule	4
Part IE3c(2)(b)	n/a	n/a	n/a
Part IE3c(2)(c)	3.1	Prioritization and Schedule	4
Part IE3c(2)(d)	3.3	Screening Documentation	16
Part IE3c(3)	4.2	Investigation Timeframes	17
Part IE3c(4)	4.3	Investigation Procedures	18
Part IE3c(5)	4.3	Investigation Procedures	18
Part IE3c(6)	4.5	Investigation Documentation	7

2.0 LEGAL AUTHORITY

MCINCR-MCBQ is a Department of Defense (DoD) facility and, therefore, owns and operates the property inside its legal boundaries (with the exception of the Department of Justice campus). As a result, MCINCR-MCBQ has direct legal authority over MCINCR-MCBQ infrastructure, property, equipment, and activities conducted by staff and contractors, and is responsible if an illicit discharge to the MS4 occurs. In addition, MCINCR-MCBQ has responsibility for removing any sources of illicit discharges identified during illicit discharge investigations if related to MCINCR-MCBQ-owned infrastructure, property, or equipment. MCINCR-MCBQ also has responsibility for ceasing activities or practices conducted by MCINCR-MCBQ staff and contractors resulting in illicit discharges to the MS4.

In addition to MCINCR-MCBQ's authority as a DoD facility, MCINCR-MCBQ utilizes other legal authorities, such as contract language, Marine Corps Orders (MCOs), Marine Corps Base Orders (MCBOs), plans, and standard operating procedures (SOPs) to prohibit nonstormwater discharges to the MS4. Contract language for projects that require field work at MCINCR-MCBQ provides a requirement to implement control measures for various sources of pollution, including stormwater discharges. MCINCR-MCBQ also incorporates requirements into contracting language for construction projects to implement controls for preventing nonstormwater discharges to the MS4. All construction contractors are required to implement appropriate erosion and sediment controls for any land disturbance that exceed 2,500 square feet and obtain a permit for stormwater discharges from construction activities for land disturbance activities of 1 acre or more. controls and comply with regulations even if the construction activity does not require a stormwater discharge permit. **Table 2** outlines the documents relevant to enforcing nonstormwater discharge policy at MCINCR-MCBQ.

Table 2. Legal Authority for Prohibiting Nonstormwater Discharges

Document	Relevance
MCO P5090.2A *Environmental Compliance and Protection Manual*	• Requires identification of nonstormwater discharges • Requires submittal of illicit discharges to appropriate regulatory agency • Mandates the elimination of non-permitted stormwater discharges • Authorizes certain nonstormwater discharges • Stipulates requirements for hazardous pollutant discharges and discharges from construction and industrial activities
MCBO 6280.1B *Handling, Transfer, and Disposal of Hazardous Materials and Hazardous Waste*	• Details procedures for proper handling, transfer, and disposal of hazardous materials and hazardous waste

Table 2. Legal Authority for Prohibiting Nonstormwater Discharges	
Document	**Relevance**
MCBO 6280.4A *Hazardous Material Management Program*	• Provides details on MCINCR-MCBQ's Hazardous Material Management Program
Commander's Policy Letter 3-12 *Sewage Spill Response, Reporting, and Management*	• Details the procedures for reporting and responding to spills
Environmental Compliance & Protection Standard Operating Procedure	• Provides SOPs for the Hazardous Material Management Program, the Hazardous Waste Program, and the Spill Prevention and Response Program • Describes procedures for mitigating potential and actual environmental impacts from hazardous material spills at MCINCR-MCBQ
Oil and Hazardous Substance Spill Prevention and Response Plan (Includes the Spill Prevention Control and Countermeasures Plan)	• Outlines emergency notification protocols and initial response procedures for oil, hazardous substance, hazardous material, and hazardous waste spills that occur at workstations throughout MCINCR-MCBQ • Lists the emergency spill response equipment available at all industrial areas within MCINCR-MCBQ • Details the equipment, methods, and procedures used to prevent the discharge of oil to navigable waters of the United States or onto adjoining shorelines • Provides an inventory of all petroleum, oil, and lubricant handling facilities, an inventory of containment structures and operational practices, and requirements for inspections and recordkeeping
Hazardous Waste Minimization Program	• Utilizes alternative materials, process modifications, and alternative disposal procedures to reduce the generation of hazardous wastes • Uses suggestions from employees to minimize hazardous waste generation
Integrated Pest Management Plan	• Provides a comprehensive overview of pest management and pesticide-related operations at MCINCR-MCBQ • Provides general instructions for preventing pollution of the MS4
The RED Plan	• Details emergency notification and initial response procedures to be conducted in the early stages of an oil or hazardous substance spill that has escaped to the air, water, or soil and is beyond the capabilities of trained personnel to address
Facility SOPs	• Each Facility SOP contains a "Source Control Procedures" section that details the procedures to be followed to stop or minimize a spill

Table 3. Legal Authority for Prohibiting Nonstormwater Discharges	
Document	**Relevance**
Comprehensive Storm Water Management Action Plan (CSWMP)	• Summarizes all the previously described plans and policies • Lists allowable nonstormwater discharges at MCINCR-MCBQ • Describes good housekeeping BMPs applicable to illicit discharges

This page intentionally left blank.

3.0 DRY WEATHER FIELD SCREENING PROTOCOLS

The purpose of dry weather field screening is to detect, identify, and eliminate illicit discharges to the MS4. Inspections must be performed during dry weather (i.e., a period when no precipitation or snow melt is occurring) and at least 72 hours from the previous measurable storm event. If a discharge is observed during a period of dry weather, it is potentially attributable to a nonstormwater source.

The Natural Resources and Environmental Affairs Branch (NREAB) is responsible for dry weather field screening. The outfalls to be screened each year are to be prioritized in accordance with **Section 3.1**. Screening procedures are discussed in **Section 3.2** as well as in **Appendix A**. The required screening documentation is outlined in **Section 3.3**.

3.1 Prioritization and Schedule

There are currently 198 stormwater outfalls identified within the MCINCR-MCBQ MS4 area. As a result, MCINCR-MCBQ is subject to Part IE3c.2c of the Small MS4 Permit which requires a minimum of 50 outfalls to be screened during each 12-month period. Additionally, it is required that, of the outfalls screened each year, no more than 50% were screened during the previous 12-month period. This 50% criteria is not applicable if all outfalls have been screened during the previous three years.

Historic illicit discharge events, land use, and age of infrastructure will be considered when prioritizing outfalls for screening. Priority will be given to outfalls that were the site of illicit discharges during the previous year's screening. Additionally, areas subject to industrial land use and areas which house older infrastructure will also be prioritized.

Annually, the list of outfalls to be screened annually will be developed using the following rationale:

1. Outfalls that had confirmed or suspected illicit discharges during the previous year's screening (may account for no more than 50% of the total screened)
    a. Sites where suspected sanitary cross-connections have occurred in the past should be given the highest priority
2. Outfalls that are located in industrial areas of MCINCR-MCBQ
3. Outfalls that are located near, or associated with, older infrastructure

3.2 Screening Procedures

Part IE3c.2 of the Small MS4 Permit requires that permittees implement dry weather screening protocols that are designed to detect, identify, and eliminate illicit discharges to the MS4. The dry weather outfall screening protocol for MCINCR-MCBQ is included as **Appendix A**.

3.3 Screening Documentation

Part I.E.3.c.(2)(d) of the Small MS4 Permit requires that the following information pertaining to each evaluated outfall is documented during the dry weather field screening:

- The unique outfall identifier;
- Time since the last precipitation event;
- The estimated quantity of the last precipitation event;
- Site description (e.g., conveyance type and dominant watershed land use);
- Whether or not a discharge was observed; and
- If a discharge was observed, the estimated discharge rate (e.g., width and depth of discharge flow rate) and visual characteristics of the discharge (e.g., odor, color, clarity, floatables, deposits or stains, vegetation condition, structural condition, and biology).

Additionally, MCINCR-MCBQ requires that the following information is recorded in the event that a discharge is observed:

- Total chlorine content;
- Fluoride content;
- Temperature;
- Turbidity; and
- pH.

Based on the screening information collected, each outfall with observed flow will be characterized as either "Unlikely", "Potential", "Suspect", or "Obvious" for illicit discharges. Outfalls characterized as Potential", "Suspect", or "Obvious", will be further investigated as described in **Section 4.0**.

All of the information indicated above will be recorded on a Field Investigation Data Sheet for each outfall evaluated. The Field Investigation Data Sheet is included in **Appendix A**.

4.0 ILLICIT DISCHARGE INVESTIGATIONS

Illicit discharge investigations are conducted in an attempt to identify and locate the source of any observed unauthorized nonstormwater discharge. NREAB is responsible for illicit discharge investigations. The causes of an illicit discharge investigation are outlined in **Section 4.1**. The timeframes for investigative procedures are described in **Section 4.2**. Investigative procedures can be found in **Section 4.3**. **Section 4.4** describes protocols that are required when the source of an illicit discharge cannot be determined. Required documentation is outlined in **Section 4.5**.

4.1 Investigation Causes

An illicit discharge investigation is initiated whenever:

1. The NREAB receives a report of a potential illicit discharge.
2. An illicit discharge is found during the annual dry weather field screening.

4.2 Investigation Timeframes

Investigative priority will be given to discharges of sanitary sewage and those believed to pose a risk to human health and safety. Illicit discharge investigations will occur according to the timeframes outlined in **Table 3**.

Table 4. Timeframes for Illicit Discharge Investigations

Scenario	Timeframe
Receipt of an illicit discharge complaint	Investigated within one business day
An illicit discharge is identified during field screening	Field personnel will attempt an immediate investigation
A potential illicit discharge, as categorized during the field screening, is identified and the source could not be traced during the field screening	Investigated within seven business days
A suspect or obvious illicit discharge, as categorized during the field screening, is identified and the source could not be traced during the field screening	Investigated within one business day
Discharge that is continuous (i.e., occurs most or all of the time) or is expected to occur more than once	Three follow-up investigations must be conducted over a 12-month period to ensure that the discharge has been eliminated

Table 5. Timeframes for Illicit Discharge Investigations	
Scenario	**Timeframe**
Discharge that is intermittent (e.g., occurring for a few hours per day or a few days per year)	Three attempts to observe and analyze flow must be made within six months of report or discovery
The source of a discharge cannot be identified within six months of beginning the investigation	After documenting that the source remains unidentified, suspend investigation

4.3 Investigation Procedures

The source of some illicit discharges may be readily ascertainable. However, some discharges may require further investigation for source determination. The course that the investigation will take will vary according to the nature of the discharge. Potential means of investigation are described below:

Source Isolation – Field personnel work upstream from the point of the initial observation, inspecting stormwater structures (e.g., manholes, catch basins, junctions) for the presence of the same indicators, until a structure is found that does not exhibit evidence of the illicit discharge. This indicates that the source of the discharge is likely located between the clean structure and the last structure to exhibit an indicator. Once the source area has been identified, field personnel should inspect the drainage area near the point of entry to identify the source. This means of investigation may be undertaken by field personnel immediately upon discovery of an illicit discharge during the annual field screening.

Dye Testing – Dye testing is often used to confirm sanitary sewer cross connections but may be used to confirm other sources of an illicit discharge. Dye is introduced into plumbing fixtures or at the suspected source of an illicit discharge. Stormwater structures are then monitored for the presence of the dye. The presence of the dye in the MS4 confirms that the source was correctly ascertained.

Laboratory Analysis – Samples may be collected and submitted for laboratory analysis, if needed, to aid in source identification. This will be determined by NREAB on a case-by-case basis.

Certain scenarios may warrant follow-up investigations. If a discharge is found to be continuous or if a discharge is expected to occur more than once, the Small MS4 Permit requires that three follow-up investigations are conducted over a 12-month period to ensure that the discharge has been eliminated.

4.4 Cases of Undetermined Sources

If the source of an illicit discharge is not determined within six months of initiating the investigation, NREAB must document that the source remains unidentified, and investigative procedures may be suspended. If an illicit discharge is found to be intermittent (e.g., occurring for a few hours per day or a few days per year) and three attempts to observe the flow within a six-month timespan were unsuccessful, the unsuccessful attempts must be documented. Investigative procedures may then be suspended.

4.5 Investigation Documentation

The following information concerning each illicit discharge investigation will be documented:

- The dates that the illicit discharge was initially observed, reported, or both;
- The results of the investigation, including the source, if identified;
- Any follow-up to the investigation;
- Resolution of the investigation; and
- The date that the investigation was closed.

This page intentionally left blank.

5.0 REFERENCES

AECOM. 2019. *MS4 Program Plan*. Retrieved from https://www.quantico.marines.mil/Portals/147/NREA/Final%20MS4%20Program%20Plan.pdf?ver=2019-02-11-111741-493

Headquarters, United States Marine Corps. 2013. *Environmental Compliance and Protection Manual* (MCO P5090.2A). Retrieved from https://www.marines.mil/Portals/1/MCO%20P5090.2A%20W%20CH%201-3.pdf

Marine Corps Base Quantico. 2013. *Environmental Compliance and Protection Standard Operating Procedures*. Retrieved from https://www.quantico.marines.mil/Portals/147/MCB_Quantico_ECPSOP_20140407.pdf?ver=2016-10-31-073006-400

Marine Corps Base Quantico. 2007. *Handling, Transfer, and Disposal of Hazardous Materials and Hazardous Waste* (MCBO 6280.1B). Retrieved from https://www.quantico.marines.mil/LinkClick.aspx?fileticket=H1i72focDrI%3D&tabid=20489&portalid=147&mid=45602

Marine Corps Base Quantico. 2013. *Hazardous Material Management Program* (MCBO 6280.4A). Retrieved from https://www.quantico.marines.mil/Portals/147/Adjutant/SSIC/06000/HAZARDOUS%20MATERIAL%20MANAGEMENT%20PROGRAM_MCBO%206280.4A.pdf?ver=2014-02-23-161323-687

Marine Corps Base Quantico. 2012. *Sewage Spill Response, Reporting, and Management* (Commander's Policy Letter 3-12). Retrieved from https://www.quantico.marines.mil/LinkClick.aspx?fileticket=1nuwTIM6A6w%3d&tabid=20532&portalid=147&mid=45612

Marine Corps Installations National Capital Region – Marine Corps Base Quantico. 2017. *Oil and Hazardous Substance (OHS) Spill Prevention and Response* (MCINCR-MCBQO 5090.6). Retrieved from https://www.quantico.marines.mil/Portals/147/MCINCR-MCBQO%205090.6%20-%20OHS%20SPR.pdf?ver=2017-02-07-103328-697

This page intentionally left blank.

APPENDIX A Dry Weather Outfall Screening Protocol

This page intentionally left blank.

Marine Corps Installations National Capital Region Marine Corps Base Quantico

Dry Weather Outfall Screening Protocol

Created: November 2019 (initial issue) **Last revised:**

1.0 PURPOSE

This Dry Weather Screening Protocol is a guideline for conducting illicit discharge inspections, which is a component of Minimum Control Measure 3: Illicit Discharge Detection and Elimination (IDDE) required under the Virginia General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (9VAC25-890-40 et. seq.). Maine Corps Installations National Capital Region Marine Corps Base Quantico (MCINCR-MCBQ) has obtained coverage under this permit (issued as Permit No. VAR040069) for discharges from the municipal separate storm sewer system (MS4) that serves the Mainside region of the installation.

Information regarding the IDDE program for the Installation is contained in the MCINCR-MCBQ *Illicit Discharge Detection and Elimination Written Procedures* and *MCINCR-MCBQ Municipal Separate Storm Sewer System (MS4) Program Plan*. Additional guidance for conducting illicit discharge inspections can be found in the publication entitled "*Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*," developed by the Center for Watershed Protection and Robert Pitt, University of Alabama under Environmental Protection Agency (EPA) cooperative agreement number X-82907801-0 (https://www.epa.gov/sites/production/files/2015-11/documents/idde_manualwithappendices.pdf).

2.0 ABBREVIATIONS AND DEFINITIONS

2.1 Abbreviations

a. **EPA** – Environmental Protection Agency
b. **IDDE** – Illicit Discharge Detection and Elimination
c. **mL** – milliliter
d. **MS4** – Municipal Separate Storm Sewer System
e. **NREAB** – Natural Resources and Environmental Affairs Branch
f. **PPE** – Personal Protective Equipment
g. **SOP** – Standard Operating Procedure
h. **VDEQ** – Virginia Department of Environmental Quality
i. **VPDES** – Virginia Pollutant Discharge Elimination System

2.2 Definitions

a. ***Illicit Discharge*** - any discharge to the municipal separate storm sewer system that is not composed entirely of stormwater, except for discharges allowed under a VPDES permit or discharges resulting from firefighting operations.

b. ***Measurable Storm Event*** – a precipitation event that results in a total measured precipitation accumulation equal to, or greater than, one-tenth (0.1) inch of rainfall and that produces runoff that discharges to the storm sewer system.

3.0 OPERATIONAL PROCEDURES

3.1 Non-Stormwater (Illicit) Discharge Inspections

a. Inspection Requirements

1. A minimum of 50 outfalls for the MS4 serving the Mainside region of MCINCR-MCBQ must be inspected annually. Of the 50 outfalls screened annually, no more than 50% of the outfalls screened each year may have been screened during the previous year.
2. Inspections must be performed during a period when no precipitation or snow melt is occurring and at least 72 hours from the previous measurable storm event.

b. Inspection Locations

1. Refer to **Figure 1** and **Table 1** for outfall locations.
2. Locations of the MCINCR-MCBQ's MS4 outfalls are shown on **Figure 1**. A unique identification number has been assigned to each outfall. Refer to **Table 1** for a list of MCINCR-MCBQ MS4 outfalls.
3. If a storm drain outfall cannot be located or accessed in the field, then inspect storm drain manholes or inlets upstream of the outfall for dry weather flow.

c. Inspection Procedures

1. Conduct field screening of outfalls and record observations on a Field Investigation Data Sheet (**Attachment A**). The observations should include the following:

i. Record general information in Section 1 (*Background Data*) of the Field Investigation Data Sheet.

ii. Observe the conditions surrounding the outfall and determine if flow is present; record presence of flow and the outfall's physical characteristics in Section 2 (*Outfall Description*) of the Field Investigation Data Sheet.

iii. Look for the following *physical indicators for flowing and non-flowing outfalls* and record observations in Section 3 of the Field Investigation Data Sheet:

- Outfall Damage
- Deposits/Stains
- Abnormal Vegetation
- Poor Pool Quality
- Pipe Benthic Growth (such as algae or other organic matter)

iv. If flow or standing water is present, collect a sample using a plastic sample bottle, plastic dipper, telescoping dipper, or swing sampler, as appropriate. Look for the following *physical indicators for flowing outfalls* and record observations in Section 4 of the Field Investigation Data Sheet:

- Odor
- Color
- Turbidity
- Floatables (does not include trash)

v. If flow or standing water is present, collect and record the following in Section 5 (*Data Collection for Flowing Outfalls*) of the Field Investigation Data Sheet:

- Flow rate
- Temperature
- pH
- Turbidity
- Total chlorine content
- Fluoride content
- Clarity

vi. Based on the physical indicators that are observed (such as flow, staining, and deposits), determine the likelihood of illicit discharge and record in Section 6 (*Overall Outfall Characterization)* of the Field Investigation Data Sheet using the following classifications:

- Unlikely illicit discharge
- Potential illicit discharge (presence of 2 or more indicators)
- Suspect illicit discharge (1 or more indicators with severity of 3)
- Obvious illicit discharge

2. At flowing outfalls, trace the source of the flow by working back up the storm sewer system via manholes and inlets. Attempt to trace the source while outfalls are actively flowing, but no later than one week after the initial illicit discharge was observed.

i. Investigate illicit discharges suspected of being sanitary sewage or significantly contaminated first.

ii. Investigations of illicit discharges suspected of being less hazardous to human health and safety may be delayed until they have been investigated, eliminated, or identified.

iii. No further action is required for discharges authorized under a separate VPDES permit.

3.2 Inspection Supplies

a. Inspection Equipment

- Field Investigation Data Sheets (**Attachment A**)
- Clipboard and pens
- Outfall maps and outfall information details
- MCINCR-MCBQ access authorization letter
- Tool for removing manhole covers
- Clear sample bottles
- Plastic dipper
- Telescoping dipper
- Swing sampler with clean 1,000 milliliter (mL) plastic sampling container
- Multiparameter water quality meter
- Portable photometer calibrated for fluoride detection
- Portable water testing kit capable of analyzing total chlorine concentration
- Digital camera with extra batteries/cellular telephone with camera and fully charged battery
- 2 gallons of distilled water
- Measuring tape and folding ruler
- Small dry-erase board and markers
- Paper towels
- Containers for collecting used test kit materials and other waste materials
- Flashlight

b. Personal Protective Equipment (PPE)

- Work gloves
- Neoprene or vinyl gloves
- Sturdy work boots/Safety-toed boots (for removing manhole covers)
- Knee-high rubber boots/waders
- Safety vest
- Cellular telephone with charged battery
- First aid kit
- Weather-appropriate clothing

3.3 Safety Considerations

a. Always wear safety-toed boots to protect feet from possible crushing injuries while handling the manhole covers.

b. Use proper lifting techniques when removing manhole covers to prevent back injury.

c. Use extreme caution when working over open manhole structures; no part of your body should enter the plane created by the manhole opening as this would constitute confined space entry.

d. DO NOT enter manhole or outfall structures under any conditions.

e. Always wear neoprene or vinyl gloves when working with field test kit chemicals.

3.4 Post Inspection Notifications and Actions

a. If outfall inspections identify illicit discharges, the NREAB Water Program should be notified and follow-up investigations should be conducted to identify their source(s). Investigations must be documented, and information recorded must include:

- The date(s) that the illicit discharge was observed and reported
- The results of the investigation
- Any follow-up to the investigation
- Resolution of the investigation
- The date that the investigation was closed

b. Once the source of an illicit discharge (if any) is detected, necessary measures must be taken to fix or eliminate the discharge.

c. Update GIS system annually with new storm sewer system/outfall information as changes occur and update Figure 1 and Table 1 of this SOP.

4.0 RECORDKEEPING AND REPORTING REQUIREMENTS

4.1 Recordkeeping Requirements

a. Complete the Field Investigation Data Sheet (**Attachment A**) for each outfall. These forms shall be maintained with the MCINCR-MCBQ MS4 Program files.

4.2 Reporting Requirements

a. Information regarding dry weather screening activities and IDDE investigations must be reported to the Virginia Department of Environmental Quality (VDEQ) as part of the Annual MS4 Program reporting requirements

b. Depending of the nature and quantity of material released, illicit discharges may require reporting to VDEQ and/or EPA. The NREAB Water Program Manager must be notified immediately if any discharges of a potentially hazardous nature are observed; the Water Program Manager shall determine if any agency notifications are required.

5.0 RESPONSIBILITIES

5.1 NREAB

a. NREAB is responsible for all the inspection procedures.

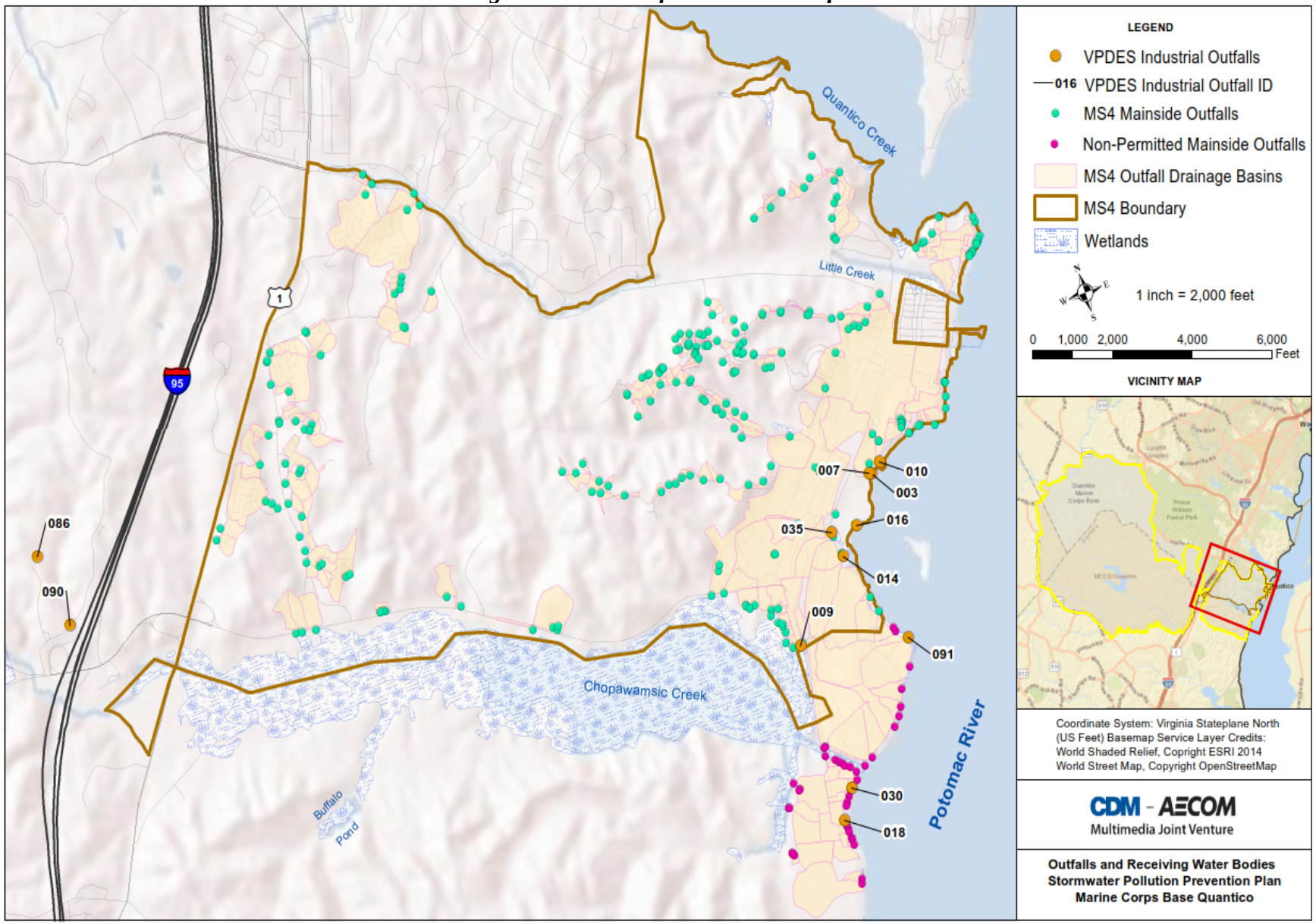
6.0 FIGURES AND TABLES

Figure 1: MS4 Outfall Location Map
Table 1: MCINCR-MCBQ MS4 Outfall List

7.0 ATTACHMENTS

Attachment A: Field Investigation Data Sheet

Figure 1: MS4 Outfall Location Map



This page intentionally left blank.

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
100	38.54182935	-77.3283796	Little Creek > (Lower) Potomac River
101	38.54420369	-77.33206529	Little Creek > (Lower) Potomac River
102	38.53567963	-77.32972724	Little Creek > (Lower) Potomac River
103	38.5342242	-77.33290516	Little Creek > (Lower) Potomac River
104	38.53430131	-77.33301094	Little Creek > (Lower) Potomac River
105	38.53725895	-77.33174913	Little Creek > (Lower) Potomac River
106	38.53696709	-77.33195993	Little Creek > (Lower) Potomac River
107	38.53662947	-77.33222446	Little Creek > (Lower) Potomac River
108	38.53644381	-77.33279846	Little Creek > (Lower) Potomac River
109	38.53812765	-77.33579256	Little Creek > (Lower) Potomac River
110	38.543469	-77.33155	Little Creek > (Lower) Potomac River
111	38.541015	-77.328255	Little Creek > (Lower) Potomac River
112	38.53211649	-77.30116599	Little Creek > (Lower) Potomac River
113	38.53231614	-77.29953504	Little Creek > (Lower) Potomac River
114	38.53231388	-77.29351985	Little Creek > (Lower) Potomac River
115	38.53132012	-77.29377626	Little Creek > (Lower) Potomac River
116	38.53105735	-77.29415009	Little Creek > (Lower) Potomac River
117	38.5301625	-77.29475669	Little Creek > (Lower) Potomac River
118	38.52905936	-77.29515919	Little Creek > (Lower) Potomac River
119	38.52554348	-77.31482321	Little Creek > (Lower) Potomac River
120	38.52551163	-77.31431175	Little Creek > (Lower) Potomac River
121	38.52552664	-77.31417001	Little Creek > (Lower) Potomac River
122	38.52552244	-77.3132071	Little Creek > (Lower) Potomac River
123	38.52539085	-77.31325907	Little Creek > (Lower) Potomac River
124	38.5255061	-77.31296335	Little Creek > (Lower) Potomac River
125	38.52559595	-77.31295958	Little Creek > (Lower) Potomac River
126	38.52557953	-77.31281927	Little Creek > (Lower) Potomac River
127	38.52627338	-77.31100727	Little Creek > (Lower) Potomac River
128	38.52690563	-77.3097504	Little Creek > (Lower) Potomac River
129	38.52714568	-77.31050125	Little Creek > (Lower) Potomac River
130	38.52699162	-77.31102772	Little Creek > (Lower) Potomac River
131	38.52632124	-77.31126015	Little Creek > (Lower) Potomac River
132	38.52583509	-77.30764789	Little Creek > (Lower) Potomac River
133	38.52657764	-77.30812733	Little Creek > (Lower) Potomac River
134	38.52651017	-77.3086512	Little Creek > (Lower) Potomac River

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
135	38.5266711	-77.30895278	Little Creek > (Lower) Potomac River
136	38.52666498	-77.30570245	Little Creek > (Lower) Potomac River
137	38.5274973	-77.30728847	Little Creek > (Lower) Potomac River
138	38.52833055	-77.30735184	Little Creek > (Lower) Potomac River
139	38.525881	-77.305918	Little Creek > (Lower) Potomac River
140	38.526012	-77.305025	Little Creek > (Lower) Potomac River
141	38.52416986	-77.29434555	Little Creek > (Lower) Potomac River
142	38.52429927	-77.29681478	Little Creek > (Lower) Potomac River
143	38.52466523	-77.2929415	Little Creek > (Lower) Potomac River
144	38.525306	-77.299232	Little Creek > (Lower) Potomac River
200	38.51111689	-77.31525832	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
201	38.51237082	-77.31400313	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
202	38.51267005	-77.31377916	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
203	38.51091849	-77.31420983	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
204	38.50611004	-77.30912277	Chopawamsic Creek > (Lower) Potomac River
205	38.50607224	-77.31003254	Chopawamsic Creek > (Lower) Potomac River
206	38.50655328	-77.31047426	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
207	38.50718049	-77.31023764	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
208	38.5079005	-77.31057325	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
209	38.50871338	-77.31015575	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
210	38.507696	-77.310246	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
211	38.507556	-77.310305	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
212	38.508476	-77.31098	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
213	38.50943	-77.312479	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
214	38.51981051	-77.32150351	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
215	38.52008888	-77.32218998	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
216	38.52200699	-77.32404364	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
223	38.53472074	-77.3405855	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
224	38.53634382	-77.34112445	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
225	38.53642629	-77.34122478	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
226	38.53421632	-77.34552973	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
227	38.53330563	-77.34425895	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
228	38.53147577	-77.34447696	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
229	38.53087312	-77.34329	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
229	38.524707	-77.306247	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
230	38.53072627	-77.34401344	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
231	38.52919179	-77.34653656	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
232	38.52972379	-77.34867621	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
233	38.52704301	-77.35370158	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
234	38.53128534	-77.34713671	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
235	38.52831085	-77.34567692	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
236	38.5284458	-77.34544122	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
237	38.52803919	-77.34708834	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
238	38.52680136	-77.34742982	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
239	38.52570039	-77.34671661	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
240	38.52464964	-77.34743343	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
241	38.52363442	-77.34737182	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
242	38.52295063	-77.34757827	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
243	38.52236473	-77.34664368	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
244	38.52244897	-77.34635711	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
245	38.52114583	-77.34472138	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
246	38.52115866	-77.34435056	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
247	38.535624	-77.345192	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
248	38.535671	-77.345123	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
249	38.527194	-77.34876	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
250	38.526798	-77.348431	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
251	38.531681	-77.34594	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
252	38.51902664	-77.35045753	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
253	38.51895338	-77.34990349	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
254	38.51877057	-77.34870907	Unnamed tributary > Chopawamsic Creek > (Lower) Potomac River
255	38.5175023	-77.33704515	Chopawamsic Creek > (Lower) Potomac River
256	38.5165699	-77.33615491	Chopawamsic Creek > (Lower) Potomac River
257	38.51345745	-77.33091219	Chopawamsic Creek > (Lower) Potomac River
310	38.50612312	-77.30195817	(Lower) Potomac River
311	38.50717873	-77.30228146	(Lower) Potomac River
312	38.5157758	-77.29445276	(Lower) Potomac River
313	38.51576306	-77.29449517	(Lower) Potomac River
314	38.51789684	-77.2901598	(Lower) Potomac River
315	38.51791863	-77.2901463	(Lower) Potomac River
316	38.51786398	-77.29007355	(Lower) Potomac River

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
317	38.51699956	-77.29047546	(Lower) Potomac River
318	38.51561981	-77.29214472	(Lower) Potomac River
319	38.51598317	-77.29334475	(Lower) Potomac River
320	38.51681851	-77.29479885	(Lower) Potomac River
321	38.51664668	-77.29471813	(Lower) Potomac River
322	38.51654358	-77.29478233	(Lower) Potomac River
323	38.51630327	-77.29497881	(Lower) Potomac River
324	38.51658474	-77.29753093	(Lower) Potomac River
325	38.51637	-77.290765	(Lower) Potomac River
326	38.515975	-77.293562	(Lower) Potomac River
327	38.51160513	-77.30362206	(Lower) Potomac River
328	38.51038674	-77.30342483	(Lower) Potomac River
329	38.52468668	-77.2844902	(Lower) Potomac River
330	38.52556343	-77.28311875	(Lower) Potomac River
331	38.52648184	-77.28312403	(Lower) Potomac River
332	38.5268415	-77.28317382	(Lower) Potomac River
333	38.52768187	-77.28595577	(Lower) Potomac River
334	38.52687076	-77.28700418	(Lower) Potomac River
335	38.52652383	-77.28808645	(Lower) Potomac River
336	38.52639575	-77.28869548	(Lower) Potomac River
337	38.524905	-77.284093	(Lower) Potomac River
338	38.524708	-77.284507	(Lower) Potomac River
339	38.525335	-77.283497	(Lower) Potomac River
340	38.526559	-77.28787	(Lower) Potomac River
400	38.53291822	-77.29817374	Unnamed tributary > Quantico Creek > (Lower) Potomac River
401	38.53265243	-77.2962112	Unnamed tributary > Quantico Creek > (Lower) Potomac River
402	38.53305811	-77.29548675	Unnamed tributary > Quantico Creek > (Lower) Potomac River
403	38.53437114	-77.29464009	Unnamed tributary > Quantico Creek > (Lower) Potomac River
500	38.51848399	-77.30435824	Unnamed tributary > (Lower) Potomac River
501	38.523599	-77.307183	Unnamed tributary > (Lower) Potomac River
502	38.513158	-77.306161	Unnamed tributary > (Lower) Potomac River
503	38.52332857	-77.31628871	Unnamed tributary > (Lower) Potomac River
504	38.52487377	-77.31654821	Unnamed tributary > (Lower) Potomac River
505	38.52494426	-77.31650446	Unnamed tributary > (Lower) Potomac River
506	38.52392955	-77.3148523	Unnamed tributary > (Lower) Potomac River

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
507	38.52466766	-77.31353274	Unnamed tributary > (Lower) Potomac River
508	38.52443347	-77.31215391	Unnamed tributary > (Lower) Potomac River
509	38.52409199	-77.31109947	Unnamed tributary > (Lower) Potomac River
510	38.52515842	-77.30550128	Unnamed tributary > (Lower) Potomac River
511	38.52501961	-77.30595776	Unnamed tributary > (Lower) Potomac River
512	38.5258345	-77.30851877	Unnamed tributary > (Lower) Potomac River
513	38.52583635	-77.30876855	Unnamed tributary > (Lower) Potomac River
514	38.52603206	-77.30950079	Unnamed tributary > (Lower) Potomac River
515	38.52633155	-77.31011099	Unnamed tributary > (Lower) Potomac River
515	38.51852506	-77.31507308	Unnamed tributary > (Lower) Potomac River
516	38.52627648	-77.31018065	Unnamed tributary > (Lower) Potomac River
517	38.52570852	-77.3097328	Unnamed tributary > (Lower) Potomac River
518	38.52566745	-77.30985023	Unnamed tributary > (Lower) Potomac River
519	38.52552806	-77.30980488	Unnamed tributary > (Lower) Potomac River
520	38.52524458	-77.30967052	Unnamed tributary > (Lower) Potomac River
521	38.52443179	-77.30780044	Unnamed tributary > (Lower) Potomac River
522	38.52359863	-77.30718286	Unnamed tributary > (Lower) Potomac River
523	38.52362151	-77.30697524	Unnamed tributary > (Lower) Potomac River
524	38.52465643	-77.30642564	Unnamed tributary > (Lower) Potomac River
525	38.52451502	-77.306042	Unnamed tributary > (Lower) Potomac River
526	38.52411856	-77.30505494	Unnamed tributary > (Lower) Potomac River
527	38.524201	-77.305001	Unnamed tributary > (Lower) Potomac River
528	38.524493	-77.30586	Unnamed tributary > (Lower) Potomac River
530	38.526392	-77.31006	Unnamed tributary > (Lower) Potomac River
531	38.526297	-77.310043	Unnamed tributary > (Lower) Potomac River
532	38.525829	-77.308496	Unnamed tributary > (Lower) Potomac River
533	38.524212	-77.310905	Unnamed tributary > (Lower) Potomac River
534	38.51718782	-77.30676183	Unnamed tributary > (Lower) Potomac River
535	38.51654702	-77.30781611	Unnamed tributary > (Lower) Potomac River
536	38.51668037	-77.30912218	Unnamed tributary > (Lower) Potomac River
537	38.51769467	-77.31129125	Unnamed tributary > (Lower) Potomac River
538	38.51804679	-77.31270209	Unnamed tributary > (Lower) Potomac River
539	38.5186787	-77.31364388	Unnamed tributary > (Lower) Potomac River
540	38.51870251	-77.31440856	Unnamed tributary > (Lower) Potomac River
542	38.51861886	-77.31567364	Unnamed tributary > (Lower) Potomac River

Table 1: MCINCR-MCBQ MS4 Outfall List

Outfall ID	LAT	LONG_	Receiving Waters
543	38.51842431	-77.31646858	Unnamed tributary > (Lower) Potomac River
544	38.52158731	-77.32295701	Unnamed tributary > (Lower) Potomac River
545	38.52193725	-77.3221241	Unnamed tributary > (Lower) Potomac River
546	38.52053513	-77.3212611	Unnamed tributary > (Lower) Potomac River
547	38.52004378	-77.32065241	Unnamed tributary > (Lower) Potomac River
548	38.52187196	-77.30968494	Unnamed tributary > (Lower) Potomac River
549	38.52184505	-77.30955787	Unnamed tributary > (Lower) Potomac River
550	38.52263354	-77.31031668	Unnamed tributary > (Lower) Potomac River
551	38.52141892	-77.30929635	Unnamed tributary > (Lower) Potomac River
552	38.52030991	-77.30870157	Unnamed tributary > (Lower) Potomac River
553	38.51954933	-77.30836705	Unnamed tributary > (Lower) Potomac River
554	38.52198989	-77.30866402	Unnamed tributary > (Lower) Potomac River
555	38.52128514	-77.30816748	Unnamed tributary > (Lower) Potomac River
556	38.52073646	-77.30756247	Unnamed tributary > (Lower) Potomac River
563	38.5231911	-77.29563737	Unnamed tributary > (Lower) Potomac River
564	38.52223238	-77.29827021	Unnamed tributary > (Lower) Potomac River
565	38.52332035	-77.29497244	Unnamed tributary > (Lower) Potomac River
566	38.52592964	-77.3016534	Unnamed tributary > (Lower) Potomac River
567	38.52628201	-77.30318435	Unnamed tributary > (Lower) Potomac River
568	38.52298222	-77.30397225	Unnamed tributary > (Lower) Potomac River
569	38.52354926	-77.3026692	Unnamed tributary > (Lower) Potomac River
570	38.523348	-77.296553	Unnamed tributary > (Lower) Potomac River
571	38.525169	-77.299418	Unnamed tributary > (Lower) Potomac River

ATTACHMENT A

Field Investigation Data Sheet

This page intentionally left blank.

MCINCR-MCBQ MS4 DRY WEATHER OUTFALL SCREENING
FIELD INVESTIGATION DATA SHEET

Section 1: Background Data

Receiving Water: Potomac River;___ Chopawamsic Creek ___; Little Creek ___; Quantico Creek____		**Outfall ID:**
Today's date:	Time (Military):	
Investigators:	Form completed by:	
Temperature (°F):	Last Rainfall (date):	Amount (inches):
Coordinates:	Northing:	Easting:
Camera:		Photo #s:
Notes (e.g.., origin of outfall, if known, unusual conditions noted, etc.):		

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____ _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/ Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____Bottom Width: _____	
Flow Present?	☐ Yes ☐ No				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 4)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

MCINCR-MCBQ MS4 DRY WEATHER OUTFALL SCREENING
FIELD INVESTIGATION DATA SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Data Collection for Flowing Outfalls

Date Collected:	Time Collected:	Investigators:
Equipment Calibration		

FLOW MEASUREMENT					FLOW CHARACTERISTICS (See Screening Action Levels below)			
METHOD		RESULT	UNIT	EQUIPMENT	PARAMETER	RESULT	UNIT	EQUIPMENT
☐Flow #1	Direct Reading			Flow Meter	Temperature		°F	YSI Multi-Probe
☐Flow #2	Volume			Bottle	pH		S.U.	YSI Multi-Probe
	Time to fill		Sec		Turbidity			YSI Multi-Probe
☐Flow #3	Flow depth		In	Tape measure	Chlorine			
	Flow width	_____	In	Tape measure	Fluoride			
	Measured length	___ft ___in	Ft, In	Tape measure	Clarity			Visual
	Time of travel		S	Stop watch				

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Comments:

MCINCR-MCBQ MS4 DRY WEATHER OUTFALL SCREENING
FIELD INVESTIGATION DATA SHEET

Additional details and sketches

MCINCR-MCBQ MS4 DRY WEATHER OUTFALL SCREENING
FIELD INVESTIGATION DATA SHEET

Additional details and sketches

This page intentionally left blank.

This page intentionally left blank.

[Insert Design Guidance PDF, allow for 92 pages]

MCINCR-MCBQ

Application and Design Guidance

For Land Disturbance Activities

This page intentionally left blank.

Table of Contents

List of Tables

List of Figures

List of Attachments

Acronyms

BMP	Best Management Practice
CBPA	Chesapeake Bay Preservation Area
CFR	Code of Federal Regulations
CGP	Construction General Permit
CWA	Clean Water Act
EISA	Energy Independence and Security Act
ESC	Erosion and Sediment Control
LID	Low-Impact Development
MCINCR-MCBQ	Marine Corps Installations National Capital Region – Marine Corps Base Quantico
METF	maximum extent technically feasible
MS4	Municipal Separate Storm Sewer Systems
NOT	Notice of Termination
NOV	Notice of Violation
NPDES	National Pollutant Discharge and Elimination System
NREA	Natural Resources and Environmental Affairs
PE	Professional Engineer
RLD	Responsible Land Disturber
RPA	Resource Protection Area
RRM	Runoff Reduction Method
SWM	Stormwater Management
SWPP	Stormwater Pollution Protection
SWPPP	Stormwater Pollution Prevention Plan
U.S. EPA	United States Environmental Protection Agency
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VESCH	Virginia Erosion and Sediment Control Handbook
VESCL&R	Virginia Erosion and Sediment Control Law and Regulations
VESCP	Virginia Erosion and Sediment Control Program

VPDES	Virginia Pollutant Discharge Elimination System
VRRM	Virginia Runoff Reduction Method
VSMP	Virginia Stormwater Management Program
WQIA	Water Quality Impact Assessment

1 Introduction

1.1 Purpose and Objective

This Application and Design Guidance for Land Disturbance Activities, hereafter referred to as Application and Design Guidance, is designed to help direct and assist applicants through the application process for Erosion and Sediment Control, Stormwater Management and Pollution Prevention, and Low Impact Development at Marine Corps Installations National Capital Region – Marine Corps Base Quantico (MCINCR-MCBQ). This document fulfills the requirements of Annual Standards and Specifications under MCNCR-MCBQ's General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges from Stormwater Small Municipal Separate Storm Sewer Systems (MS4) Permit. The Application and Design Guidance provides guidance on compliance with State and Federal erosion and sediment control and stormwater management requirements found in:

- MCINCR-MCBQ's General VPDES Permit for Discharges from Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) Permit, Permit No. VAR040069;
- Virginia Erosion and Sediment Control Law (§62.1-44 et. seq.);
- VPDES Permit Regulations (9VAC25-31);
- Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830);
- Virginia Erosion Control Regulations (9VAC25-840);
- Virginia Erosion and Sediment Control Certification Regulations (9VAC25-850);
- Virginia Stormwater Management Program (VSMP) Regulations (9VAC25-870);
- General VPDES Permit for Discharges of Stormwater from Construction Activities (9VAC25-880);
- General VPDES Permit for Discharges from Stormwater Small Municipal Separate Storm Sewer Systems (9VAC25-890); and the
- Energy Independence and Security Act, Section 438

1.2 Administrative Compliance and Applicability

The Application and Design Guidance shall be administered by the MCINCR-MCBQ Natural Resources and Environmental Affairs (NREA) Branch. These Guidelines shall apply to all plan design, construction, inspections and maintenance activities undertaken by the MCINCR-MCBQ internal workforce or by contracted external entities where such activities are regulated by the Virginia Erosion and Sediment Control Program (VESCP) and the Virginia Stormwater

Management Program (VSMP) Regulations. The VESCP incorporates the Virginia Erosion and Sediment Control Law (§62.1-44 et. seq.) and Regulations (VESCL&R) (9VAC25-840).

The Application and Design Guidance does not cover every aspect of design necessary for project construction. The applicant or applicant's designee (e.g., design professional, project manager, or contractor) is responsible for the design of a properly functioning project that meets requirements within the VESCL&R and VSMP Regulations. It is the responsibility of the designer to ensure that the techniques utilized are appropriate for the conditions of an individual site. Where it is determined that conformance with this document is not appropriate, alternative design, materials, and methodologies may be considered on a case-by-case basis for approval by the NREA (see Section 4.7 on Variance and Exception requests).

As of 1 July 2014, MCINCR-MCBQ NREA is the Review Authority for all projects disturbing less than one acre of land owned by MCINCR-MCBQ. For land disturbing projects greater than one acre, including phased projects or projects part of a larger common plan of development, both MCINCR-MCBQ NREA and the Virginia Department of Environmental Quality (VDEQ) have review and approval authority. All coordination with VDEQ is handled by MCINCR-MCBQ. The contents of this Application and Design Guidance provides the steps necessary to obtain approval for land disturbing activities at MCINCR-MCBQ. The submittal process is detailed in Sections 4.1 and 4.2.

For pre-application inquiries, contact:
MCINCR-MCBQ NREA Branch
Name: Jonmark Sullivan, NREA Water Program Manager
Tel: 703-432-0539
Email: johnmark.sullivan@usmc.mil

1.3 Regulated Land Disturbing Activities

A "land disturbance" or "land-disturbing activity" is any land change on private or public land that may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the Commonwealth, including, but not limited to, clearing, grading, excavating, transporting, and filling of land. This definition includes land-disturbing activities equal to or exceeding 10,000 square feet or 2,500 square feet in a Chesapeake Bay Preservation Area (CBPA). MCINCR-MCBQ is within the CBPA; therefore, the 2,500 square foot threshold shall be applied to all land disturbing activities within in the installation.

In accordance with Section 62.1-44.15:34 of the Stormwater Management Act and Section 62.1-44.15:51 of the VESCL&R, the following activities are specifically exempt from the definition[1]:

- Disturbed land areas of less than 2,500 square feet.
- Minor land-disturbing activities and individual home landscaping, repairs and maintenance work.
- Individual service connections.
- Installation, maintenance, or repair of underground public utility lines when such activity is confined to an existing hard-surfaced road, street, or sidewalk.
- Septic tank lines or drainage fields unless included in an overall plan for land-disturbing activity relating to construction of the building to be served by the septic tank system.
- Surface or deep mining.
- Exploration or drilling for oil and gas including the well site, roads, feeder lines, and off-site disposal areas.
- Tilling, planting, or harvesting of agricultural, horticultural or forest crops, or livestock feedlot operations; including a specific list of engineering operations.
- Repair or rebuilding of the tracks, right-of-way, bridges, communication facilities and other related structures, and facilities of a railroad company.
- Agricultural engineering operations including, but not limited to, the construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds not required to comply with the provisions of the Virginia Dam Safety Act, ditches, strip-cropping, lister furrowing, contour cultivating, contour furrowing, land drainage and land irrigation.
- Installation of fence, sign, telephone, electric, or other kinds of posts or poles.
- Shoreline erosion control projects on tidal waters when the projects are approved by local wetlands boards, the Virginia Marine Resources Commission or the Army Corps of Engineers however, any associated land that is disturbed outside of this exempted area shall remain subject to this article and the regulations adopted pursuant thereto.

[1] List of exempted activities may not be abridged. Refer to Section 62.1-44.15:34 of the Stormwater Management Act and Section 62.1-44.15:51 of the VESCL&R for a compressive list of exempt activities.

- Emergency work to protect life, limb, or property, and emergency repairs; however, if the land-disturbing activity would have required an approved erosion and sediment control plan, if the activity were not an emergency, then the land area disturbed shall be shaped and stabilized in accordance with the requirements of the VESCP authority.

The following activities are to comply with VESCP requirements but are not required to comply with water quantity and water quality technical criteria in the VSMP[2]:

- Activities under a state or federal reclamation program to return an abandoned property to an agricultural or open land use.
- Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original construction of the project. The paving of an existing road with a compacted or impervious surface and reestablishment of existing associated ditches and shoulders.
- Discharges from a land-disturbing activity to a sanitary sewer or a combined sewer system.

[2] Refer to Section 62.1-44.15:34 of the Stormwater Management Act for exclusions.

2 Regulated Land Disturbing Activity Guidelines

2.1 General Guidelines for Land Disturbing Activities

Determining the submission requirements for a land disturbance project is dependent on the total area that is to be disturbed. **Figure 1** provides a visual representation of what is required based on the total land disturbed. **Table 1** provides a categorical summary of land disturbing activities and the associated submission requirements.

Figure 1. Visual Representation of Application Criteria Based on Land Disturbance Area

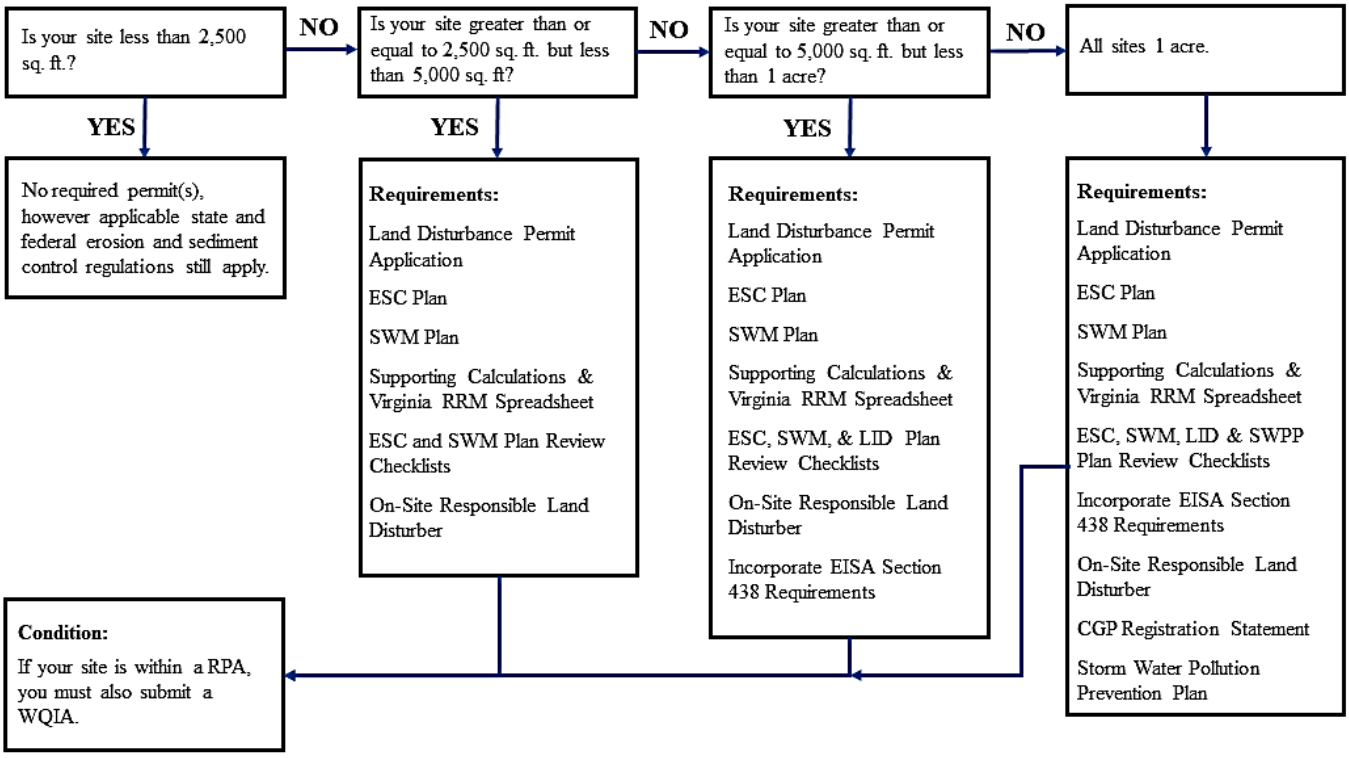


Table 1. Summary of Land Disturbing Activities and Associated Submission Requirements

Land Disturbance	Required Items
Category 1 Less than 2,500 sq. ft.	• No required permit(s); however, applicable state and federal erosion and sediment control regulations still apply. • Contact NREA to confirm that no permitting will be required.
Category 2 2,500 sq. ft. or greater	• MCINCR-MCBQ Land Disturbance Permit Application • Erosion and Sediment Control (ESC) Plan • Stormwater Management (SWM) Plan • SWM Plan and ESC Plan supporting calculations and any other design calculations necessary to support design • Virginia Runoff Reduction Method (RRM) Spreadsheet • Checklist for SWM Plan Review • Checklist for ESC Plan Review
Category 3 5,000 sq. ft. or greater	• Those requirements listed under Category 2, as well as: • Incorporate Energy Independence and Security Act (EISA) Section 438 Design Requirements in project • Checklist for Low-Impact Development (LID) Plan Review
Category 4 1 acre (43,580 sq. ft.) or greater	• Those requirements listed under Category 3, as well as: • General VPDES Permit for Discharges of Storm Water from Construction Activities from VDEQ o Construction General Permit (CGP) Registration Statement o Permit Fee Form and fee (supplied after MCINCR-MCBQ NREA review process is complete) • Storm Water Pollution Prevention Plan (SWPPP) • Checklist for SWPPP Review
Condition Project Site located within a Resource Protection Area (RPA) or Sensitive Area[3]	• Those requirements outlined above (Categories 1, 2, 3, or 4), as well as: • Water Quality Impact Assessment (WQIA)

[3] See Section 3.4 for details on RPA and Sensitive Area designated locations and requirements.

2.2 Projects Disturbing Less than 2,500 Sq. Ft. (Category 1)

For projects disturbing less than 2,500 square feet, there are usually no required permit(s); however, contractors are still required to install any necessary stormwater controls during construction and to abide by applicable MCINCR-MCBQ requirements. If the project site falls within an area that is deemed as sensitive or within a Resource Protection Area (RPA), MCINCR-MCBQ NREA may require permits. Contact NREA to confirm locations of RPAs and "Sensitive Areas" and that no permitting will be required.

2.3 Projects Disturbing 2,500 Sq. Ft. of Greater (Category 2)

For projects that will be disturbing greater than or equal to 2,500 square feet, the applicant or designee is required to submit a MCINCR-MCBQ Land Disturbance Permit Application (Attachment E) along with the necessary documents detailed in **Table 1**. Specific requirements for ESC Plans, SWM Plans, and supporting calculations are provided in Section 3.

The ESC Plan and SWM Plan Review checklists can be found within Attachment D.

2.4 Projects Disturbing 5,000 Sq. Ft. or Greater (Category 3)

In addition to requirements for Category 2 projects, the applicant must also abide by the requirements and regulations set forth by the Energy Independence and Security Act of 2007 (EISA) for all projects disturbing an area of 5,000 square feet or greater. Section 438 of EISA requires agencies to protect water resources by reducing stormwater runoff from any Federal development projects and incorporating Low Impact Development (LID) Best Management Practices (BMPs) into the design. LID design per EISA is mandatory in addition to the requirements set forth in the Virginia Stormwater Management Program (see Section 3.3). The design objective of LID is to maintain or restore the hydrology of the site prior to the planned project being constructed with regard to the temperature, rate, volume and duration of flow. More information regarding the EISA requirements is discussed in Section 3.4 and Attachment A. LID design requirements are provided in Attachment B. The LID Design Plan Review Checklist (Attachment D) will guide the applicant with the incorporation of LID into the project.

2.5 Projects Disturbing 1 Acre or Greater (Category 4)

For projects that disturb 1 acre or greater, the applicant or contractor must also to apply through MCINCR-MCBQ for a VDEQ General VPDES Permit for Discharges of Stormwater from Construction Activities, also called the Construction General Permit (CGP). The CGP package must include a Registration Statement and supporting information (both of which can be found at the VDEQ website provided in the References in Attachment G). Refer to Section 3.6 for additional information about document requirements and the submittal process for CGP approval. A SWPPP is also required for all Category 4 projects. More information regarding the SWPPP is discussed in Section 3.7.

This page intentionally left blank.

3 Requirements

3.1 Land Disturbance Permit Application

The applicant is required to submit a completed Land Disturbance Permit Application (Attachment E). Complete information concerning the applicant and contractor must be provided. The applicant must also include a Responsible Land Disturber (RLD) for the project site. The RLD must either have a state RLD certificate, be a certified Professional Engineer (P.E.) in the Commonwealth of Virginia, or must be enrolled or have obtained a certificate from the Virginia ESC Certification Program.

All contractor RLD's and Site Superintendents are required to complete NREA's classroom Stormwater Construction Classroom Training at the first training opportunity after permit approval. The classes are given quarterly during the year.

3.2 Erosion and Sediment Control Plans

The purpose of an ESC Plan is to describe the control measures proposed to reduce or eliminate the potential for erosion and sedimentation on a construction project. The ESC Plan must be developed to comply with the Virginia Minimum Standards (9VAC25-840-40), provided in Attachment C. For more information on developing an adequate ESC Plan, refer to the Virginia Erosion and Sediment Control Handbook (VESCH). The plan shall utilize erosion and sediment control standards and specifications listed in Chapter 3 of the VESCH. Nomenclature for erosion and sediment control measures on ESC Plans shall be consistent with the Virginia Uniform Coding System provided in the VESCH. Guidance on development of ESC Plans can be found in Chapter 6 of the VESCH. Refer to Attachment F with reference links to the VDEQ website and the VESCH.

The ESC Plan Review Checklist must also be completed by the designer and provided with application submittal. The checklist is provided in Attachment D.

3.3 Stormwater Management Plans

The SWM Plan must address all components outlined in 9VAC25-870-55. Per 9VAC25-870-63 and 65, which address water quality design criteria requirements, the SWM Plan must utilize stormwater management BMPs from the Virginia BMP Clearinghouse to obtain the required water quality pollutant reductions. The required water quality pollutant reductions shall be calculated by using the Virginia Runoff Reduction Method (VRRM) Spreadsheet for site-specific project conditions. The VRRM Spreadsheets (currently version 3.0) are located online at the VDEQ Stormwater Management website (refer to Attachment F Reference for web address).

The SWM design shall also follow the minimum standards for water quantity control through channel and flood protection per 9VAC25-870-66. Locations of concentrated stormwater flow (e.g., outfalls, channels, etc.) on the project site must be evaluated for Channel Protection and

Flood Protection to the defined Limits of Analysis. Different design criteria are specified in the regulation dependent on whether the outfall is discharging into a natural or manmade system.

The SWM Plan Review Checklist must also be completed by the designer and provided with application submittal. This checklist is provided in Attachment D.

Per 9VAC25-870-55, SWM plans shall be appropriately sealed and signed by a professional registered in the Commonwealth of Virginia pursuant to Article 1 of Chapter 4 of Title 54.1 of the Code of Virginia.

3.4 Energy Independence and Security Act (EISA) Design

All Federal projects that are 5,000 square feet or more must incorporate the LID requirements in Section 438 of EISA. The intent of Section 438 of EISA is to require federal agencies to develop and redevelop facilities in a manner that reduces storm water runoff and pollutants in order to protect or restore the waters of the United States. Compliance with Section 438 requires that storm water management measures are implemented to the maximum extent technically feasible (METF) to maintain or restore the pre-development hydrology conditions, specifically with respect to temperature, rate, volume, and duration of flow. To meet these performance requirements, storm water control practices that are effective in reducing the volume of storm water discharge must be used. Navy policy, dated 20 December 2010, Engineering and Construction Bulletin, Issue No. 2011-01, states that all new construction projects costing over Seven Hundred Fifty Thousand Dollars ($750,000.00) and/or disturbing 5,000 sq. ft. or more shall comply with EISA. The 2010 Navy Policy further states that LID shall be used in these same projects. LID is to be tracked and reported as to the Navy's progress on storm water management.

A flowchart for EISA Section 438 implementation is provided in Attachment A. This flowchart provides step-by-step instructions to help in the process of determining where to start when designing LID devices for projects. Design Guidance for LID projects is included in Attachment B which includes recommendations for devices that may be most effective in different situations. Additional technical guidance is located online at the U.S. EPA weblink provided in Attachment F.

3.5 Water Quality Impact Assessment for RPAs and Sensitive Areas

MCINCR-MCBQ falls within the Chesapeake Bay Preservation Area, which includes Resource Protection Areas (RPAs). Sensitive features such as tidal wetlands, tidal shores, and connected and contiguous nontidal wetlands are included in RPAs, as are a 100-foot buffer adjacent to these features and perennial streams. Within RPAs no land disturbance is permitted (to include the clearing of vegetation) unless specifically allowed in 9VAC25-830-140.

If the project location is within a RPA or an area determined by NREA to be in a Sensitive Area, a Water Quality Impact Assessment (WQIA), provided in Attachment D, shall be submitted in addition to categorical requirements listed in this document. This applies to all disturbance projects

greater than 2,500 sq. ft. east of I-95 and may include sensitive areas west of I-95, as determined by NREA at time of project review. Sensitive Areas are designated as:

- Tidal wetlands;
- Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or waterbodies with perennial flow;
- Tidal shores;
- Such other lands considered by the local government to meet the provisions of this section and to be necessary to protect the quality of the state waters; (e.g., county delineated RPAs); and
- A buffer area not less than 100 feet in width located adjacent to and landward of the components listed above, and along both sides of any water body with perennial flow.

The intent of a WQIA is identify the impacts of proposed development on water quality and lands in the RPAs consistent with the goals and objectives of the Act, this chapter, and local programs, and to determine specific measures for mitigation of those impacts.

3.6 General VPDES Permit for Discharges of Storm Water from Construction Activities (CGP)

In addition to the MCINCR-MCBQ Land Disturbance Permit, a General VPDES Permit for Discharges from Construction Activities is required for all projects disturbing 1 acre or more of land. A CGP application package shall be completed and submitted to NREA who will facilitate internal review and coordinate with the VDEQ for VDEQ review and issuance of a CGP.

A CGP is a National Pollutant Discharge and Elimination System (NPDES) permit that is issued under the Clean Water Act (CWA) that authorizes the discharge of stormwater from construction sites that disturb greater than or equal to one acre of land. To apply for coverage under the CGP, the following items must be submitted to NREA as part of the CGP Package:

- Completed CCGP Registration Statement (original signed and dated)
- Construction Activity Operator Permit Fee Form
- SWPPP for Construction Projects
- Full set of ESC Plans
- Full set of SWM Plans
- SWM supporting calculations including the Virginia RRM Spreadsheet
- An electronic copy of ESC and SWM Plans
- SWM Plan Review Checklist

- If nutrient credits are to be used to meet water quality requirements, a letter of availability

A RLD must be documented for the project site. The RLD must have a state RLD certificate, must be a certified P.E. in the state of Virginia, or must be enrolled in the state ESC certification Program or have obtained a state certificate through this program.

Note, at a minimum, all contractor RLD's and Site Superintendents are required to complete NREA's classroom Storm Water Training during the first class opportunity after contract award. The classes are given quarterly during the year.

Once the SWPPP, ESC Plans, and SWM plans have been submitted, reviewed, and approved by MCINCR-MCBQ, the applicant should then submit Permit Application Fee Form and appropriate fee to NREA. The fee shall be an original check made out to "Treasurer of Virginia." All correspondence with VDEQ is to be done by NREA, not the contractor. NREA will submit the fee form, registration statement, and applicable check for permitting to VDEQ. No land disturbing activity can begin until the permit has been issued by VDEQ.

After construction is complete and final stabilization of the site has occurred, NREA will provide the contractor a close-out memo. Once this memo has been received, the contractor is to fill out a Notice of Termination (NOT) form for the project and return it to NREA. All correspondence with VDEQ is to be done by NREA, not the contractor. NREA will submit the NOT form to VDEQ.

3.7 Stormwater Pollution Prevention Plan (SWPPP)

The purpose of a SWPPP is to detail the design, installation, implementation, and maintenance of effective pollution prevention measures as specified in 40 CFR 450.21(d) to minimize the discharge of pollutants. An excerpt from 9VAC25-870-56 states, at a minimum, such measures must be designed, installed, implemented, and maintained to:

1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
2. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and
3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

The pollution prevention plan shall include effective best management practices to prohibit the following discharges in accordance with 40 CFR 450.21(e):

1. Wastewater from washout of concrete, unless managed by an appropriate control;

2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
4. Soaps or solvents used in vehicle and equipment washing.

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls in accordance with 40 CFR 450.21(c). The SWPPP describes the BMPs used to reduce pollutants at construction sites from stormwater discharges, and it includes written records of site inspections and the follow-up maintenance that is performed.

The SWPPP is to be retained at the construction site along with a copy of the CGP and CGP coverage letter. The applicant's designee is responsible for developing, implementing and maintaining the SWPPP and committing the resources necessary to prevent pollution. MCINCR-MCBQ staff may conduct site inspections for compliance with the SWPPP and the ESC minimum control measures.

The MCINCR-MCBQ Stormwater Pollution Prevention Plan Template, Version 2.0, shall be used. This template can be found at the NREA Water Programs website. The Checklist for Storm Water Pollution Prevention Plan Review for Construction Projects (Attachment D) shall be completed and submitted with the SWPPP.

This page intentionally left blank.

4 Review and Approval Process

The review and approval process depends on the total area of land disturbance as discussed in Section 2.1 of this Application and Design Guidance, Table 1.

4.1 Submittals

For all projects disturbing an area of 2,500 sq. ft. or greater, a Land Disturbance Permit is required. Submittals to NREA shall include all requirements outlined in in this Application and Design Guidance and any other supporting documentation deemed appropriate. The required elements for ESC and SWMP Plans can be found in Section 3 and the ESC and SWMP Plan Review Checklists provided in Attachment D.

Prior to submittal, it is highly encouraged to contact NREA to schedule a pre-submittal meeting and determine applicable requirements. All submittals shall include both hard copies and electronic copies of files on CD. Initial submittal requirements and the number of copies, indicated in parentheses, are provided in Table 2.

Table 2. Initial Submittal Requirements

Land Disturbance	Required Items
Category 1 Less than 2,500 sq. ft.	• Contact NREA to confirm that no permitting will be required.
Categories 2 & 3 2,500 sq. ft. or greater	• (2) MCINCR-MCBQ Land Disturbance Permit Application • (2) Erosion and Sediment Control (ESC) Plan • (2) Stormwater Management (SWM) Plan • (2) SWM Plan and ESC Plan supporting calculations and any other design calculations necessary to support design • (2) Virginia Runoff Reduction Method (VRRM) Spreadsheet • (2) Checklist for SWM Plan Review • (2) Checklist for ESC Plan Review • (2) LID Plan Review Checklist (Category 3 & 4 only) • (2) Water Quality Impact Assessment (WQIA) (for projects located in an RPA or Sensitive Area only)
Category 4 1 acre (43,580 sq. ft.) or greater	• Those requirements listed under Category 2 & 3, as well as: • (2) Storm Water Pollution Prevention Plan (SWPPP) • (2) Checklist for SWPPP Review • (1) CGP Registration Statement

Land Disturbance	Required Items
	• (1) Permit Fee Form and fee (supplied after MCINCR-MCBQ NREA review process is complete)

During the plan review process described in Section 4.2, additional copies and/or revised documents may be requested for Land Permit Application Approval. Applicants will be notified during the plan review process.

As-built drawings shall be submitted for all projects in order to close out the MCINCR-MCBQ Land Disturbance Permit.

It is recommended that all required submittals be provided to NREA **at least 120 days** from anticipated date of the proposed land disturbing activity.

4.2 Plan Review

Plan reviews shall be conducted by MCINCR-MCBQ personnel. Plan review shall ensure compliance with the Application and Design Guidance. After receiving the submittals, the NREA shall have 15 calendar days to determine completeness of the application submittal and notify in writing. The NREA shall have additional 45 calendar days from the time of notification to review the submission package and provide written comments. Plan reviews are not to be used to evaluate design concepts but rather compliance with the requirements set forth in the Application and Design Guidance.

If a re-submission to review, the NREA shall have 45 calendar days to review and respond in writing to previously disapproved plan(s). Re-submission should include one red-lined plan set of the first submission showing all to-date revisions and at least one clean, updated plan set. An itemized written response to comments is also required.

After confirming the submittals compliance with the Application and Design Guidance, an approval notification will be sent to responsible parties by electronic delivery. When approved, at least three unmarked, updated plan sets, stamped by a licensed professional engineer, architect, certified landscape architect, or land surveyor in Virginia, must be submitted to NREA. NREA will stamp the plans with MCINCR-MCBQ Land Disturbance Permit approval and distribute them to appropriate parties. A contractor is required to have the approved plans, permit, and SWPPP, if applicable, available on site at all times. Additional copies may be requested as needed.

For projects disturbing 1 acre or more, VDEQ approval of the CGP is also required. NREA will handle all coordination with VDEQ. For projects requiring a CGP, NREA shall have an additional 45 calendar days (not to exceed 90 days) to coordinate with VDEQ for SWM Plan review and provide written comments to modifications to approved plan(s).

4.3 Pre-Construction Conference

A pre-construction conference shall be held prior to commencement of a land disturbance in order to clarify roles, responsibilities, and obligations of all parties involved with the land disturbing activity. At a minimum, the pre-construction conference shall be attended by the project manager, construction contractor, and a NREA representative.

4.4 Inspections

Site inspections shall be conducted by qualified NREA personnel who hold a certificate of competence from the State Water Control Board in the area of project inspection as defined in 9VAC25-850 et. seq. Site inspections may also be performed by VDEQ and/or United State Environmental Protection Agency (U.S. EPA) personnel.

4.4.1 ESC Inspections

Land disturbing activities shall be inspected by NREA personnel immediately following the initial installation of ESC measures prior to the land disturbance, at least once during every two-week period, within 48 hours of any runoff-producing storm event, and upon completion of the project. Construction project contractors or RLDs are also responsible for conducting internal ESC inspections on a regular basis.

The *Inspection Report for ESC and SWPP at Construction Sites*, provided in Attachment F, shall be used to record each inspection visit. All ESC measures shown on the plan shall be inspected, and any problems or violations shall be documented in the report. Required or recommended corrective actions for each problem or violation shall be noted on the report along with a date by which all corrective actions must be completed. A signed and dated copy of the report shall be provided to all parties involved with the land disturbing activity within 24 hours of the inspection. The inspection report will not be considered complete unless it includes all names, signatures and dates.

4.4.2 Structural SWM/BMP Inspections

NREA shall be notified 24 hours prior to installation of structural BMPs and shall be present for installation of BMPs. In addition, inspections shall be made during or immediately following initial installation of erosion and sediment controls and at the completion of the project. Completion of the project is defined as the achievement of final permanent stabilization, not completion of construction.

4.4.3 SWPPP Inspections

Inspection Report for ESC and SWPP at Construction Sites, provided in Attachment F, shall be used on each site inspection visit during construction. All SWPPP measures, including ESC, SWM, and Pollution Prevention shown on the plan shall be inspected. All issues and violations shall be photographed and documented in the *Inspection Report for ESC and SWPP at*

Construction Sites, where required corrective action for each issue or violation shall be specified and a date by which all corrective actions must be completed. Critical areas that require continuous inspections shall also be identified on the site plan. A copy of the completed *Inspection Report for ESC and SWPP at Construction Sites* shall be sent to the Contractor, Project Manager, and other responsible parties.

4.4.4 Project Close-Out Inspection

Project completion is defined as the achievement of final permanent stabilization, verification of final product according to approved plans, submittal of as-built drawings and other project specific requirements deemed necessary at time of application approval. The inspector will determine that final stabilization has been achieved. Once NREA concurs, final project as built and Land Disturbance Permit Notice of Termination are submitted to NREA by the Contractor, the Land Disturbance Permit will be closed out, and the CGP terminated by VDEQ for projects of 1 acre or greater of disturbance. The Contractor is responsible to submit the VSMP General Permit Notice of Termination Form to NREA before the Land Disturbance Permit is closed out. NREA will coordinate with VDEQ for termination the CGP.

4.5 Enforcement

Violations shall be documented in the *Inspection Report for ESC and SWPP at Construction Sites*, including photographs, descriptions, and necessary corrective actions. The applicant's designee or construction contractor shall be responsible for ensuring that corrective action is taken in response to problems and violations listed on the inspection report issued by NREA. All corrective actions to address violations shall be coordinated with NREA.

If an issue is detected during a construction site inspection, NREA provided notification that a Notice of Violation (NOV) or Warning Letter will be issued and/or if the ESC Plan requires revisions. Table 3 lists common construction site violations and the typical MCINCR-MCBQ response.

Table 3. Construction Site Violations

Violation	MCINCR-MCBQ Response
Failure to obtain a VSMP General Permit for Construction Activities	NOV
Failure to obtain NREA approval for E&SC Plan, SWPPP, or SWMP prior to commencement of land disturbing activities	NOV
Failure to install E&SC measures before land disturbance	NOV
Improper maintenance of E&SC structures	1st violation: E-mail warning 2nd violation: E-mail warning 3rd or continuing violations: NOV
Release of any substance causing a reportable spill (including concrete wash down, paint runoff, or excess sediment)	NOV
Absence of an assigned and certified RLD at the site	NOV
Failure to maintain complete inspection records	1st violation: E-mail warning 2nd violation: NOV
Other violations	At the discretion of the inspector

4.6 Revisions and Amendments to Approved Plans

Revisions and amendments to ESC Plans, SWM Plans, SWPPPs, and permits must be submitted in writing to NREA. Formal plan revisions are only necessary when revisions involve activities such as changing disturbance areas, engineered controls or revisions to ESC/SWM measures. All revisions will be reviewed by NREA for conformance with the Application and Design Guidance. Exceptions may be granted for emergency situations. Revisions shall not be considered approved until written notice is provided.

4.7 Variances and Exceptions

A variance or exception may be granted if any requirements are deemed inappropriate or too restrictive for site conditions. Variances and exceptions to regulations must ensure protection of off-site properties and resources from damage. Economic hardship is not a sufficient reason to request a variance or an exception from applicable State or Federal regulations or to the Application and Design Guidance. Variances and exceptions are considered to be project specific and must be approved by NREA.

The applicant shall submit a written request to NREA for a variance or exception with an explanation and description of the specific condition necessitating the request. The request must also include a detailed description of the alternative practice and justification that the practice

meets the intent of the regulation for which the variance is sought. Project specific variance and exception requests shall be accompanied by complete details and documentation, including justification and impacts associated with the request.

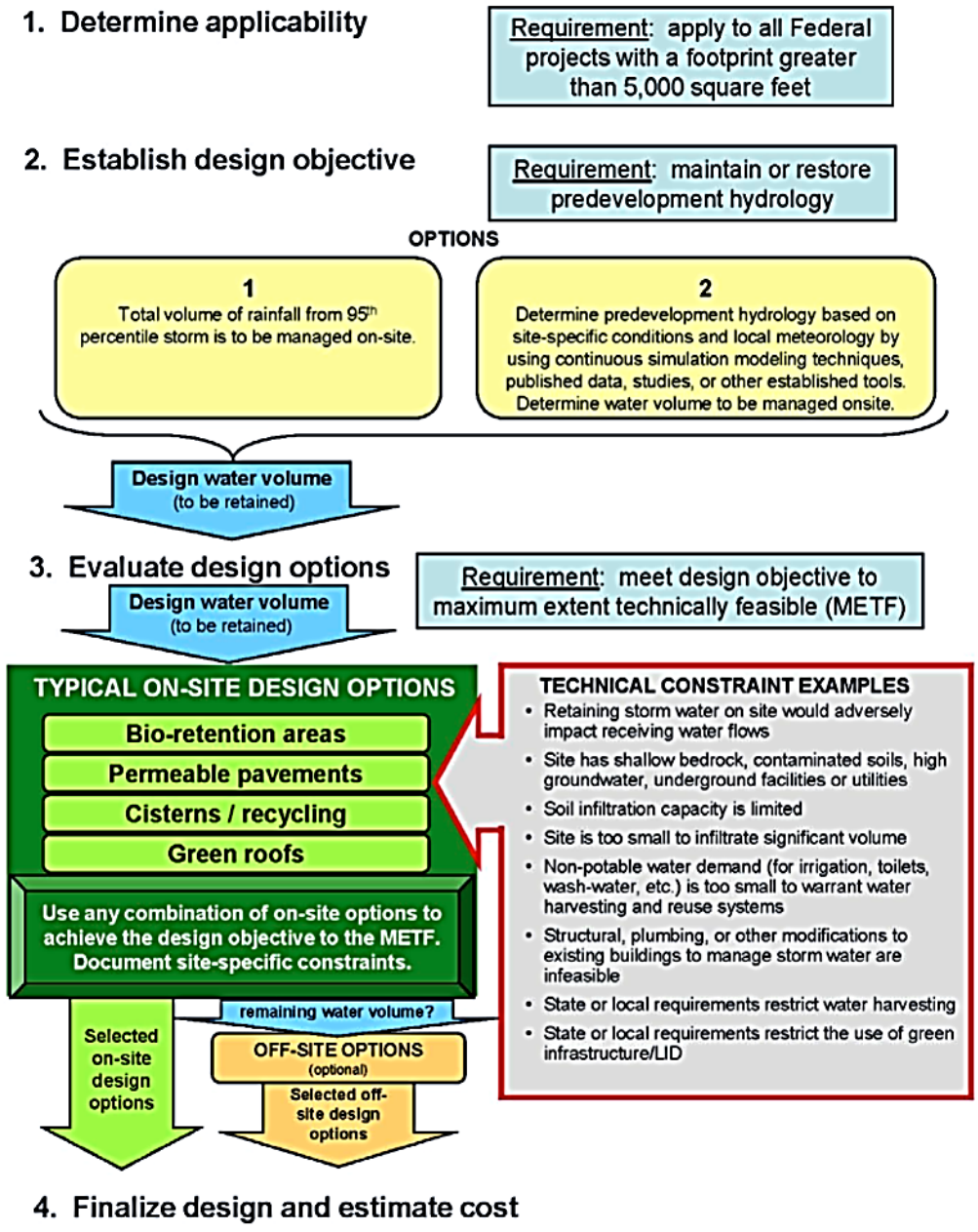
NREA shall respond in writing either approving or disapproving the variance or exception request. All requests shall be considered unapproved until written approval from NREA has been received. A period of 30 days shall be scheduled for this request. All approved variances or exceptions shall be clearly listed in on the ESC Plan and SWM Plans.

Attachment A

EISA Section 438 Implementation Flowchart

This page intentionally left blank.

Flowchart for EISA §438 Implementation



Source: U.S. Environmental Proection Agency, Technical Guidance on Implementing the Stormwater Runoff Reqirements for Federal Projects under Section 438 of the Energy Indenpence and Secrity Act, EPA 841-B-09-001, December 2009

This page intentionally left blank.

Attachment B

Low Impact Development (LID) Design Guidance
What Is It and Do I Need It in My Project?

This page intentionally left blank.

In December 2007, Congress enacted EISA. Section 438 of that legislation establishes strict storm water runoff requirements for Federal development and redevelopment projects. The provision reads as follows:

> "Stormwater runoff requirements for federal development projects. The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

A new way of thinking about storm water has evolved, and new approaches have been developed to eliminate or reduce the amount of water and pollutants that run off a site and ultimately discharged into adjacent water bodies. The new approach has a fundamental notion to employ systems and practices that use or mimic natural processes to 1) infiltrate and recharge, 2) evapotranspiration, and/or 3) harvest and reuse precipitation near to where it falls to earth.

According to the Under Secretary of Defense memorandum dated January 19, 2010, Low Impact Development (LID) is to be utilized to the "most practicable extent possible" beginning FY2011. This offers a new innovative approach to urban storm water management. LID uniformly or strategically integrates storm water controls throughout the urban landscape. It does not rely on the conventional end-of-pipe or in-the–pipe structural methods. The primary goal of LID is to mimic the predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff.

The Department of Navy policy sets a goal of no net increase in storm water volume and sediment or nutrient loading from all construction sites. No net increase may be achieved through use of LID BMPs.

Incorporation of LID BMPs will be used to meet requirements of Section 438 of EISA. The design objective of LID is to maintain or restore the hydrology of the site prior to the planned project being constructed with regard to the temperature, rate, volume and duration of flow. For further guidance can be found at the Hydrology and Low Impact Development webpage at: https://mrsi.erdc.dren.mil/sustain/cx/lid

What is LID?

LID is a storm water management strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfill environmental regulatory requirements. LID employs a variety of natural and engineered features that reduce the rate of runoff, filter out pollutants, and facilitate the infiltration of water into the ground. By reducing water pollution and increasing groundwater recharge, LID helps to improve the quality of receiving surface waters and stabilize the flow rates of nearby streams. LID

incorporates a set of overall site design strategies as well as highly localized, small-scale, decentralized source control techniques known as Integrated Management Practices (IMPs). IMPs may be integrated into buildings, infrastructure, or landscape design. Rather than collecting runoff in piped or channelized networks and controlling the flow downstream in a large storm water management facility, LID takes a decentralized approach that disperses flows and manages runoff closer to where it originates. Because LID embraces a variety of useful techniques for controlling runoff, designs can be customized according to local regulatory and resource protection requirements, as well as site constraints. Figures located in Appendix D provide illustrations of key elements in LID. New projects, redevelopment projects, and capital improvement projects can all be viewed as candidates for implementation of LID.

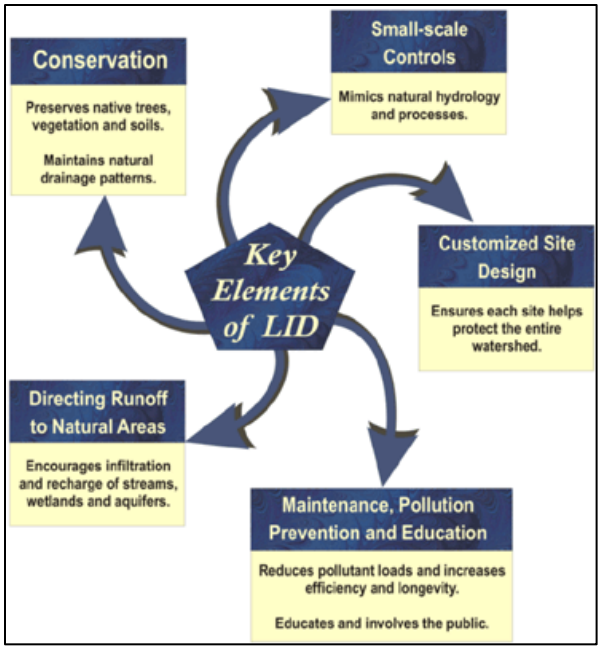


Figure 1. Aspects of LID that should be kept in mind when designing your LID features.

LID employs a variety of different techniques. The following is a list of basic IMPs that are available.

- Bioretention: Vegetated depressions that collect runoff and facilitate its infiltration into the ground.
- Dry Wells: Gravel-or stoned-filled pits that are located to catch water from roof downspouts or paved areas.
- Filter Strips: Bands of dense vegetation planted immediately downstream of a runoff source designed to filter runoff before entering a receiving structure or water body.
- Grassed Swales: Shallow channels lined with grass and used to convey and store runoff.
- Infiltration Trenches: Trenches filled with porous media such as bioretention material, sand, or aggregate that collect runoff and infiltrate it into the ground.
- Inlet Pollution Removal Devices: Small storm water treatment systems that are installed below grade at the edge of paved areas and trap or filter pollutants in runoff before it enters the storm drain.
- Permeable Pavement: Asphalt or concrete rendered porous by the aggregate structure.
- Permeable Pavers: Manufactured paving stones containing spaces where water can penetrate into the porous media placed underneath.

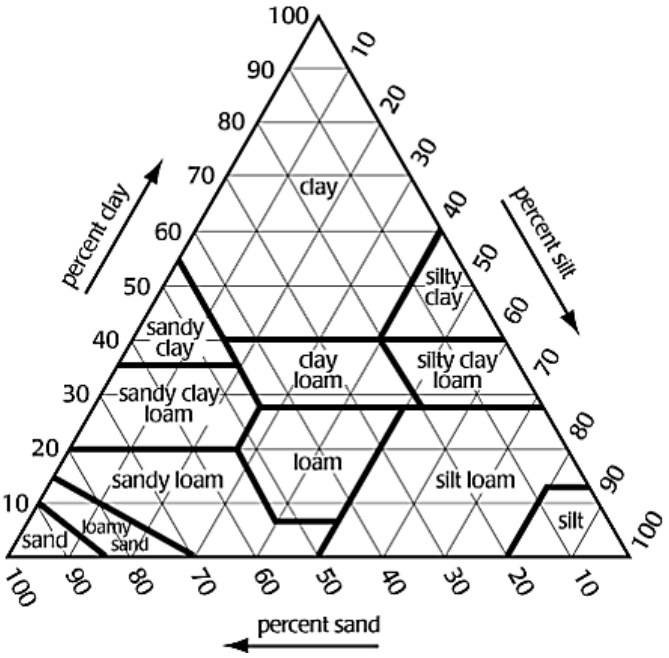
- Rain Barrels and Cisterns: Containers of various sizes that store the runoff delivered through building downspouts. Rain barrels are generally smaller structures, located above ground. Cisterns are larger, are often buried underground, and may be connected to the building's plumbing or irrigation system.
- Soil Amendments: Minerals and organic material added to soil to increase its capacity for absorbing moisture and sustaining vegetation.
- Tree Box Filters: Curbside containers placed below grade, covered with a grate, filled with filter media and planted with a tree in the center.
- Vegetated Buffers: Natural or man-made vegetated areas adjacent to a water body, providing erosion control, filtering capability, and habitat.
- Vegetated Roofs: Impermeable roof membranes overlaid with a lightweight planting mix with a high infiltration rate and vegetated with plants tolerant of heat, drought, and periodic inundation.

Determining What LID Features Are Best Suited for Your Project Site

The following 4-step process will assist the designer/developer in identifying the LID practices best suited for their site.

STEP ONE:

Determine what type of soil, in general, your site consists of (i.e. sand, clay, etc.). You can use the Texture Triangle below to determine the general percentages of sand, silt, and clay on your site. For example, if it is determined that you have a heavy Clay texture on your site, you can look at the texture triangle and see that a heavy Clay (red dot on texture triangle) is approximately 80% Clay, 10% Sand and 10% Silt.



STEP TWO:

Once you have a general idea of the soil makeup, use the Soils and Particle Size Conversion Cheat below to determine the size of particle you are dealing with.

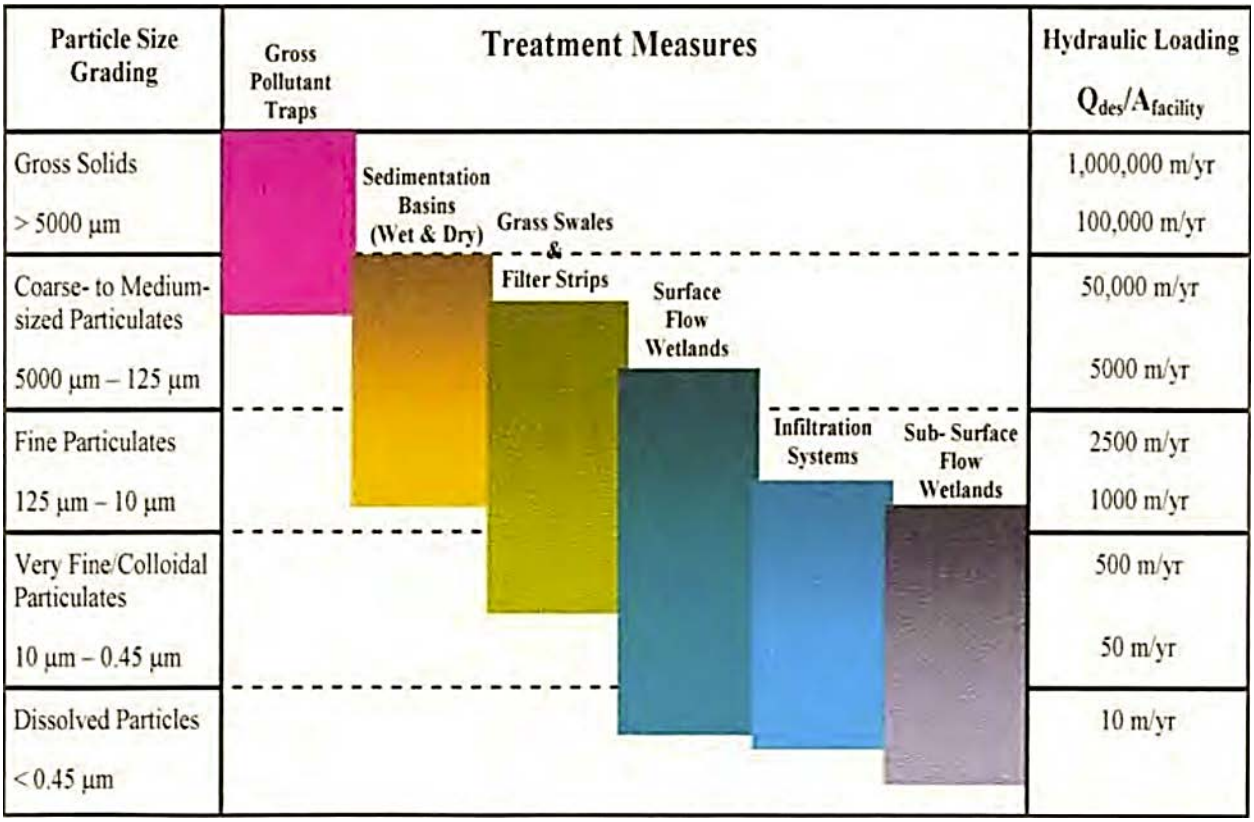
Soils and Particle Size Conversion Cheat Sheet		
Particle	**Diameter**	**Conversion**
clay	less than 0.002 mm	less than 2 µm
silt	0.002 mm - 0.05 mm	2µm - 50 µm
sand	0.05 mm - 2.00 mm	50 µm - 2000 µm
fine pebbles	2.00 mm - 5.00 mm	2000 µm - 5000 µm
medium pebbles	5.00mm - 20.00 mm	5000 µm - 20000 µm
coarse pebbles	20.00 mm - 75.00 mm	20000 µm - 75000µm

Looking at the chart, a general Clay material consists of particles 0.002 mm or less than 2 µm.

STEP THREE:

With this knowledge, you can refer to Removal Effectiveness of LID Features Chart (see below) to determine which type of LID feature(s) would work best on your site.

Removal Effectiveness of LID Features Chart



Using this chart, you can figure that on your site, the most effective LID Features would be some sort of Surface Flow Wetland, Infiltration System, and/or a Sub-surface Flow Wetland.

STEP FOUR:

You can then refer to the following charts (Functions of LID Features and LID Uses and Other Info.) to determine if the LID feature you have selected will accomplish your goal(s) for the site.

Functions of LID Features

Feature	Effect or Function				
	SlowerRunoff	Infiltration	Retention	Detention	WaterQualityControl
Soil Amendments		X			
Bioretention		X	X	X	X
Dry Wells		X	X		X
Filter Strips	X				X
Vegetated Buffers	X				X
Grassed Swales	X				X
Infiltration Trenches		X			X
Inlet Devices					X
Rain Barrels			X		
Cisterns			X		
Tree Box Filters					X
Vegetated Roofs	X			X	X
Permeable Pavers		X			X
Permeable Pavement	X	X			X

LID Uses and Other Information

LID Feature	Appropriate Uses	Estimated Cost	Maint. Issues	Corrective Actions
Soil Amendments	- increase soil's infiltration capacity - help reduce runoff from the site - soils become more effective at maintaining water quality	Increased upfront costs, may be partially offset by reductions in the required volume of stormwater ponds and other detention or retention practices	- may be inspected as part of the E&SC plan, usually at completion. -routine soil infiltration rate analysis of amended soils in potential problem areas is recommended.	- extensive mechanical aeration and/or disking of organic amendments to depth of several inches and site restabilization
Bioretention	Median Strips Parking lot islands Swales	$107 and $430 per square meter ($10 and $40 per square foot)	biannual evaluation of the trees and shrubs, subsequent removal of any dead/diseased vegetation	replace dead vegetation, soil pH regulation, erosion repair, mulch replenishment, unclogging the underdrain, and repairing overflow structures
Dry Wells	Small impervious areas Runoff from driveways Runoff from downspouts	Site Specific (i.e. cost of excavation, price of gravel, depth of well)	Clear debris from inlet, drain, gutter that could clog downspout.	Clogging of gravel over long period of time if extensive loading fine grained sediment is present
Filter Strips	Treating runoff from roads and highways Roof Downspouts Very small parking lots or pervious surfaces Fringe of stream buffers Pretreatment for structural purposes	Approximately 30¢ per square foot for seed or 70¢ per square foot for sod	Mowing, irrigation, and weeding. Inspection of filter strips at least twice annually for erosion or damage to vegetation and additional inspection after periods of heavy runoff.	The need for litter removal should be determined through periodic inspection, but litter should always be removed prior to mowing

LID Feature	Appropriate Uses	Estimated Cost	Maint. Issues	Corrective Actions
Vegetated Buffers	Along creeks, streams, rivers and other waterways	- Forest buffer costs range between $218 and $729 per acre to plant and maintain. - Grass buffers costs between $168 to $400 per acre to plant and maintain	Inspect annually, and after heavy rain events for evidence of sediment deposition, erosion, and flow channel development.	Self maintaning if sized and constructed properly
Grassed Swales	manage runoff from drainage areas that are less than 10 acres in size, with slopes no greater than 5 percent.	approximately $0.50 per square foot (includes design costs)	periodic mowing, weed control, watering during drought conditions, reseeding of bare areas, and clearing of debris and blockages.	Remove cuttings from the channel; Accumulated sediment removed to avoid concentrated flows; The grass should be thick and reseeded as necessary.
Infiltration Trenches	used in conjunction with another stormwater management device, such as a detention pond pretreated with other devices such as grit chambers, water quality inlets, sediment traps, swales, and vegetated filter strips	site and design specific	Prevent clogging; A thorough annual inspection should include monitoring of the observation well to confirm that the trench is draining properly	Remove stone and sediment that has clogged the system
Inlet Devices (Hydrodynamic Separators)	Areas with limited land availability	Capital costs can range from $2,300 to $40,000 per precast unit	Inspections can be scheduled according to observed rates of sediment accumulation, remove sediment by pump or vac truck	Removal or replacement of failed device

LID Feature	Appropriate Uses	Estimated Cost	Maint. Issues	Corrective Actions
Rain Barrels	Stores rooftop runoff from downspouts in barrels for later re-use	approx. $120/barrel	minimal maintenance; inspect screens for clogging	repair/replace sceens as needed; replace barrel as needed
Cisterns	Stores rooftop runoff from downspouts in larger volumes than barrels in underground tanks for later re-use	vary by size	minimal maintenance; inspect screens for clogging	repair/replace sceens as needed; replace tank as needed
Tree Box Filters	Satisfy regulatory requirements for new development protect and restore streams retrofit existing urban areas protect reservoir watersheds	site and design specific	Regular Removal of trash Watering of plants during severe drought	Plants may be replaced because they have overgrown the filter or because of environmental stress
Vegetated Roofs	help control nitrogen pollution in stormwater runoff	avg between $161-$215/sq m ($15-$20/sq ft)	minimal maintenance; tend to plants and shrubs as normal	Repair localized problems
Permeable Pavers	Used in place of conventional asphalt or concrete	$54-$108/sq m ($5.00-$10.00/sq ft.); may eliminate need for underground stormwater systems	sweeping, vacuuming or low pressure washing, adding aggregate as needed. DO NOT PLOW	Replace individual blocks as needed
Permeable Pavement	Used in place of conventional asphalt or concrete	Permeable Asphalt - $5-$11/sq m ($0.50 to $1.00 per square foot Permeable Concrete - $22-$70/sq m($2.00-$6.50/sq ft.)	sweeping, vacuuming or low pressure washing, adding aggregate as needed.	With Proper maintenance, no additional actions needed other than normal wear & tear repairs.

LID Definitions and Diagrams

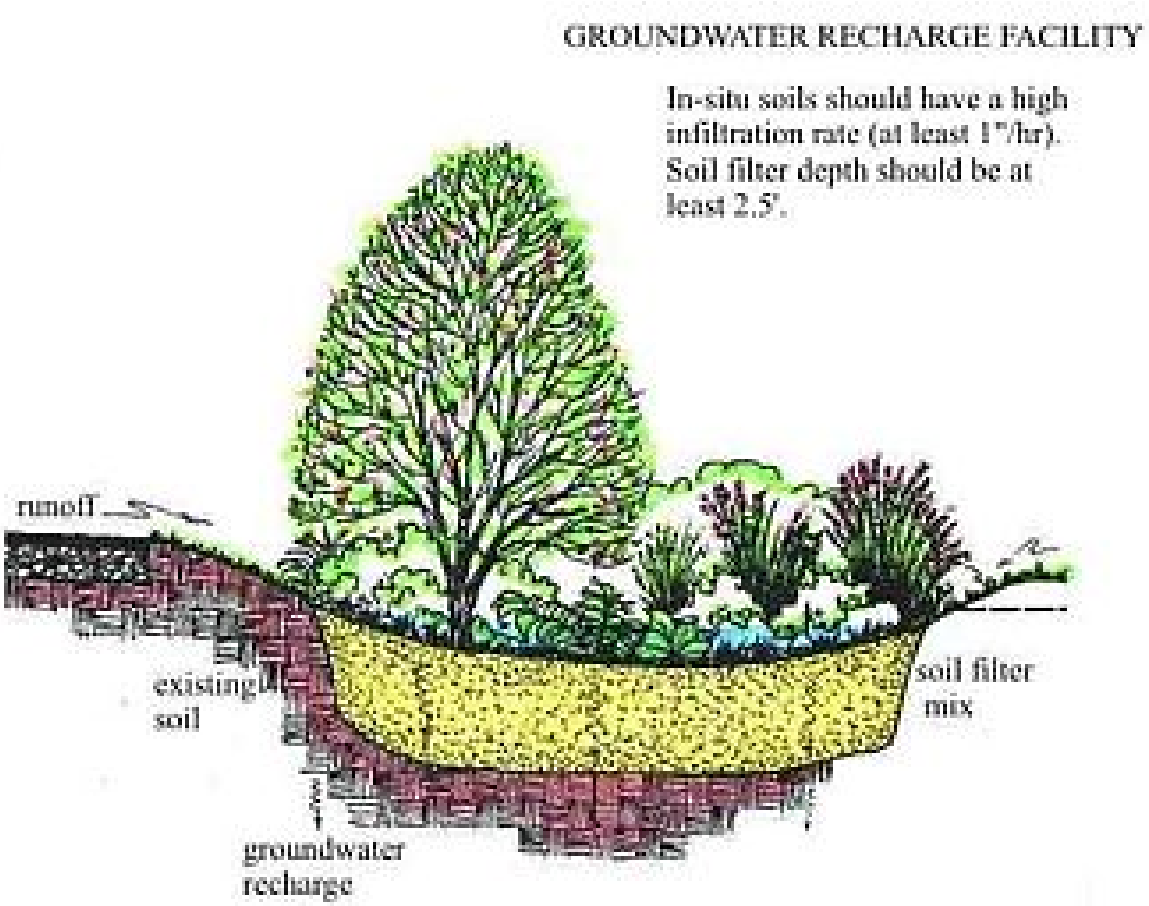
For additional reference and visual aide, see below for definitions of the basic LID features and diagrams to illustrate the basic concept/design of each feature. Remember, the following diagrams are not the only way possible to design the features. The guide is designed to be a tool to illustrate the feature, not be the design guide.

SOIL AMENDMENTS:

Soil amendments, which include both soil conditioners and fertilizers, make the soil more suitable for the growth of plants and increase water retention capabilities. The use of soil amendments is conditional on their compatibility with existing vegetation, particularly native plants.

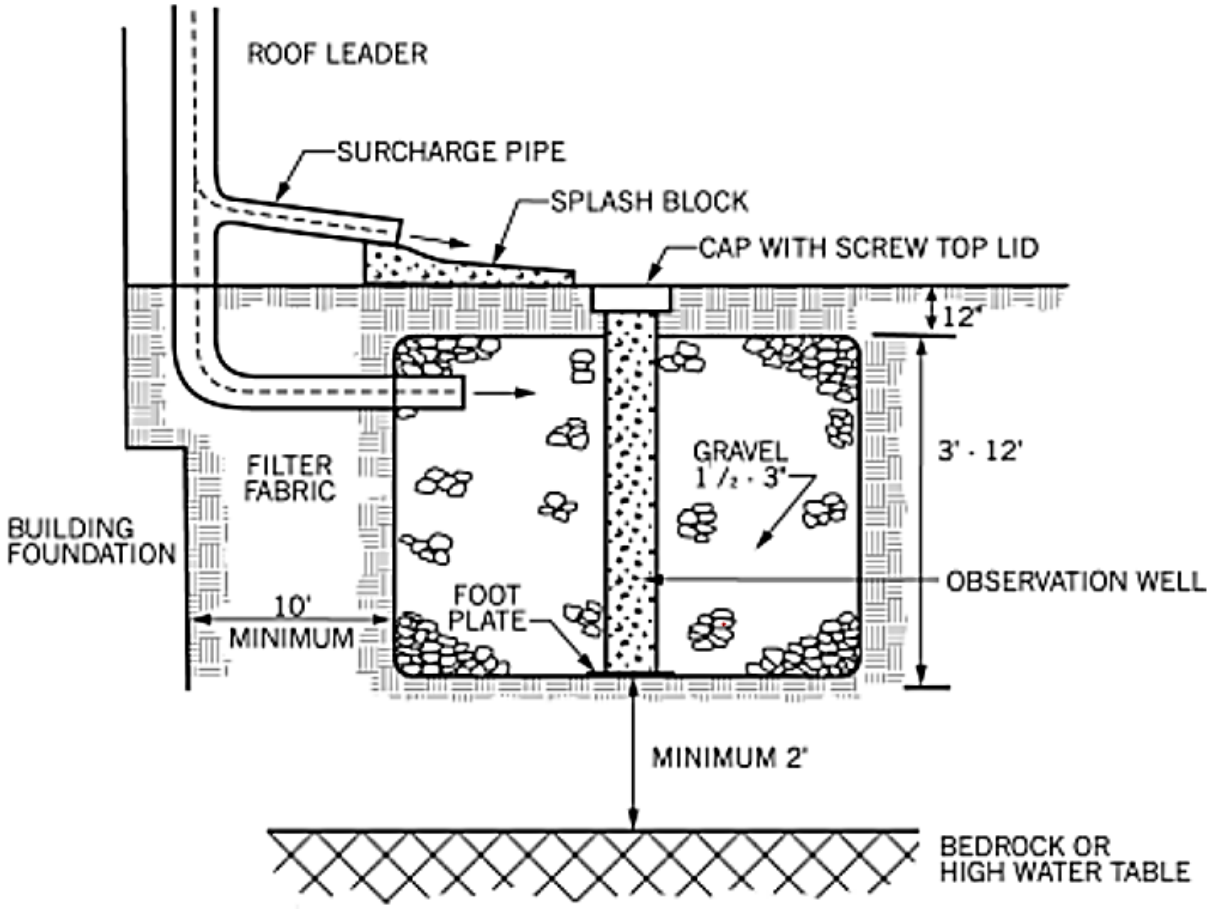
BIORENTION:

Bioretention areas typically have porous backfill under the vegetated surface, and an under drain that encourages infiltration and water quality filtering while avoiding extended ponding.



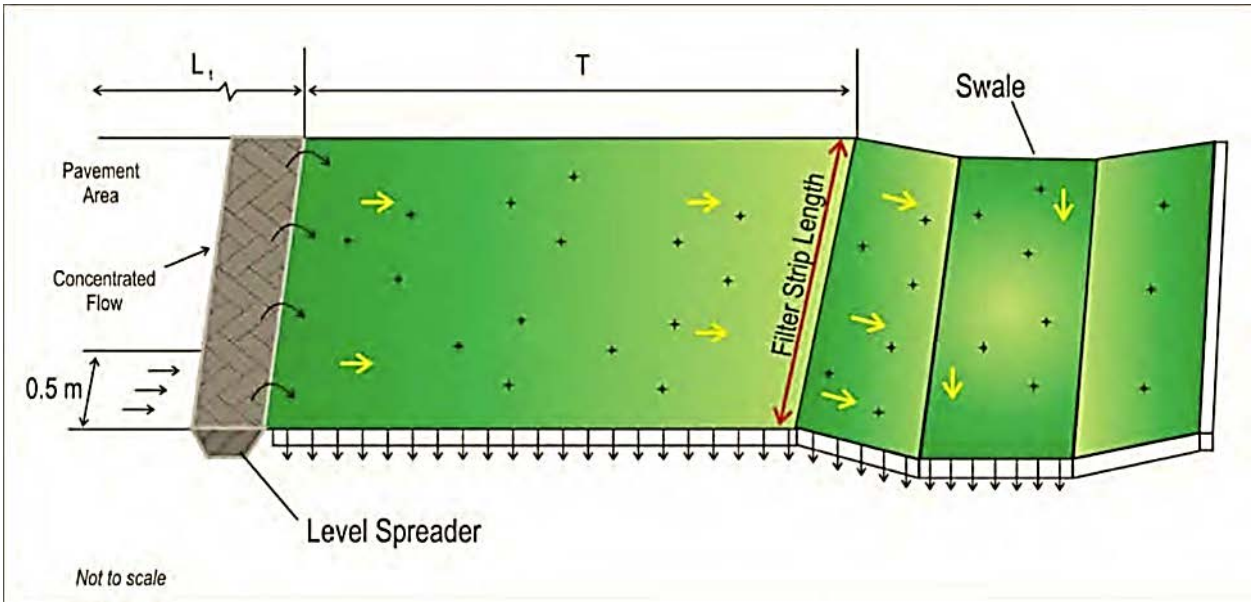
DRY WELLS:

A dry well typically consists of a pit filled with aggregate such as gravel or stone and is located to catch water from roof downspouts or paved areas.



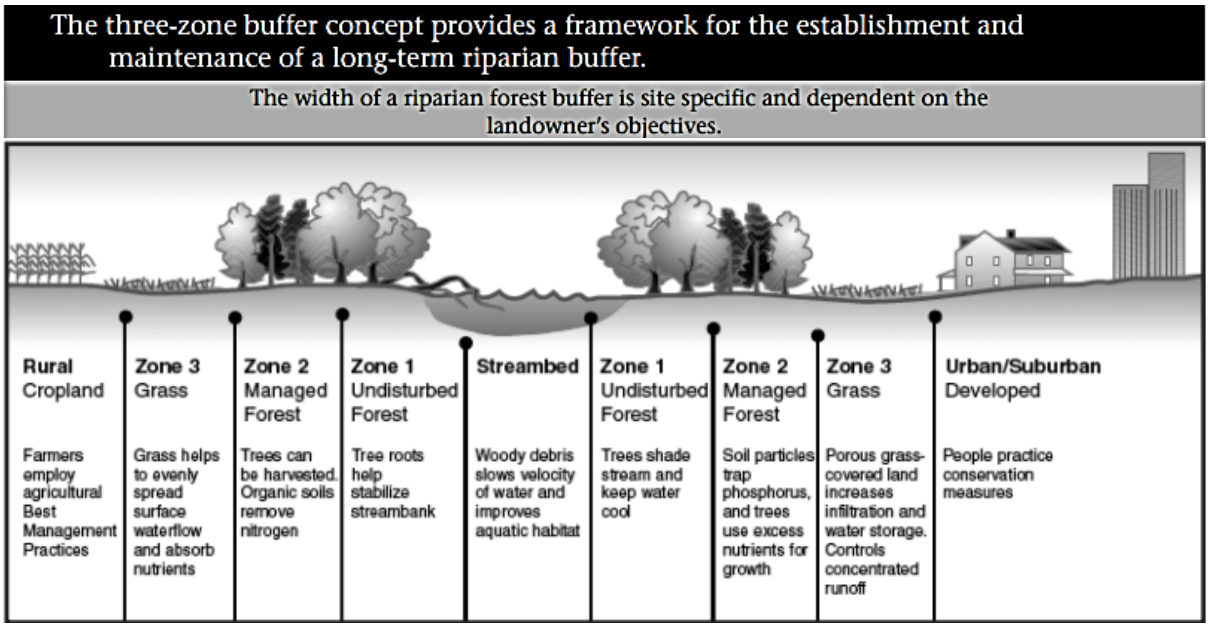
FILTER STRIPS:

Are bands of dense vegetation planted downstream of a runoff source.



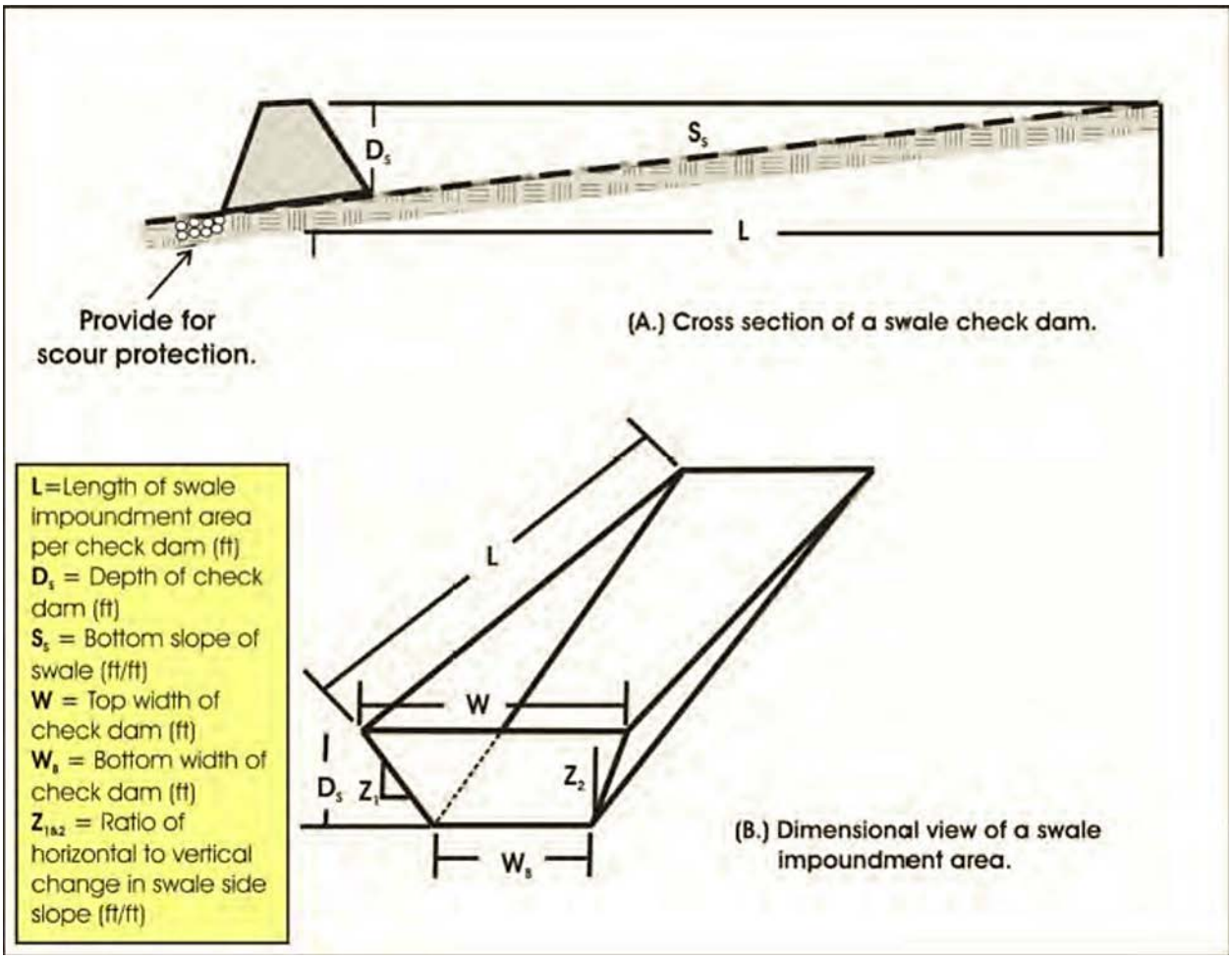
VEGETATED BUFFERS:

Vegetated buffers trap and filter sediments, nutrients, and chemicals from surface runoff and shallow groundwater.



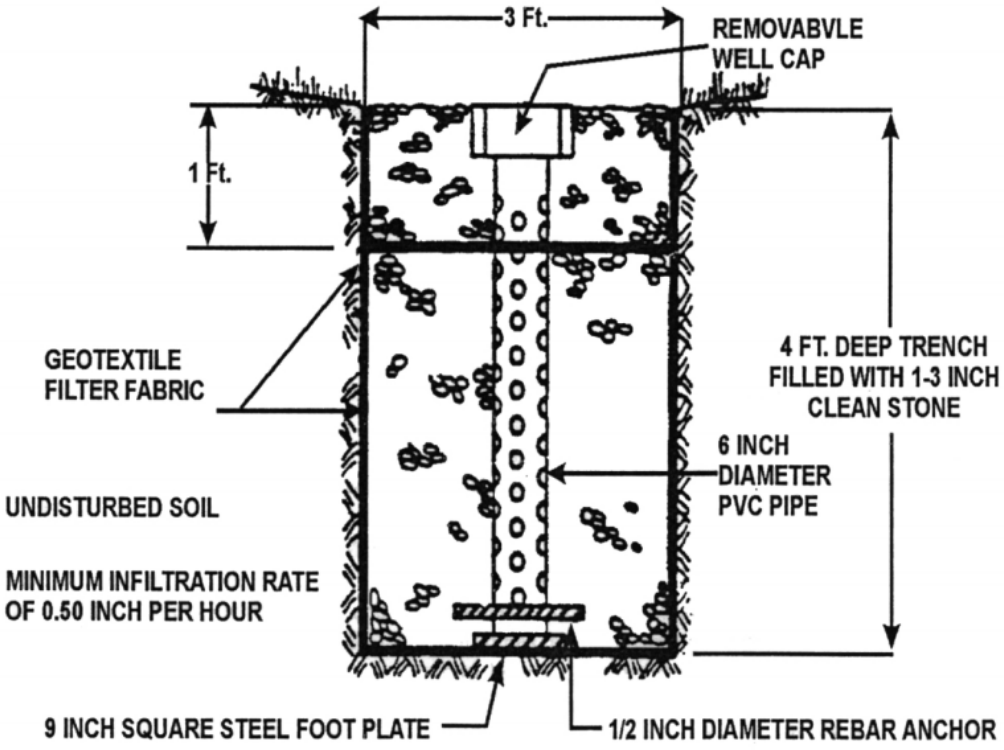
GRASSED SWALES:

Are shallow grass-covered hydraulic conveyances that help to slow runoff and facilitate infiltration.



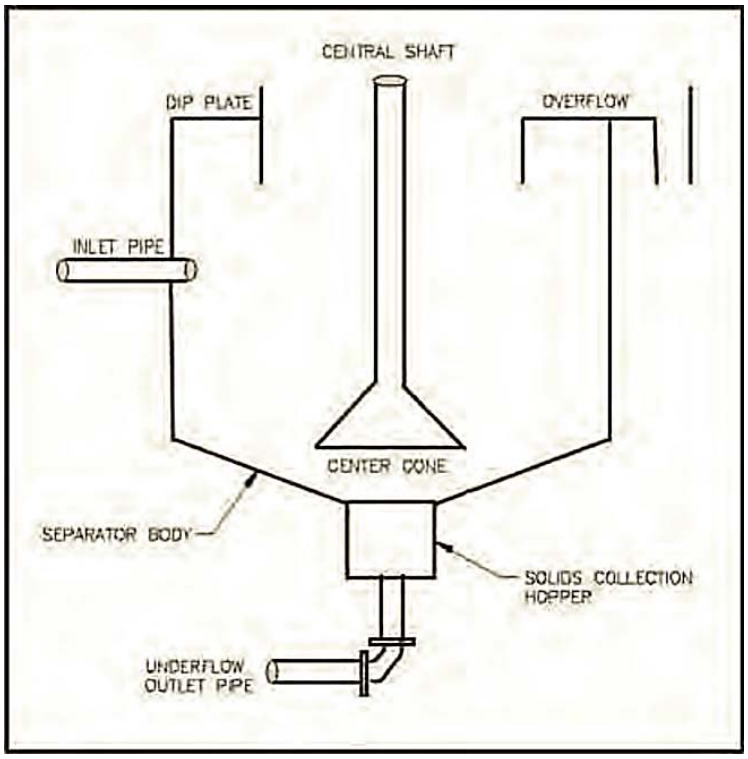
INFILTRATION TRENCHES:

Infiltration trenches are trenches that have been back-filled with stone. These trenches collect runoff during a storm event and release it into the soil by infiltration.



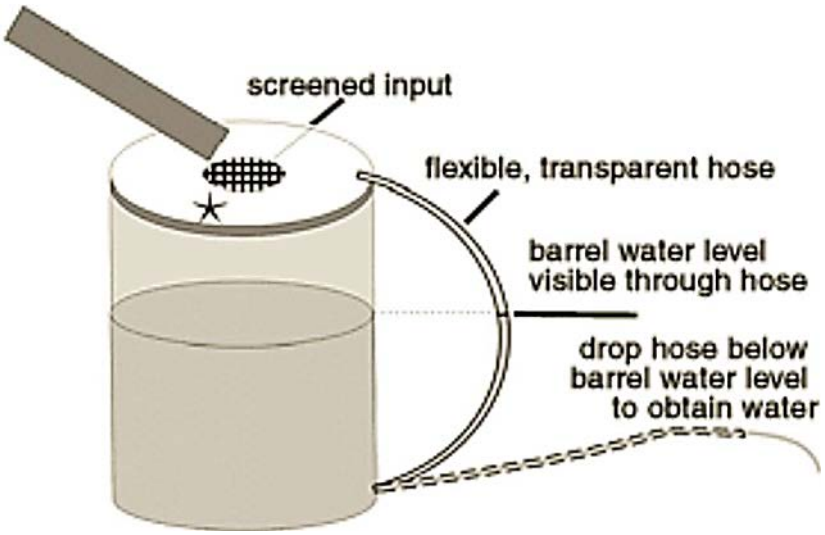
INLET DEVICES (A.K.A. HYDRODYNAMIC SEPARATORS):

Inlet devices are flow through structures with a settling or separation unit to remove sediments and other stormwater pollutants.



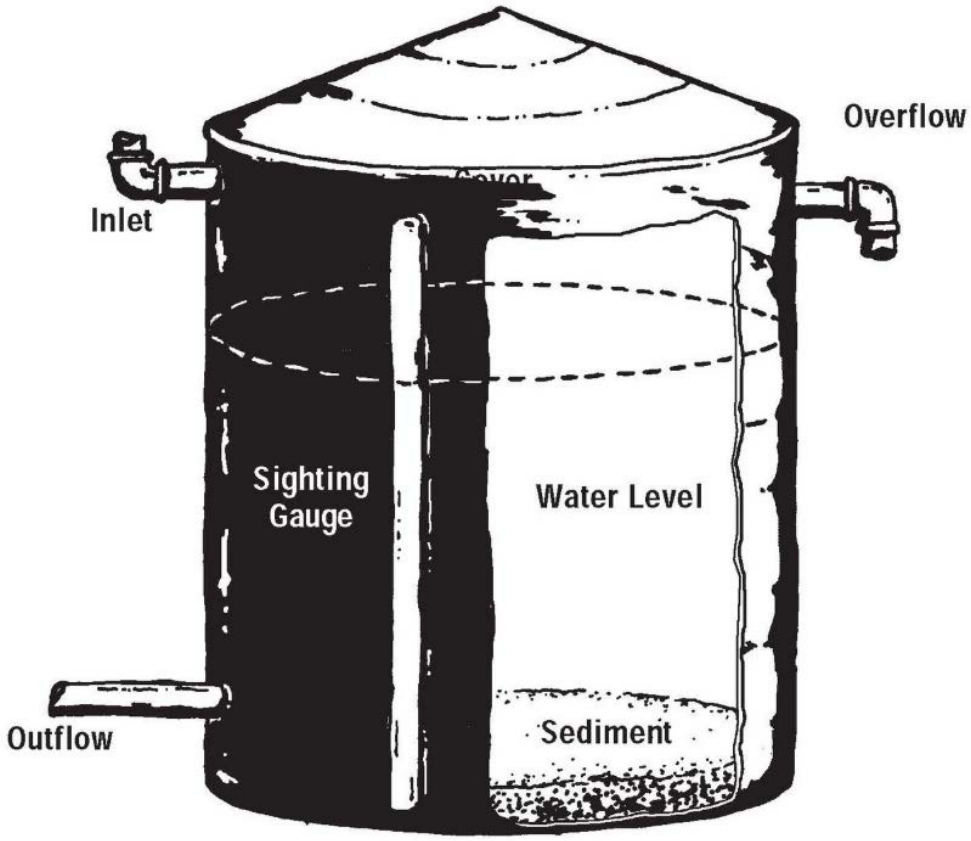
RAIN BARRELS:

Rain barrels are placed outside of a building at roof downspouts to store rooftop runoff for later reuse in lawn and garden watering.



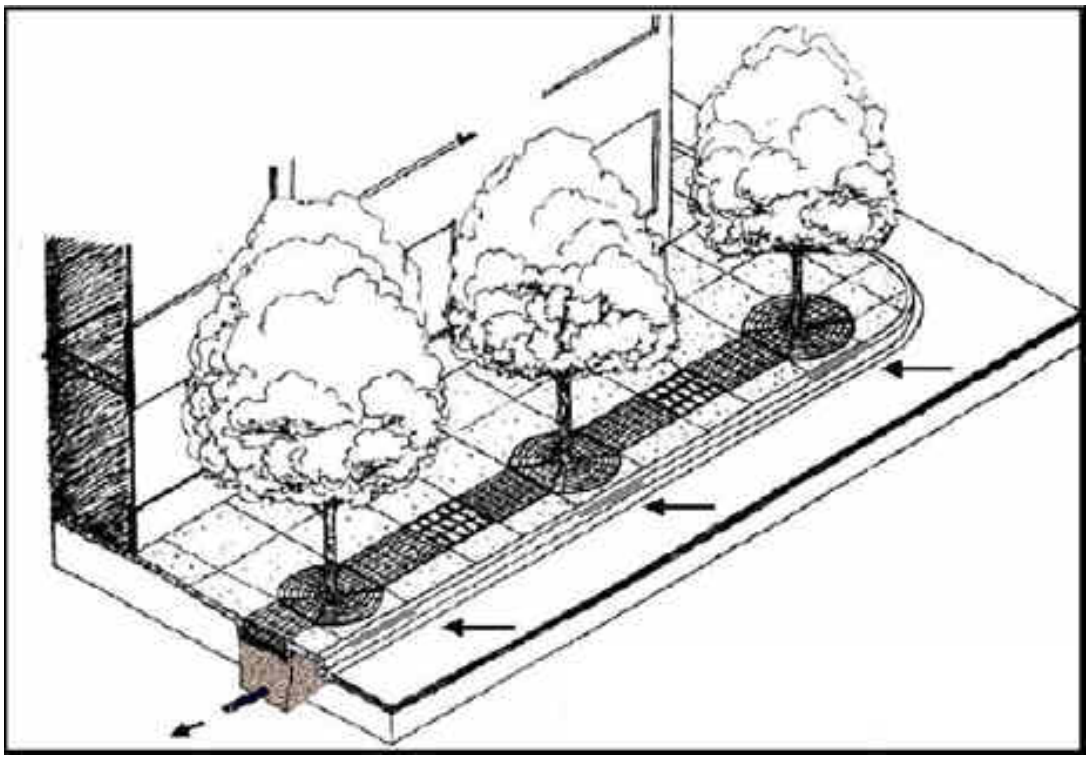
CISTERNS:

Also collect rooftop runoff but store the water in significantly larger volumes in manufactured tanks or built underground storage areas. Both cisterns and rain barrels can be implemented without the use of pumping devices, instead relying on gravity flow.



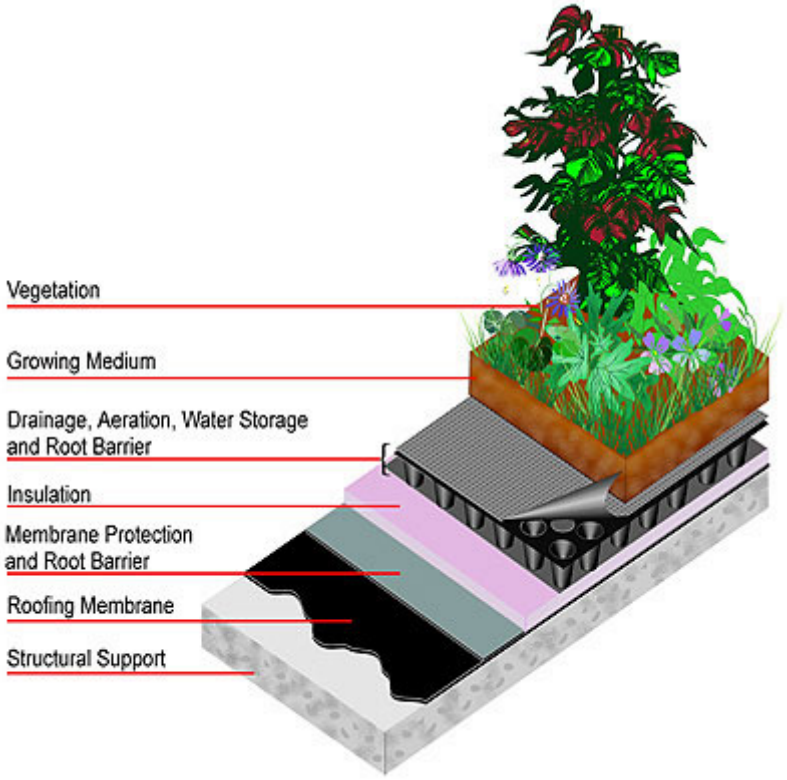
TREE BOX FILTERS:

Tree box filters are in-ground containers typically containing street trees in urban areas. These filters can be very effective at controlling runoff water quality, especially when numerous units are distributed throughout a site. Runoff is directed to the tree box, where it is filtered by vegetation and soil before entering a catch basin.



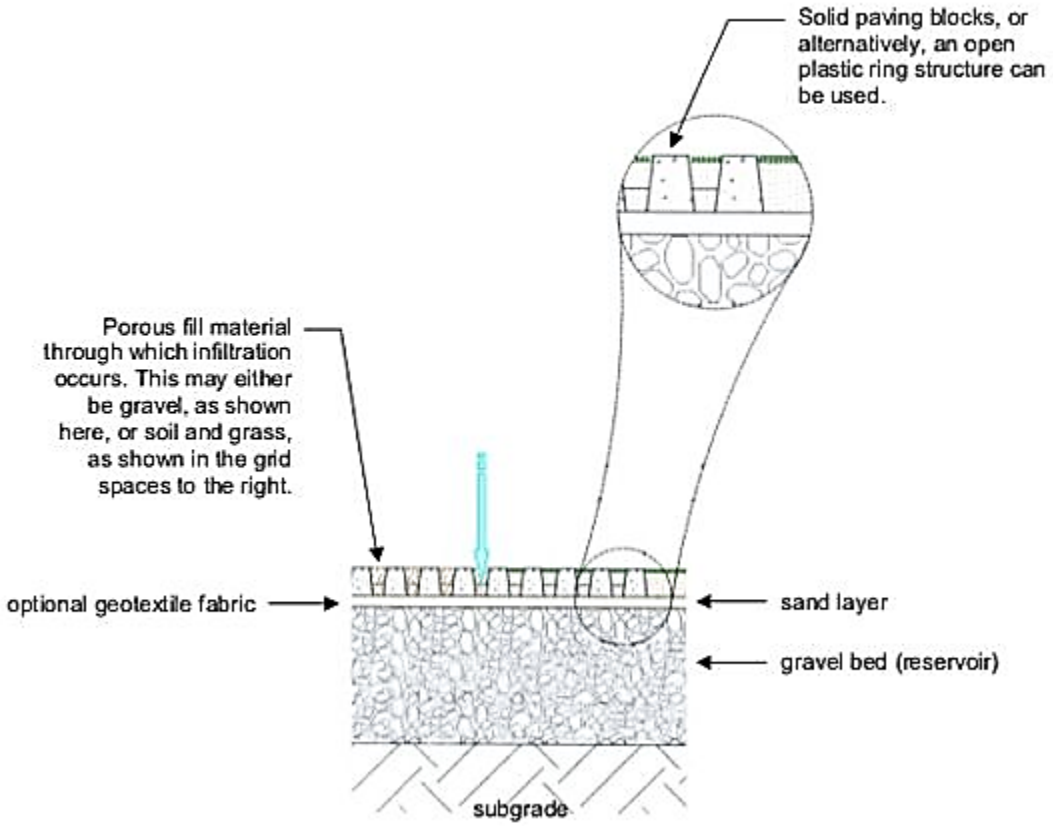
VEGETATED ROOFS:

Vegetated roofs, also known as green roofs, eco-roofs or nature roofs, are structural components that help to mitigate the effects of urbanization on water quality by filtering, absorbing or detaining rainfall.



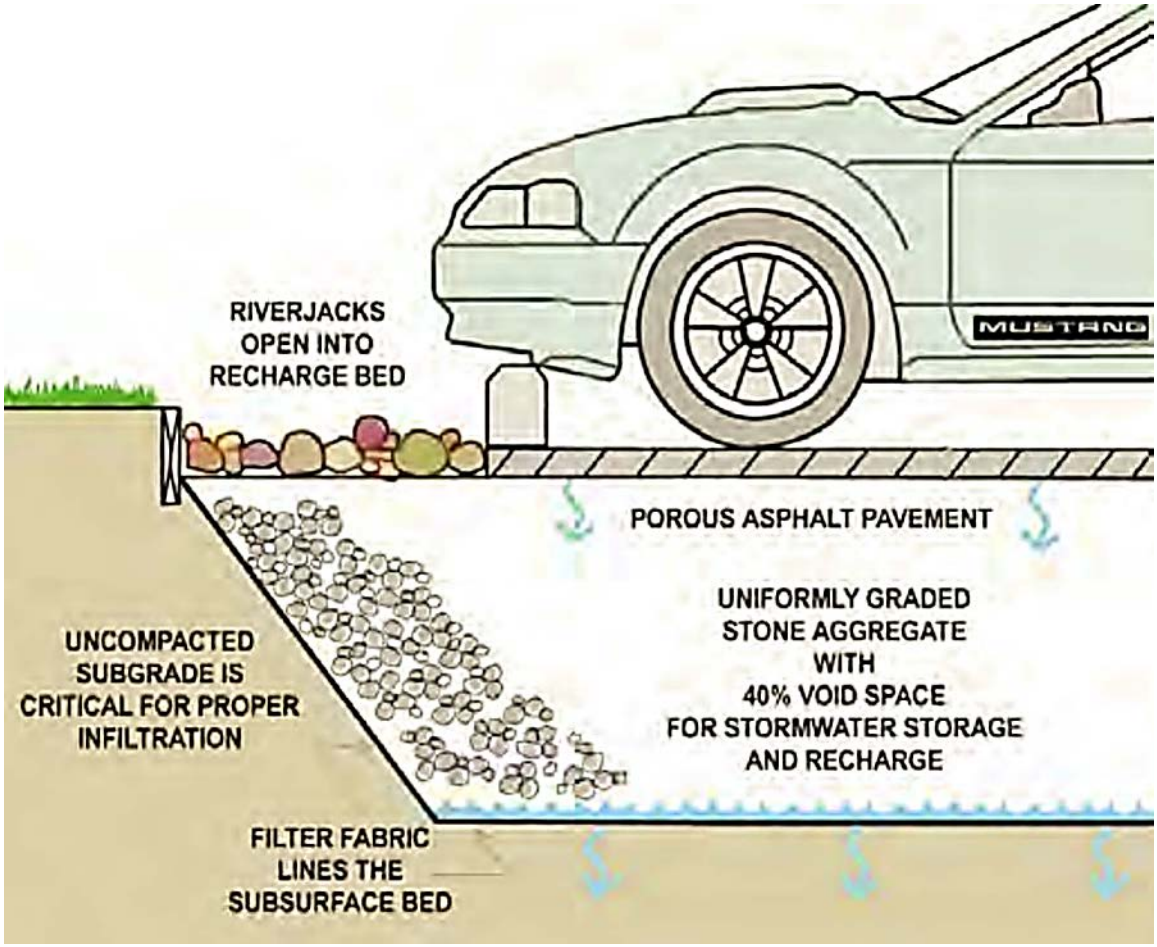
PERMEABLE PAVERS:

Permeable pavers allow water to seep through regularly interspersed void areas in order to reduce runoff and associated pollutants.



PERMEABLE PAVEMENT:

Can be either asphalt or concrete. As with permeable pavers, water is allowed to pass through voids and infiltrate into the underlying soil. Permeable pavement lacks most of the fine material found in conventional pavements, allowing water to flow through voids in the aggregate. (By contrast, paver blocks themselves are not necessarily permeable; infiltration occurs in the gaps between the blocks.) A layer of clean, uniformly graded gravel lies beneath the pavement, and geotextile separates this stone bed from the soil below. Runoff from the paved surface and adjacent impervious areas slowly passes through the gravel layer, which also may serve as a storage area. Permeable pavement has the same structural properties as conventional pavement. Environmental benefits are similar to other IMPs: reduction of runoff volume and rate, pollutant filtering, flow dispersion, and groundwater recharge. In addition, permeable pavements reduce the footprint of a site's impervious area.



This page intentionally left blank.

Attachment C

Minimum Standards for Erosion and Sediment Control

This page intentionally left blank.

Minimum Standard	Summary Description and Purpose of Minimum Standard
MS-1	Addresses permanent and temporary soil stabilization within 7 days when site is at final grade and on sites that are not at final grade but will remain dormant for more than 14 days.
MS-2	Soil Stockpiles and borrow areas must be stabilized or protected with sediment trapping measures. This includes off site/remote areas. According to MS-1, piles dormant more than 14 days should be temporary seeded.
MS-3	Permanent Stabilization must be applied to areas not otherwise permanently stabilized. Ground cover needs to be uniform, mature enough to survive and inhibit erosion.
MS-4	Perimeter controls (sediment barriers, sediment basins, traps, perimeter dikes, etc.) must be installed as first measures and shall be made functional before upslope activity occurs.
MS-5	Stabilization practice shall be applied immediately to earthen structures (i.e. dams, dikes & diversions) after installation.
MS-6	Sediment traps and basins shall be designed and constructed based on the total drainage area they serve.
MS-7	Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion.
MS-8	Concentrated runoff shall not flow down a cut or fill slope unless contained in an adequate temporary or permanent channel, flume or slope drain structure.
MS-9	Where water seeps from a slope face, adequate drainage or other protection shall be provided.
MS-10	All storm sewer inlets made operable during construction must be protected so sediment laden water cannot enter without first being filtered.
MS-11	Before any newly constructed stormwater conveyance channel can be made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.
MS-12	Minimize encroachment to live water course. Non-erodible materials shall be used for constructing causeways and coffer dams; earthen material may be used if armored by non-erodible material.
MS-13	When construction vehicles must cross a live water course more than twice in a 6-month period, a temporary stream crossing of non-erodible material must be provided.
MS-14	When working in a live water course, all applicable Federal, State and local regulations pertaining to the activity must be met.
MS-15	The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse has been completed.
MS-16	Underground utility lines can have no more than 500 feet open trench and need to be stabilized as soon as possible. All dewatering operations shall be filtered before water leaves the site.
MS-17	Provisions shall be made to minimize the transport of sediment from the site onto paved surfaces.
MS-18	All temporary ESC measures shall be removed within 30 days of achieving final stabilization or when the measures are no longer needed.
MS-19	Stormwater standard: Protect properties and waterways downstream of a land disturbing activity from erosion and sediment deposition due to increases in peak stormwater runoff.

This page intentionally left blank.

Attachment D

ESC Plan Review Checklist

SWM Plan Review Checklist

Storm Water Pollution Prevention Plan Review Checklist

LID Plan Review Checklist

WQIA Form

This page intentionally left blank

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

CHECKLIST FOR E&SC PLAN REVIEW FOR CONSTRUCTION SITES

Construction Project Name: Submission Date:

Reviewer: Title: Review Date:

A. PROJECT NARRATIVE REQUIREMENTS

	YES	NO	N/A
1. **Proper Certifications provided:**			
a. Is an RLD named and valid certificate provided?	☐	☐	☐
b. Are plans stamped by a Certified Professional Engineer?	☐	☐	☐
2. **Project Description:**			
a. Nature and purpose of land disturbance described?	☐	☐	☐
b. Land area (in acres) to be disturbed specified in the narrative?	☐	☐	☐
3. **Existing Site Conditions:** Description of existing topography, drainage, and vegetation provided?	☐	☐	☐
4. **Adjacent Areas:** Description of neighboring areas which might be affected by the land disturbance provided?	☐	☐	☐
5. **Off-Site Areas:** Description of any off-site land disturbing activities (borrow pit, waste, surplus, etc.) provided?	☐	☐	☐
6. **Soils:** Brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure provided?	☐	☐	☐
7. **Critical Areas:** Description of areas on the site that are potential erosion problems (steep slopes, channels, underground springs) provided?	☐	☐	☐
8. **Erosion and Sedimentation Control Measures:**			
a. Current edition of the VA E&SC Law and Regulations, and the Va E&SC Handbook cited?	☐	☐	☐
b. Enumerated description of methods which will be used to control E&SC on the site provided?	☐	☐	☐
c. Cited the maintenance and use of current VESCHB & approved E&SC plan at job site?	☐	☐	☐
9. **Permanent Stabilization:**			
a. Brief description, including specifications, of how the site will be stabilized provided?	☐	☐	☐
b. Statement describing permanent stabilization as 90% uniform growth on entire site, ability to inhibit erosion and mature enough to survive, including two (2) – 3 inch cuttings	☐	☐	☐
10. **Stormwater Runoff Considerations:**			
a. Increase of peak runoff resulting from site development determined?	☐	☐	☐
b. Flooding or downstream channel degradation as a result of runoff increase determined?	☐	☐	☐
c. Description of strategy used to control stormwater runoff provided?	☐	☐	☐
11. **Calculations:**			
a. Calculations for pre- and post-development runoff provided?	☐	☐	☐
b. Detailed calculations for the design of temp sediment basins, perm storm detention basins, diversions, channels, etc. provided?	☐	☐	☐
12. **Maintenance:** A plan or schedule of regular inspections and repair of E&SC devices described? Plan should stipulate that all E&SC devices shall be inspected every 14 calendar days and within 48 hours of a rainfall event of 0.5" or greater	☐	☐	☐

B. SITE PLAN REQUIREMENTS

	YES	NO	N/A
1. **Vicinity Map:**			
a. Is a small map showing the site location in relation to surrounding area included in the drawings?	☐	☐	☐
b. Land area (in acres) to be disturbed included in the drawings?	☐	☐	☐
2. **North Arrow:** Is North arrow shown on all pages of E&SC drawings?	☐	☐	☐
3. **Limits of Clearing and Grading:** Are areas to be cleared and/or graded marked?	☐	☐	☐

B. SITE PLAN REQUIREMENTS (Continued)

	YES	NO	N/A
4. **Existing Contours:**			
a. Existing contours on site shown?	☐	☐	☐
b. Existing contours at offsite areas which will affected by the land disturbance shown?	☐	☐	☐
5. **Final Contours:**			
a. Changes to the existing contours shown?	☐	☐	☐
b. Final drainage patterns shown?	☐	☐	☐
6. **Existing Vegetation:** Existing tree lines, grassed areas, or unique vegetation shown?	☐	☐	☐
7. **Soils:** Boundaries of soil types shown?	☐	☐	☐
8. **Existing Drainage Patterns:**			
a. Drainage divides and respective direction of flow shown?	☐	☐	☐
b. Area (in acres) of each drainage divide shown?	☐	☐	☐
9. **Critical Erosion Areas:** Per Chapter 6 of VESCH, are potentially serious erosion areas shown?	☐	☐	☐
10. **Site Development:** Are all site developments such as buildings, parking lots, access roads, utility construction, storm sewer system, final drainage, etc. shown?	☐	☐	☐
11. **Location of Practices:** Locations of E&SC and stormwater management practices used on site shown?	☐	☐	☐
12. **Off-site Areas:**			
a. Any off-site land disturbing activities identified?	☐	☐	☐
b. Adequate E&SC measures, protection, or stabilization shown?	☐	☐	☐
13. **Detail Drawings:** All detail drawings of E&SC devices not referenced to the VESCH explained and/or illustrated?	☐	☐	☐
14. **Minimum Standard Requirements (Per 4VAC50-30-40)**			
MS-1 Has temp or perm stabilization of denuded areas been addressed in the narrative? Seeded? Yes / No Mulched? Yes / No Graveled? Yes / No	☐	☐	☐
MS-2 Has stabilization of soil stockpiles been addressed with seeding and/or sediment trapping devices?	☐	☐	☐
MS-3 Has maintenance of permanent stabilization been addressed?	☐	☐	☐
MS-4 Will all sediment trapping devices be constructed and functional as first step in LDA?	☐	☐	☐
MS-5 For perimeter sediment trapping devices, has stabilization of earthen structures been addressed?	☐	☐	☐
MS-6 Are adequate sediment traps and/or basins required where needed?	☐	☐	☐
MS-7 Has stabilization of cut and fill slopes been adequately addressed?	☐	☐	☐
MS-8 Are paved flumes, channels, or slope drains required where necessary?	☐	☐	☐
MS-9 Has adequate stabilization or protection of surface roughening, outlets, etc. been addressed?	☐	☐	☐
MS-10 Has adequate protection of all operational storm sewer inlets been addressed?	☐	☐	☐
MS-11 Are channel lining or outlet protection adequate for stormwater conveyance channels?	☐	☐	☐
MS-12 Are in-stream construction measures adequately addressed to minimize channel damage?	☐	☐	☐
MS-13 Are temporary stream crossings of non-erodible materials planned for installation where applicable?	☐	☐	☐
MS-15 Has restabilization of areas subject to in-stream construction been adequately addressed?	☐	☐	☐
MS-16 Is stabilization of utility trenches adequately addressed?	☐	☐	☐
MS-17 Is the transport of soil and mud onto public roadways adequately addressed with applicable measures?	☐	☐	☐
MS-18 Has removal of all temp control devices been addressed?	☐	☐	☐
Has maintenance of all control devices been addressed?	☐	☐	☐
MS-19 Are properties and waterways downstream adequately protected from erosion and sediment deposition due to increases in peak runoff?	☐	☐	☐

C. CONCLUSION: ☐ **E&SC Plan Approved** ☐ **E&SC Plan Disapproved**

D. GENERAL JUSTIFICATION/S:

☐ The E&SC Plan does not meet the 19 Minimum Standards of the VESCH.

☐ Verbiage in the E&SC Narrative is either inadequate or insufficient, or both.

☐ Details of E&SC measures on construction drawings (Site Plan) is either inadequate or insufficient, or both.

☐ Other (comment/s shown below)

E. COMMENTS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Reviewer's Signature:_____
Email:_____
Phone:_____

Total Area Disturbed: _____

Anticipated Start Date: _____

Contractor Information: _____
(Address, Phone, etc.) _____
_____
_____
_____

Contractor POC: _____
Email:_____
Phone: _____

Contractor RLD: _____
Email:_____
Phone: _____

MCBQ FEAD POC(s): _____
Email:_____
Phone: _____

This page intentionally left blank.

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

CHECKLIST FOR SWM PLAN REVIEW FOR CONSTRUCTION SITES

Please fill in all blanks and **please reference the plan sheets/pages where the information may be found,** where appropriate, or write N/A by items that are not applicable.

GENERAL

Plan Submission Date _____
Project Name _____
VSMP Permit Number _____
Site Plan Number _____
Site Address _____
Applicant _____ Phone Number _____
Applicant Legal Address _____
Owner _____ Phone Number _____
Owner E-mail Address _____
Principal Designer _____ Phone Number _____
Principal Designer E-mail Address _____
Total Disturbed Area Figure _____

_____ Professional's seal - The designer's original seal, signature, and date are required on the *cover* sheet of each Narrative and each set of Plan Sheets. A facsimile is acceptable for subsequent Plan Sheets.

_____ Number of plan sets – Attach two sets of SWM Plans.

_____ Exceptions - Exceptions requested are governed by Section 9VAC25-870-57 of the *Virginia Stormwater Management Regulations.*

_____ Local Consideration – Provide contact information for the locality's plan review coordinator.

Name _____ Phone Number _____
Address _____

_____ Grandfathering - Attach supporting documentation consistent with the requirements of Section 9VAC25-870-48 of the *Virginia Stormwater Management Regulations*.

_____ Offsite Compliance – Attach letter of availability from the off-site provider as governed by Section 9VAC25-870-55 of the *Virginia Stormwater Management Regulations.*

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

CHECKLIST PREPARER

I certify that I am a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations. By signing this checklist I am certifying that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE _____

PRINTED NAME _____

QUALIFICATIONS _____

DATE _____

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

SITE PLANS

Please reference the plan sheet numbers where specific information may be found in the blanks below.

_____ Common address and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.

_____ A narrative that includes a description of current site conditions and proposed development and final site conditions, including proposed use of environmental site design techniques and practices, stormwater control measures, relevant information pertaining to long-term maintenance of these measures, and a construction schedule.

_____ Existing and proposed mapping and plans (recommended scale of 1" = 50', or greater detail), which illustrates the following at a minimum:

☐ North arrow
☐ Legend
☐ Vicinity map
☐ Existing and proposed topography (minimum of 2-foot contours recommended)
☐ Property lines
☐ Perennial and intermittent streams
☐ Mapping of predominant soils from USDA soils surveys as well as the location of any site-specific test bore hole investigations that may have been conducted and information identifying the hydrologic characteristics and structural properties of soils used in the installation of stormwater management facilities
☐ Boundaries of existing predominant vegetation and proposed limits of clearing and grading
☐ Location and boundaries of natural feature protection and conservation areas (e.g.,wetlands, lakes, ponds, aquifers, public drinking water supplies, etc.) and applicable setbacks (e.g., stream buffers, drinking water well setbacks, septic drainfield setbacks, building setbacks, etc.)
☐ Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
☐ Current land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
☐ Location and description of any planned demolition of existing structures, roads, etc.
☐ Proposed land use(s) with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, parking lots, stormwater management facilities, and easements
☐ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and easements
☐ Earthwork specifications
☐ Show the BMP name, **geographic coordinates** and design of both structural and non-structural stormwater control measures, including maintenance access and limits of disturbance
☐ Storm drainage plans for site areas not draining to any BMP(s)
☐ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, lateral groundwater movement interceptors (French drains, agric. tile drains, etc.), swales, and areas of overland flow, including grades, dimensions, and direction of flow
☐ Final drainage patterns and flow paths
☐ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainage systems

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

☐ Location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
☐ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
☐ Final stabilization and landscaping plans

_____ Hydrologic and hydraulic analysis, including the following:

☐ Site map with locations of design points and drainage areas (size in acres) for runoff calculations
☐ Identification and calculation of stormwater site design credits, if any apply
☐ Summary description of the water quantity and water quality compliance strategy.
☐ Time of concentration (and associated flow paths)
☐ Imperviousness of the entire site and each drainage area
☐ NRCS runoff curve numbers or volumetric runoff coefficients
☐ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
☐ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
☐ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
☐ Pollution load and load reduction requirements and calculations
☐ Final good engineering and sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations, verifying compliance with the water quality and water quantity requirements of the regulations
☐ Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities
☐ Final analysis of the potential downstream impacts/effects of the project, where necessary
☐ Downstream analysis, where detention is proposed
☐ Dam safety and breach analysis, where necessary

_____ Representative cross-section and profile drawings and details of stormwater control measures and conveyances which include the following:
☐ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.)
☐ Design water surface elevations
☐ Structural details of BMP designs, outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.

_____ Applicable construction and material specifications, including references to applicable material and construction standards (ASTM, etc.)

_____ Landscaping plans for stormwater control measures and any site reforestation or revegetation

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

_____ Long term operations and maintenance plan/agreement as governed by 9VAC25-870-112 of the Virginia Stormwater Management Program Regulations.

_____ Evidence of acquisition of all applicable local and non-local permits

_____ Waiver/exception requests

_____ Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts, etc.)

_____ Applicable supporting documents and studies (e.g., infiltration tests, geotechnical investigations, TMDLs, flood studies, etc.)

_____ Other required permits: _____

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

This page intentionally left blank.

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

CHECKLIST FOR SWPP PLAN REVIEW FOR CONSTRUCTION SITES

Construction Project Name: _____ Submittal Date: _____

Reviewer: _____ Review Date: _____ Approved? YES ☐ NO ☐

A. Site Description	YES	NO	N/A
1. Description of the nature of the construction activity	☐	☐	☐
2. Existing data describing the soil or the quality of any discharge from the site	☐	☐	☐
3. A description of existing vegetation at the site	☐	☐	☐
4. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities including offsite borrow and fill areas covered by the plan	☐	☐	☐
5. Offsite material storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) where storm water discharges are authorized by this permit are considered a part of the project and shall be addressed in the plan	☐	☐	☐
5. An estimate of the runoff coefficient of the site prior to construction and after construction activities are completed	☐	☐	☐
6. The name of the receiving water(s) and the ultimate receiving water(s), and areal extent of wetland acreage at the site	☐	☐	☐
7. Are unique site features and sensitive (critical areas) addressed in the plan	☐	☐	☐
8. **Potential Sources of Pollution:**			
a. A description of any other potential pollution sources, such as vehicle fueling, storage of fertilizers or chemicals, sanitary waste facilities, etc.	☐	☐	☐
b. Current edition of the VA E&SC Law and Regulations, and the Va E&SC Handbook cited?	☐	☐	☐
c. Description of pollutant sources from areas other than the permitted construction activity (including storm water discharges from dedicated asphalt plants and dedicated concrete plants) that contribute to the permitted discharge	☐	☐	☐
9. Have endangered species on the project site been addressed in the plan	☐	☐	☐
10. Has the plan addressed historic preservation areas on the project site	☐	☐	☐
11. **A site plans that include:**			
a. North Arrow indicated on all pages	☐	☐	☐
b. drainage patterns and approximate slopes or contours for existing and proposed after major grading activities	☐	☐	☐
c. soil maps from USDA soil surveys and any soil boring locations shown with corresponding soil data	☐	☐	☐
d. areas of soil disturbance and areas of the site which will not be disturbed	☐	☐	☐
e. the location of major structural and nonstructural controls identified in the plan	☐	☐	☐
f. the location of areas where stabilization practices are expected to occur including the types of vegetative cover	☐	☐	☐
g. surface waters (including wetlands)	☐	☐	☐
h. locations where storm water is discharged to a surface water with an outline of the drainage area for each discharge point	☐	☐	☐
i. existing and planned paved areas and buildings and other impervious surfaces	☐	☐	☐
j. locations of permanent storm water management practices to be used to control pollutants in storm water after construction activities have been completed	☐	☐	☐
k. proposed land use(s) w/ calculation of percentage of surface area to used for the various uses	☐	☐	☐
l. locations of offsite material, waste, borrow or equipment storage areas covered by the plan	☐	☐	☐
m. locations of other potential pollution sources as described in 8. above	☐	☐	☐
10. The location and description of any discharge associated with industrial activity other than construction, including storm water discharges from dedicated asphalt plants and dedicated concrete plants, which is covered by this permit	☐	☐	☐

B. Controls

	YES	NO	N/A
1. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading, utilities and infrastructure installation)	☐	☐	☐

For ***each*** specific major activity, the plan will address the following:

2. **Structural Practices:**			
a. The plan shall include a description of structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable	☐	☐	☐
b. area with 3 or more acres at one time, a temporary (or permanent) sediment basin providing 3,618 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site	☐	☐	☐
c. For drainage locations serving less than 3 acres, smaller sediment basins or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips or equivalent sediment controls are required for all downslope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for 3,618 cubic feet of storage per acre drained is provided	☐	☐	☐
3. Stabilization Practices:			
a. Description of interim and permanent stabilization practices	☐	☐	☐
b. Site-specific scheduling of the implementation of the practices	☐	☐	☐
c. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized	☐	☐	☐
4. Slope Protection:			
a. Does the plan address slope protection (i.e. blankets, tackifiers, etc.) and include design specs and details for all slopes on the project	☐	☐	☐
b. Does the plan identify any critical slopes? If so, are they located on maps and described within the plan?	☐	☐	☐
5. Storm Drains:			
a. Has the plan addressed storm drains and stipulated how each type of drain on the site will be protected	☐	☐	☐
6. Perimeter Controls:			
a. Does the plan address structural practices (i.e. silt fence, fiber rolls, etc.) including design specifications and details to filter and trap sediment before it leaves the construction site	☐	☐	☐
b. The plan must address how offsite accumulations of sediment must be removed, at a frequency sufficient to minimize offsite impacts, if sediment escapes the construction site.	☐	☐	☐
7. Onsite sediment and dewatering retention:			
a. The plan must describe all control practices (i.e. sediment traps, basins), including design specifications and details (volume, dimensions, outlet structure) that will be implemented onsite	☐	☐	☐
b. The plan must describe how dewatering practices are to be conducted if water must be removed from from an area, while retaining the water onsite	☐	☐	☐
8. Construction Entrances/Exits:			
a. The plan must address the locations for all construction entrances/exits	☐	☐	☐
b. The plan must address procedures to remove accumulated sediment off-site (i.e. vehicle tracking) and stabilization practices (i.e. stone pads, wash racks, etc.) to minimize off-site tracking of sediments and discharges to storm water.	☐	☐	☐
c. The plan must contain a statement saying sediment tracked onto the roadway will be cleaned from the roadway each day	☐	☐	☐

C. Housekeeping

	YES	NO	N/A
1. Material Handling and Waste Management:			
a. The plan must address and describe measure for trash disposal, sanitary wastes, recycling, and proper handling of other materials to prevent discharge of solid materials	☐	☐	☐
b. Plan must contain a statement saying that no solid materials, including building materials, garbage, and debris shall be discharged to surface water of the state, except as authorized by a **CWA Section 404 permit**	☐	☐	☐
c. The plan must ensure and demonstrate compliance with applicable state or local waste disposal, sanitary sewer or septic system regulations	☐	☐	☐
d. Statement saying that litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, picked up daily).	☐	☐	☐

C. Housekeeping (Continued)

	YES	NO	N/A
2. Building Material Staging Areas:			
A. Onsite:			
a. Description of construction and waste materials expected to be stored onsite with updates as appropriate	☐	☐	☐
b. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response	☐	☐	☐
B. Offsite:			
a. Description of construction and waste materials expected to be stored offsite with updates as appropriate	☐	☐	☐
b. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response	☐	☐	☐
3. Washout Areas (concrete, concrete mixers, paint, etc.):			
a. Washout areas must be designated in the plan and shown on the drawings	☐	☐	☐
b. Each area designated must address the controls necessary to minimize potential for storm water pollution	☐	☐	☐
4. Vehicle and Vehicle Fueling and Maintenance:			
a. Plan must address where vehicles/equipment will be stored and maintained as well as what maintenance practices would be implemented to control pollutants from entering storm water (secondary containment, drip pans, etc.)	☐	☐	☐
5. Vehicle and Equipment Washing:			
a. Plan must address the measures to be implemented to control pollutant discharges from washing activities	☐	☐	☐
b. Washing areas are depicted on the drawings	☐	☐	☐
6. Spill Prevention and Control Plan:			
a. Reduce chance of spills	☐	☐	☐
b. Stop the source of spills	☐	☐	☐
c. Contain and clean up spills	☐	☐	☐
d. Dispose of materials contaminated by spills	☐	☐	☐
e. Train personnel responsible for spill prevention	☐	☐	☐
7. Non-Storm Water Discharges:			
a. Except for flows from fire fighting activities, sources of non-storm water that are combined with storm water discharges from the construction site must be identified in the plan.	☐	☐	☐
b. The plan shall identify and ensure the implementation of appropriate pollution prevention measures and controls for the non-storm water component(s) of the discharge	☐	☐	☐

D. Post-Construction BMP's

	YES	NO	N/A
1. A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur ***after*** construction operations have been completed	☐	☐	☐
2. LID should be incorporated into design	☐	☐	☐
3. Structural BMPs require design specifications and details	☐	☐	☐

E. Inspections and Maintenance

	YES	NO	N/A
Inspections:			
1. Inspections shall be conducted at least once every fourteen calendar days and within 48 hours of the end of a storm event that is 0.25 inches or greater	☐	☐	☐
2. Inspection reports shall included:			
a. name(s) and qualifications of personnel making the inspection, and the date(s) of the inspection	☐	☐	☐
b. major observations relating to the implementation of the SWPP plan	☐	☐	☐
c. the location(s) of discharges of sediment or other pollutants from the site	☐	☐	☐
d. location(s) of BMPs that need to be maintained	☐	☐	☐
e. location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location	☐	☐	☐
f. location(s) where additional BMPs are needed that did not exist at the time of inspection	☐	☐	☐
g. Incidents of noncompliance	☐	☐	☐
h. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit	☐	☐	☐
i. Signature	☐	☐	☐
3. Statement saying that if periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations	☐	☐	☐

E. Inspections and Maintenance (Contiuned)

	YES	NO	N/A
Maintenance:			
4. Description and schedule of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures during construction identified in the site plan	☐	☐	☐
5. If site inspections identify BMPs that are not operating effectively, maintenance shall be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of storm water controls	☐	☐	☐
6. Statement saying that sediment must be removed from sediment traps, sedimentation ponds and all other sediment trapping devices when design capacity has been reduced by 50%.	☐	☐	☐
7. Corrective Action Log:			
a. Describes repair, replacement, and maintenance of BMPs undertaken based on inspections and maintenance procedures	☐	☐	☐
b. Section for actions related to the findings of inspections reference specific inspection report	☐	☐	☐
c. Section on log for actions taken, date completed and note the person that was responsible for work	☐	☐	☐

F. Recordkeeping and Training

	YES	NO	N/A
1. Recordkeeping:			
a. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained and included in the plan	☐	☐	☐
b. Statement saying that VSMP Construction General Permit must be kept onsite at all times	☐	☐	☐
c. Copy of the signed fee form and permit application form	☐	☐	☐
d. Copy of approved VSMP permit and number must be kept onsite at all times	☐	☐	☐
e. Log book of completed RLD inspection reports	☐	☐	☐
f. Records relating to endangered species and historic preservation	☐	☐	☐
8. Changes to SWPPP:			
a. Log created for changes and updates to the SWPPP	☐	☐	☐
i. Addition of new BMPs	☐	☐	☐
ii. Replacement of failed BMPs	☐	☐	☐
iii. Significant changes in activity or timing of BMPs	☐	☐	☐
iv. Changes in personnel	☐	☐	☐
v. Changes in inspection/maintenance procedures	☐	☐	☐
vi. Updates to site maps	☐	☐	☐
9. Training:			
a. Training log for staff and subcontractors who have storm water responsibilities (installing, inspecting, maintaining), which contains:	☐	☐	☐
i. Date of training	☐	☐	☐
ii. Number and names of attendees	☐	☐	☐
iii. Subjects covered	☐	☐	☐
iv. Length of training	☐	☐	☐

G. Final Stabilization

	YES	NO	N/A
1. Procedures for final stabilization outlined	☐	☐	☐
2. Statement describing final stabilization as 90% uniform coverage across the entire site, ability to inhibit erosion and mature enough to survive, including two (2) – 3 inch cuttings	☐	☐	☐
3. Statement saying once NREA Water Program has approved the site as permanently stabilized, contractor shall complete the Notice of Termination (NOT) form and return it to NREA. NREA will forward all applicable information to the state for permit termination.	☐	☐	☐

H. Hydrologic and Hydraulic Analysis

	YES	NO	N/A
1. Site map with locations of design points and drainage areas (size in acres) for runoff calculations	☐	☐	☐
2. Description of water quantity and quality compliance strategy	☐	☐	☐
3. VRRM sheets provided	☐	☐	☐
4. Time of Concentration (and associated flow paths)	☐	☐	☐
5. NRCS runoff curve numbers and runoff coefficients	☐	☐	☐
6. Hydrologic analysis for existing conditions – runoff rates, volumes & velocities – methods used and calculations	☐	☐	☐
7. Hydrologic analysis for proposed conditions – runoff rates, volumes & velocities – methods used and calculations	☐	☐	☐

H. Hydrologic and Hydraulic Analysis (Continued)

	YES	NO	N/A
8. Hydrologic and hydraulic analysis of the stormwater management system for all applicable storms	☐	☐	☐
9. Pollution load and load reduction requirements and calculations (VRRM sheets)	☐	☐	☐
10. Stormwater control measures are properly sized and designed	☐	☐	☐
11. Downstream analysis and impact/effects of the project provided	☐	☐	☐
12. Cross-section and profile drawings/details of stormwater control measures and conveyances include the following:			
a. Existing and proposed structural elevations (i.e. pipe inverts, manholes, etc.)	☐	☐	☐
b. Design surface water elevations	☐	☐	☐
c. Structural details of BMP designs, outlet structures, embankments, spillways, conveyance channels, etc.	☐	☐	☐

I. Certification

	YES	NO	N/A
1. Certification page signed and dated by appropriate contractor personnel	☐	☐	☐
2. Are the plans stamped by a licensed professional engineer	☐	☐	☐

This page intentionally left blank.

UNITED STATES MARINE CORPS
BASE NREA BRANCH, WATER
PROGRAM MCB QUANTICO, VIRGINIA

CHECKLIST FOR LID (LOW IMPACT DEVELOPMENT) PLAN REVIEW FOR CONSTRUCTION SITES

Construction Project Name: Review Date/Time:

Reviewer: Title: Approved? YES ☐ NO ☐

	Yes	No	N/A
1. Do the LID features designed reduce the hydrologic impact of development and maintain or restore the sites hydrologic and hydraulic function?	☐	☐	☐
2. LID site design strategies (check all that apply):			
a. Grading to encourage sheet flow and lengthen flow paths	☐	☐	☐
b. Maintaining natural drainage divides to keep flow paths dispersed	☐	☐	☐
c. Disconnecting impervious areas such as pavement and roofs from the storm drain network, allowing runoff to be conveyed over pervious areas instead	☐	☐	☐
d. Preserving the naturally vegetated areas and soil types that slow runoff, filter out pollutants, and facilitate infiltration	☐	☐	☐
e. Directing runoff into or across vegetated areas to help filter runoff and encourage recharge	☐	☐	☐
f. Providing small-scale distributed features/devices that help meet regulatory and resource objectives	☐	☐	☐
g. Treating pollutant loads where they are generated, or prevent their generation	☐	☐	☐
3. Are the LID features designed site applicable (i.e. size of drainage area, available storage, land use, soil type, slope, vegetative cover, etc.)?	☐	☐	☐
4. Are pre-construction and post-construction calculations and data included in design	☐	☐	☐
5. Estimated Cost for LID features in design $_____			

Individual Design Components:

1. Does the LID design provide for the conservation of natural areas ☐ ☐ ☐
2. Does the LID design provide minimization of development impacts ☐ ☐ ☐
3. Does the LID design control the watershed timing and runoff patterns ☐ ☐ ☐
4. Does the LID design use Integrated Management Practices (IMPs) ☐ ☐ ☐
5. Does the LID design provide for pollution prevention ☐ ☐ ☐
6. Does the LID design provide for O&M procedures for each LID practice in the site plan ☐ ☐ ☐

LID Features Used In Design (check all that apply):

a. Soil Amendments ☐ qty. _____
b. Bioretention ☐ qty. _____
c. Dry Wells ☐ qty. _____
d. Filter Strips ☐ qty. _____
e. Vegetated Buffer ☐ qty. _____
f. Grassed Swales ☐ qty. _____
g. Infiltration Trenches ☐ qty. _____
h. Inlet Devices ☐ qty. _____
i. Rain Barrels ☐ qty. _____
j. Cisterns ☐ qty. _____
k. Tree Box Filters ☐ qty. _____
l. Vegetated Roofs ☐ qty. _____
m. Permeable Pavers ☐ qty. _____
n. Permeable Pavement ☐ qty. _____

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

WATER QUALITY IMPACT ASSESSMENT (WQIA) FORM FOR CONSTRUCTION SITES WITHIN AN RPA ZONE

Construction Project Name: _____ Submittal Date: _____

Reviewer: _____ Review Date: _____

Applicant Name: _____

Project Manager/POC: _____

Address: _____

Contact Number: _____

Email Address: _____

Total land to be disturbed: _____(sq. ft.)

Total land to be disturbed within the RPA only: _____(sq. ft.)

Total land development footprint within RPA: _____(sq. ft.)

Existing: _____(sq. ft.) Proposed: _____(sq. ft.)

Total impervious cover within RPA:

Existing: _____(sq. ft.) Proposed: _____(sq. ft.)

Resource Protection Area (RPA) Information:

Does the site contain any of the following (check all that apply)?

- ☐ Tidal Wetland
- ☐ Nontidal Wetland (connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow
- ☐ Tidal Shores
- ☐ A vegetated buffer not less than 100 feet in width adjacent to and landward of the components listed above, and along both sides of any water body with perennial flow

Type of Proposed Activity:

- ☐ New construction
- ☐ Alteration of non-residential structure
- ☐ Residential addition
- ☐ Detached residential structure
- ☐ Deck, patio, or retaining wall
- ☐ Utility work
- ☐ Fence
- ☐ Other (please describe):

_____
_____
_____
_____

Plan of Development Information:

Describe the proposed use and development: _____
_____
_____
_____
_____

Site Plan Review Checklist:

- ☐ RPA boundary
- ☐ Limits of disturbance
- ☐ Existing structure(s)
- ☐ Proposed structure(s) The components of the project must be clearly labeled, and dimensions must be included
- ☐ Proposed impervious cover. Use hatching or coloring to indicate areas of additional impervious cover
- ☐ Downspout locations – existing and proposed (only applies to building projects)
- ☐ Location of all existing trees within the RPA
- ☐ Location of trees $\geq$ 3 inches in diameter that are to be removed within RPA
- ☐ Proposed erosion and sediment control measures and/or tree protection areas
- ☐ Proposed stormwater management or runoff mitigation features
- ☐ Proposed vegetation enhancement within RPA
- ☐ Landscaping plan that includes plant list for landscaping or RPA enhancement projects

Site Plan Narrative:

- ☐ Number, type, and size of trees impacted, including critical root zone impacts
- ☐ Tree and critical root zone protection measures implemented (root pruning, modified limit of disturbance, efforts to limit soil compaction, etc.).
- ☐ Post-construction tree or vegetation planting proposed.
- ☐ Existing erosion or drainage concerns and solutions incorporated in project
- ☐ Proposed changes to on-site drainage (new downspouts, swales, retaining walls, etc.)
- ☐ Runoff attenuation or stormwater treatment measures proposed
- ☐ Erosion and sediment control and post-construction stabilization

This page intentionally left blank.

Attachment E

MCINCR-MCBQ Land Disturbance Permit Application

This page intentionally left blank.

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

LAND DISTURBANCE PERMIT APPLICATION

Contact Information

Applicant Name: _____

Project Manager/POC: _____

Address: _____

Contact Number: _____

Email Address: _____

Contractor: _____

Address: _____

Contact Number: _____

Email Address: _____

Responsible Land Disturber: _____

RLD Certificate Number: _____

Project Information

Project Name: _____

Project Location: _____

Total Project Area _____ (acres or square feet)

Land Area to be Disturbed _____ (acres or square feet)

Change in Impervious Coverage _____ (acres or square feet)

Project Description _____

_____

_____

_____

Documents

Check all provided	Yes	No	N/A
Site Plan Drawings	☐	☐	☐
Erosion and Sediment Control (ESC) Plan	☐	☐	☐
Stormwater Management (SWM) Plan	☐	☐	☐
SWM & ESC Supporting Calculations	☐	☐	☐
Stormwater Pollution Prevention Plan (SWPPP)	☐	☐	☐
Construction General Permit (CGP) Registration Statement	☐	☐	☐
ESC Plan Review Checklist	☐	☐	☐
SWM Plan Review Checklist	☐	☐	☐
LID Plan Review Checklist	☐	☐	☐
SWPP Plan Review Checklist	☐	☐	☐
Water Quality Impact Assessment	☐	☐	☐
Variance/ Exception Request	☐	☐	☐
Other (please specify):	☐	☐	☐

Responsible Land Disturber's Acknowledgement:

_____ _____

Signature **(Date)**

_____

Print Name

_____

Title

Attachment F

Insepction Report for ESC and SWPPP at Construction Sites

This page intentionally left blank.

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

INSPECTION REPORT FOR E&SC AND SWPP AT CONSTRUCTION SITES

A. GENERAL PROJECT INFORMATION

NREA Inspector:	***Date of Inspection:***	***Inspection Type:*** *Routine ☐ Follow-up ☐ 48-hour ☐*
Onsite Status of E&SC or SWPP Measures: *Adequate: ☐ Inadequate: ☐ See Comments:☐*		***Project Name:***
Construction Contractor:		***RLD/Certificate #:***
NAVFAC ET:	***Date Last Significant Rain:***	***Amount Last Significant Rain:***
Phase of Construction:	*Clearing & Grubbing/ Rough Grading ☐*	*Building Construction ☐* / *Construction Complete/ Final Stabilization ☐*

B. EROSION & SEDIMENT CONTROL

	E&SC MINIMUM STANDARD REQUIREMENTS (Per 9 VAC25-840-40)	**YES**	**NO**	**N/A**	**NOT INSP'D**
MS-1	Are all denuded areas requiring temporary or permanent stabilization stabilized?	☐	☐	☐	☐
MS-2	Are soil stockpiles adequately stabilized with seeding and/or sediment trapping devices?	☐	☐	☐	☐
MS-3	Does permanent vegetation used onsite provide adequate stabilization?	☐	☐	☐	☐
MS-4	Have all sediment trapping devices been constructed and made functional as first step in land disturbing activity?	☐	☐	☐	☐
MS-5	For perimeter sediment trapping devices, are earthen structures stabilized?	☐	☐	☐	☐
MS-6	Are sediment traps/basins installed where needed & functional as designed?	☐	☐	☐	☐
MS-7	Are finished cut-n-fill slopes adequately stabilized?	☐	☐	☐	☐
MS-8	Is concentrated runoff from cut-n-fill slopes flowing through adequate temporary or permanent channels or pipes?	☐	☐	☐	☐
MS-9	Are slope water seepages adequately drained to protect the slope(s)?	☐	☐	☐	☐
MS-10	Are all operation stormwater inlets adequately protected?	☐	☐	☐	☐
MS-11	Are stormwater channels adequately stabilized with channel lining and/or outlet protection?	☐	☐	☐	☐
MS-12	Is in-stream protection performed with measures that minimize channel damage?	☐	☐	☐	☐
MS-13	Are temporary stream crossings constructed of non-erodible materials installed where applicable?	☐	☐	☐	☐
MS-14	Are all applicable federal, state and local regulations pertaining to working in or crossing live water courses met?	☐	☐	☐	☐
MS-15	Is necessary re-stabilization of in-stream construction complete?	☐	☐	☐	☐
MS-16	Are utility trenches stabilized properly?	☐	☐	☐	☐
MS-17	Are soil and mud kept off public roadways at intersections with site access roads?	☐	☐	☐	☐
MS-18	Have all temporary control devices that are no longer needed been removed?	☐	☐	☐	☐
	Have all control device repair and sediment removal been performed?	☐	☐	☐	☐
MS-19	Are properties/waterways downstream adequately protected from erosion and sediment deposition?	☐	☐	☐	☐

C. STORMWATER POLLUTION PREVENTION

	YES	NO	N/A	NOT INSP'D
1. Are E&SC/SW plans and permits available for viewing at the construction site	☐	☐	☐	☐
2. Are inspections by Contractor current (every 14 days or within 48 hours of a rain event)?	☐	☐	☐	☐
3. Have any design changes to the SWPP and/or E&SC been incorporated into existing plans?	☐	☐	☐	☐
4. Are P2 controls, BMPs, and other measures revised as appropriate, but in no case later than 7 days following inspection and notation of need for change?	☐	☐	☐	☐
5. Are dates of major grading activities recorded?	☐	☐	☐	☐
6. Are all significant areas (chemical storage, stockpiles, fueling and maintenance points) annotated on the SWMPPP drawings?	☐	☐	☐	☐
7. Have personnel been trained in stormwater pollution prevention practices?	☐	☐	☐	☐
8. Are chemical stored in a manner that deters contamination of area (covered, secondary containment, etc.)?	☐	☐	☐	☐
9. Is the area free of trash and debris (to the extent practicable)?	☐	☐	☐	☐
10. Are vehicle wash areas properly designed and functioning (water contained, no soap used, etc.)?	☐	☐	☐	☐
11. Do fueling areas have secondary containment and adequate spill kit?	☐	☐	☐	☐
12. Is the concrete washout area designed properly to ensure that no contaminated water will exit the area?	☐	☐	☐	☐
13. Is a stormwater discharge present at the time of inspection?	☐	☐	☐	☐
14. Is there evidence of discharge of polluted runoff? (i.e. sediment deposits, mud flows, etc.)	☐	☐	☐	☐

D. COMMENTS

E. VIOLATIONS

Description of Violation	Corrective Action	Repeat Violation

F. AUTHENTICATION

Signature of Inspector: _____ _____

Attachment G

References

This page intentionally left blank.

The following references and websites provided are valid at time of publication of this Application and Guidance Document. Please note that many of these references are outside of MCINCR-MCBQ oversight and therefore may no longer be accurate.

Low Impact Development

If the project includes the construction of a federal facility and disturbs greater than 5,000 square feet, the SWM Plan shall comply with Section 438 of EISA. Technical guidance to meet ESIA is located online at:

https://www.epa.gov/sites/production/files/2015-08/documents/epa_swm_guidance.pdf

Guidance for hydrology and low impact development is available through the U.S. Army Corps of Engineers Hydrology and Low Impact Development Center of Expertise in Sustainability (CXS) website located at:

https://www.usace.army.mil/Missions/Sustainability/Hydrology-and-Low-Impact-Development/

Erosion and Sediment Control

Guidance on development of ESC Plans can be found in Chapter 6 of the Virginia Erosion and Sediment Control Handbook (VESCH) at the VADEQ website the flowing links:

http://www.deq.virginia.gov/Programs/Water/Laws,Regulations,Guidance/Guidance/StormwaterManagementGuidance.aspx

https://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx.

The ESC Plan utilize erosion and sediment control standards and specifications listed in Chapter 3 of the VESCH. Nomenclature for erosion and sediment control measures should on ESC Plans shall be consistent with the Virginia Uniform Coding System provided in the VESCH.

http://www.deq.virginia.gov/Portals/0/DEQ/Water/StormwaterManagement/Erosion_Sediment_Control_Handbook/Uniform%20Coding.pdf

Stormwater Management

Design guidance for stormwater management techniques to meet water quality compliance (9VAC25-870-65) may be found at the Virginia BMP Clearinghouse, located at:

https://www.swbmp.vwrrc.vt.edu/

The VRRM Spreadsheets (currently version 3.0) are located online at the VDEQ Stormwater Management website at:

https://www.swbmp.vwrrc.vt.edu/vrrm/

Information about the VDEQ Construction General Permit and required application documents can be found here:

https://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx

Stormwater Pollution Prevention Plans

For more information and guidance on developing an effective SWPPP, please visit EPA's webpage on CGP Resources, Tools, and Templates webpage at:

https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates

The MCINCR-MCBQ SWPPP template shall be used for all construction projects of one acre of disturbance or greater. The SWPPP template can be found at the NREA Documents website at:

https://www.quantico.marines.mil/Offices-Staff/G-F-Installation-and-Environment/Natural-Resources-Environmental-Affairs/NREA-Documents/

This page intentionally left blank.

APPENDIX C BMP Field Inspection Checklist

This page intentionally left blank.

Field Inspection Checklist

UNITED STATES MARINE CORPS BASE
NREA BRANCH, WATER PROGRAM
MCB QUANTICO, VIRGINIA

BMP ID:	DATE: TIME:	ASSESSED BY:

SECTION 1- BACKGROUND INFORMATION SECTION

BMP TYPE :

☐ Dry Detention Pond	☐ Dry Swale	☐ Wetland
☐ Extended Detention Pond	☐ Wet Swale	☐ Level Spreader
☐ Wet Pond	☐ Grass Channel	☐ WQ Inlet
☐ Filter- specify:_____	☐ Dry Well	☐ Proprietary Device
☐ Infiltration- specify:_____	☐ Permeable Pavement	☐ Vegetated Treatment Area
☐ Check if structure is underground	☐ Bio-retention Cell	☐ Other:

YEAR CONSTRUCTED/ NOTES:

OWNERSHIP:

SITE CHARACTERIZATION

CONTRIBUTING DRAINAGE AREA (check all):_____Industrial_____Forested_____Maintained Grass_____Urban
_____ Other (if other, provide description)

SECTION 2- FIELD VISIT

Weather Conditions: _____	Rain in last 48 hrs? ☐ Yes ☐ No	High water table? ☐ Yes ☐ No

DESIGN ELEMENTS *see plan for facility size, storage capacity, and drainage area

HYDRAULIC CONFIGURATION :

☐ On-line Facility
☐ Off-line Facility

DESIGN STORM(S):

☐ Water Quality
☐ Flood Control
☐ Water Quantity/Channel Protection
☐ Unknown

BMP SIGNAGE:

☐ None
☐ Flood Warning
☐ Stormwater Education
☐ Caution: Slippery
☐ No Trespassing
☐ Wildlife Habitat
☐ Do Not Mow
☐ Other:_____

OUTLET CHARACTERISTICS

PRIMARY OUTLET STRUCTURE:	☐ N/A – infiltration w/ no outlet ☐ Pipe ☐ Riser ☐ Weir ☐ Open channel ☐ Curb cut ☐ Large Storm By-pass ☐ Large Storm Overflow ☐ Underdrain ☐ Other:_____
OUTLET FEATURES:	☐ N/A ☐ Trash Rack ☐ Pond Drain ☐ Inverted outlet pipe ☐ Standard outlet ☐ Anti-vortex device ☐ Perforated pipe ☐ Gravel Diaphragm ☐ Micropool outlet ☐ Multiple outlet levels *Outlet includes restrictor?* Yes No
OUTLET STRUCTURE CONDITIONS:	Erosion at Outlet: ☐ None ☐ Slight ☐ Moderate ☐ Severe Outlet Clogging: ☐ None ☐ Slight ☐ Moderate ☐ Severe Structural Problems: ☐ None ☐ Slight ☐ Moderate ☐ Severe
CONDITIONS AT OUTFALL:	☐ Stream or Creek ☐ Closed storm sewer ☐ Surface channel ☐ Road ditch ☐ Other: _____

Active Erosion: ☐ None ☐ Slight ☐ Moderate ☐ Severe Trash: ☐ None ☐ Slight ☐ Moderate ☐ Severe Sedimentation: ☐ None ☐ Slight ☐ Moderate ☐ Severe	Odor: ☐ None ☐ Slight ☐ Moderate ☐ Severe Algae: ☐ None ☐ Slight ☐ Moderate ☐ Severe Other WQ Problems:_____ ☐ None ☐ Slight ☐ Moderate ☐ Severe

Emergency Spillway Type: ☐ Channel ☐ Riser ☐ Overflow ☐ Weir ☐ Other:

Additional Notes:

SOIL OR FILTER MEDIA

TYPE OF FILTER/INFILTRATION MEDIA: (check all that apply)

☐ Soil mix_____ (in) ☐ Sand_____ (in) ☐ Gravel_____ (in)
☐ Large Stone _____ (in) ☐ Organic material_____ (in) ☐ Specialty Mix_____ (in)
☐ Other_____ (in) ☐ N/A
☐ Unknown Avg. depth of sediment build-up on surface?_____ (in)

SOIL MEDIA SAMPLE:	Comments:
Dominant Soil Type: ☐ Clay ☐ Loam ☐ Sand ☐ Sand/Loam Is the soil homogenous? ☐ Yes ☐ No	

Additional Notes:

VEGETATION

GENERAL OBSERVATIONS:
☐ Landscaped
☐ Aquatic Bench
☐ Invasive Species
☐ Plant Diversity

TYPE OF GROUND COVER (% of Surface Area in Plan View up to low Outlet**):**
_____Trees _____Grasses/Perennials _____Ponded water
_____Other:
_____Managed Turf _____Bare Soil _____Shrubs
_____N/A
Gravel/stone_____Mulch Emergent wetland

Depth of mulch, if present: ☐ Hardwood_____(in) ☐ Pine Straw_____(in) ☐ Other_____(in)
Rate degree of shading of BMP Surface Area by trees: ☐ Well Shaded ☐ Some Shading ☐ No Shading ☐ N/A

Additional Notes:

INLET CHARACTERISTICS

INLET #1: Diameter/Width:_____(in)	**TYPE OF INLET:** ☐ Open Channel ☐ Closed Pipe ☐ Sheet Flow ☐ Curb Cut ☐ Other:	Elevation difference between bottom of inlet and BMP surface:_____(in)
INLET SUBMERSION: ☐ Complete ☐ Partial ☐ None	**INLET CONDITIONS:** Inlet Erosion: ☐ None ☐ Slight ☐ Moderate ☐ Severe Inlet Clogging: ☐ None ☐ Slight ☐ Moderate ☐ Severe Structural Problems: ☐ None ☐ Slight ☐ Moderate ☐ Severe	Comments:
INLET #2: Diameter/Width:_____(in)	**TYPE OF INLET:** ☐ Open Channel ☐ Closed Pipe ☐ Sheet Flow ☐ Curb Cut ☐ Other:	Elevation difference between bottom of inlet and BMP surface:_____(in)
INLET SUBMERSION: ☐ Complete ☐ Partial ☐ None	**INLET CONDITIONS:** Inlet Erosion: ☐ None ☐ Slight ☐ Moderate ☐ Severe Inlet Clogging: ☐ None ☐ Slight ☐ Moderate ☐ Severe Structural Problems: ☐ None ☐ Slight ☐ Moderate ☐ Severe	Comments:

Additional Notes:

PRETREATMENT

TYPE OF PRETREATMENT *(check all that apply)*	**PRETREATMENT FUNCTION** ☐ By design ☐ Incidental
☐ None	
☐ Sediment Forebay (ft^3)	Is pretreatment functioning? ☐ Yes ☐ No
☐ Grass Channel	Is sediment removal necessary ☐ Yes ☐ No
☐ Riprap Channel or Apron	Signs of pretreatment bypass? ☐ Yes ☐ No
☐ Grass Filter Strip	Signs of flow of sediment from pretreatment to BMP? ☐ Yes ☐ No
☐ Plunge Pool?	Severity: ☐ Slight ☐ Moderate ☐ Severe
☐ Stone Diaphragm	
☐ Other:	

GENERAL DESIGN

BMP FEATURES (check all that apply)

☐ Maintenance Access ☐ Underdrain
☐ Fence ☐ Clean Out
☐ Multi-cell ☐ Observation Well
☐ Micropool ☐ Is water present in observation well? ☐ Yes ☐ No / Depth: _____ft
☐ Pond Drain ☐ Other

CONVEYANCE THROUGH BMP	
☐ No Defined Channel ☐ Low Flow Channel ☐ Concrete ☐ Eroded ☐ Earthen ☐ Other Length of Shortest Flow Path:_____(ft)	Is BMP designed with a Permanent Pool? ☐ Yes ☐ No

Additional Notes:

PERFORMANCE

GENERAL PROBLEMS: (check all that apply)

☐ Maintenance Needed	☐ Erosion at Embankments	☐ Permanent Pools not stable
☐ Water Bypass of Inlet	☐ Erosion within Facility	☐ Inadequate vegetation
☐ Water Bypass of Outlet	☐ Deposition within Facility	☐ Dead or Diseased Vegetation
☐ Incorrect Flow Paths	☐ Inappropriate Ponding of Water	☐ Too many invasive plants
☐ Short-circuiting of treatment mechanism	☐ Clogged Pond Drain/Underdrain	☐ Trees on Embankment
☐ No or ineffective treatment	☐ Clogged Media	☐ Failing structural components
☐ Ineffective pretreatment	☐ Inappropriate media material	☐ Safety issue
☐ Others_____	☐ Inappropriate underlying soil (infiltration)	(Note:_____)

WATER QUALITY IN FACILITY:

					EVIDENCE OF:
Algae	☐ None	☐ Slight	☐ Moderate	☐ Severe	☐ Geese
Odor	☐ None	☐ Slight	☐ Moderate	☐ Severe	☐ Animal Burrows
Turbidity	☐ None	☐ Slight	☐ Moderate	☐ Severe	☐ Mosquitoes
Color	☐ None	☐ Slight	☐ Moderate	☐ Severe	☐ BMP Alteration

PROBLEM (check one, if applicable)	1 – NONE	2 – FEW	3 – SEVERAL	4 – SEVERE
TRASH	☐ No evidence of trash	☐ A few pieces of trash throughout BMP	☐ Trash accumulation near inlet/outlet	☐ Lots of trash in BMP or BMP used for storage
BMP BANK EROSION	☐ No noticeable erosion	☐ Slight erosion, <5% of bank affected	☐ Moderate erosion, ~15% of bank affected	☐ Banks severely eroded, >25% of bank affected
SEDIMENT DEPOSITION	☐ No sediment deposition	☐ Areas of minor sediment deposition	☐ Areas of some deposition, may be severe near inlets/outlets	☐ Lots of deposition resulting in pond bottom clogging
SURFACE SLOPE	☐ 0-1% BMP surface slope	☐ 1-3% BMP surface slope or steeper slopes with check dams	☐ 3-5% BMP surface slope with no check dams	☐ >5% surface slope
SIDE SLOPES	☐ BMP side slopes 3:1 or flatter	☐ BMP side slopes 2:1	☐ Steep BMP side slopes	☐ Risk of side slope failure
STRUCTURAL	☐ No evidence of structural damage	☐ Minor problems (e.g. bank slump, eroded channels)	☐ Moderate structural problems – failure pending	☐ Structural failures (e.g. bank failure blowout)
VISIBILITY	☐ High visibility, near high-traffic areas	☐ Some visibility, near traffic areas	☐ Limited visibility, near low traffic areas	☐ No visibility, behind buildings or fences
ACCESSIBILITY	☐ Maintained access area for vehicles	☐ Access area designated, but not maintained	☐ Access for vehicles not designated	☐ Access for vehicles not possible
VEG COVER	☐ No mowing in/around BMP	☐ Mowing along BMP edges but areas of no mow in BMP bottom	☐ Mowed turf vegetation	☐ BMP bottom has large areas of bare soil
	☐ Dense plant cover, >75%	☐ Plant cover, 50-75%	☐ Some plant cover, 25-50%	☐ Sparse plant cover
TREES	☐ Healthy and established	☐ Slightly stressed	☐ Stressed	☐ Dead
GROUND COVER	☐ Healthy and established	☐ Slightly stressed	☐ Stressed	☐ Dead
SHRUBS	☐ Healthy and established	☐ Slightly stressed	☐ Stressed	☐ Dead
EMERGENT WETLAND	☐ Healthy and established	☐ Slightly stressed	☐ Stressed	☐ Dead

OVERALL PERFORMCE SCORE (circle one number)									
Excellent design and function, no general problems with performance		BMP is well designed, but is undersized or has few performance problems			BMP is adequately designed, several problems with performance are noted			Poor BMP design, severe performance problems or failure	
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

FIELD NOTES
GOOD OR INTERESTING DESIGN FEATURES:
POOR OR PROBLEMATIC DESIGN FEATURES:

Inspector Signature:_____

Date: _____

This page intentionally left blank.

APPENDIX D Good Housekeeping Procedures

This page intentionally left blank.

CDM - AECOM
Multimedia Joint Venture

FINAL GOOD HOUSEKEEPING PROCEDURES

MARINE CORPS INSTALLATIONS NATIONAL CAPITAL REGION
MARINE CORPS BASE QUANTICO (MCINCR-MCBQ)

QUANTICO, VA

Prepared By:
Christopher Yeager, Water Program Assistant
Benjamin Foster, Water Program Manager

March 2024

This page intentionally left blank.

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CCA	Chromated Copper Arsenate
DEQ	Virginia Department of Environmental Quality
EPA	Environmental Protection Agency
FLB	Fluorescent Light Ballasts
HID	High-Intensity Discharge
HM/HW/POL	Hazardous Materials/ Hazardous Waste/ or Petroleum, Oil, and Lubricant
IDDE	Illicit Discharge Detection and Elimination
MCINCR-MCBQ	Marine Corps Installations National Capital Region Marine Corps Base Quantico
MS4	Municipal Separate Stormwater Sewer
MVAC	Motor Vehicle Air-Conditioning
NPDES	National Pollutant Discharge Elimination System
NREA	Natural Resources and Environmental Affairs
PCBs	Polychlorinated Biphenyls
PCP	Pentachlorophenol
RCRA	Resource Conservation and Recovery
SDS	Safety Data Sheets
SOP	Standard Operating Procedures
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leachate
TSCA	Toxic Substance Control Act
VPDES	General Virginia Pollutant Discharge Elimination System

This page intentionally left blank.

FACILITY INFORMATION

Name of Facility	Marine Corps Base Quantico				
Street Address	3250 Caitlin Ave.				
City	Quantico	**State**	VA	**Zip Code**	22134
County	Stafford, Prince William, Fauquier (MS4 in Prince William County only)				

This page intentionally left blank.

1.0 INTRODUCTION AND PURPOSE

Marine Corps Installations National Capital Region Marine Corps Base Quantico (MCINCR-MCBQ) staff engage in a variety of activities that have the potential to contaminate stormwater. The majority of potential pollutant sources that may contribute to the contamination of stormwater discharges at MCINCR-MCBQ are due to industrial activities. These activities include material storage and handling in areas that are exposed to stormwater, dust or particulate generating or control processes, hazardous material/hazardous waste/or petroleum, oil, and lubricant products (HM/HW/POL) storage, fertilizer and pesticide application, and application of sand and salt to roadways.

MCINCR-MCBQ is authorized to discharge under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) Permit No. VAR040069, effective 1 November 2018, and the General VPDES Permit for Discharges of Stormwater Associated with Industrial Activity, Permit No. VA0002151 (Industrial Stormwater Permit). Section I.E.6.a of the MS4 Permit requires the development of written pollution prevention and good housekeeping procedures for facilities owned or operated by the permittee within the MS4 service area. While many industrial activities and potential pollutants are located outside of the MS4 boundary, the best practices identified in this document may be applied throughout the installation. Abbreviated good housekeeping procedures are also provided within facility-specific industrial area standard operating procedures (SOPs) located in Appendix D of the Stormwater Pollution Prevention Plan (SWPPP), dated August 2019.

Good housekeeping practices are essential in minimizing waste generation quantities and the potential for stormwater contamination. Housekeeping is to be conducted daily along with inspections scheduled periodically to ensure proper practices are being implemented and maintained.

MCINCR-MCBQ's Good Housekeeping Procedures include four (4) distinct components:

- **Training** – Training and certification requirements for applicable staff and contractors are referred to in Section 2.0;
- **Illicit Discharges** – Prevention and identification of illicit discharges are discussed in Section 3.0;
- **Maintenance & Operational Procedures –** Procedures for daily maintenance and operational activities conducted at MCINCR-MCBQ are outlined in Section 4.0; and
- **Waste Management & Disposal Procedures** – Procedures for waste management and disposal of pollutants are outlined in Section 5.0.

This page intentionally left blank.

2.0 GOOD HOUSEKEEPING & POLLUTION PREVENTION TRAINING

MCINCR-MCBQ provides training once every 12 months to applicable staff, identified by the Water Program Manager, who play a role in the prevention, recognition, and reporting of illicit discharges, spills, and stormwater contamination. The MCINCR-MCBQ Stormwater Training Plan, dated December 2019, provides additional detail on this and other training and certification requirements, including frequency of training and identification of MCINCR-MCBQ staff and contractors that require training or certification.

This page intentionally left blank.

3.0 ILLICIT DISCHARGE PREVENTION AND IDENTIFICATION

An illicit discharge is defined as any discharge to the MS4 that is not composed entirely of stormwater with the exception of certain nonstormwater discharges that are authorized by the MS4 Permit. These discharges can be hazardous to public health, harmful to aquatic life in receiving waters, and detrimental to overall water quality. Most sources of an illicit discharge at MCINCR-MCBQ are likely to originate from a generating site or activity, such as from a vehicle washing area or maintenance area. These could result from daily practices or from a specific spill incident.

3.1 Allowable Nonstormwater Discharges

In accordance with 9VAC25-890-20.D, the following nonstormwater discharges are authorized under the MS4 Permit provided they have not been identified as significant contributors of pollutants to the MS4:

- Water line flushing, managed in a manner to avoid an instream impact;
- Landscape irrigation;
- Diverted stream flows;
- Rising groundwaters;
- Uncontaminated groundwater infiltration, as defined at 40 CFR 35.2005(20);
- Uncontaminated pumped groundwater;
- Discharges from potable water sources managed in a manner to avoid instream impact;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water;
- Springs;
- Water from crawl space pumps;
- Footing drains;
- Lawn watering;
- Individual residential car washing;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Street and pavement wash waters that do not contain cleaning additives or are otherwise managed in a manner to avoid instream impact;
- Routine external building washdown provided no soaps, solvents, or detergents are used, external building surfaces do not contain hazardous substances, and the wash water is filtered, settled, or similarly treated prior to discharge;

- Discharges from emergency firefighting activities;
- Discharges or flows of water for fire prevention or firefighting training activities managed in a manner to avoid instream impact in accordance with § 9.1-207.1 of the Code of Virginia;
- Discharges from noncommercial fundraising car washes if the washing uses only biodegradable, phosphate-free, water-based cleaners; or
- Other activities generating discharges identified by the Virginia Department of Environmental Quality (DEQ) as not requiring permit authorization.

3.2 Preventing Illicit Discharges

MCINCR-MCBQ staff are the first line of defense for preventing generating sites from contributing to an illicit discharge. Executing the procedures outlined in Sections 3.0, 4.0, and 5.0 is the best approach to reduce the likelihood of nonstormwater discharges reaching the storm sewer. First, staff should take every measure to eliminate pollutant exposure to stormwater. Effective spill prevention and containment are an important secondary measure. Finally, in the event of a non-emergency leak or spill, staff should immediately contain the spill and prevent pollutants from entering the storm sewer or any water body. For emergency spills posing a hazard, immediately contact the MCINCR-MCBQ Fire Department. Report all spills to Natural Resources and Environmental Affairs (NREA) at 703-784-4030.

3.3 Identifying and Reporting Illicit Discharges

Potential illicit discharges can be identified and removed prior to entering the storm sewer with effective inspections and appropriate follow-up when pollutants appear to be potentially exposed to rainfall, and subsequently, stormwater runoff. MCINCR-MCBQ's maintenance and operations staff are in the best position to identify these pollutants. If the observer is not qualified or appropriately trained to take the appropriate action, or if illegal dumping is observed, notify the NREA Spill Program Manager at 703-784-4030.

If MCINCR-MCBQ staff detects an illicit discharge or illegal dumping, report it immediately to the NREA Spill Program Manager at 703-784-4030. Additional detail for identification of an illicit discharge is provided in the Illicit Discharge Detection and Elimination (IDDE) Written Procedures, dated October 2019. Also refer to the IDDE Written Procedures for illicit discharge reporting requirements and procedures.

4.0 MAINTENANCE & OPERATIONAL PROCEDURES

Sections 4.1 through 4.19 identify activities occurring at MCINCR-MCBQ for which good housekeeping and pollution prevention procedures and best practices should be applied in order to minimize the potential for pollutants to come in contact with stormwater. Each of the following sections identify the sources of potential pollution, best management practices (BMPs), and common potential pollutants.

4.1 Vehicle Washing

Vehicle washing results in the discharge of solvents, grease, sediment, and petroleum products from personal vehicles, golf carts, maintenance facility vehicles, etc. Washing vehicles near inlets, ditches, or other conveyances that lead to the storm sewer system may cause contaminants to pollute a nearby waterway. Always wash vehicles in a designated vehicle wash rack, and away from the storm sewer system and areas such as staging areas or other hardened surfaces where wash water will run off. The MS4 Permit prohibits vehicle washing outside of contained areas where wash water is captured and discharged to the sanitary sewer.

Best Management Practices

- ✓ Wash in designated wash bays that drain directly to the sanitary sewer.
- ✓ Use nozzles that automatically turn off water when not in use.
- ✓ If detergents or cleaners must be used, ensure the cleaner is a biodegradable and non-emulsifying detergent. Use a phosphate free water-based detergent.

Potential Pollutants

- Vehicle soap or solvents
- Oil and hydraulic residue
- Sediment

4.2 Vehicle/Equipment Maintenance

Vehicle and equipment maintenance practices involve solvents, petroleum products, and other toxic compounds that must be stored and handled in accordance with procedures that prevent potential contamination of the MS4 and associated waterways.

Best Management Practices

For general maintenance:

- ✓ Vehicles/equipment should be maintained inside and under cover.
- ✓ Vehicles/equipment that are leaking any fluids should be put inside and under cover unless a drip pan can be utilized and emptied into the designated hazardous waste containers.
- ✓ Wastewater should be disposed of in the sanitary sewer only.
- ✓ Remove leaking vehicles/equipment from service until repaired.
- ✓ Store leaking batteries in a secondary container.
- ✓ Use detergent-based or water-based cleaning systems instead of organic solvents and degreasers.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Utilize written checklist inspections at least once monthly, preferably weekly.
- ✓ Conduct and document daily inspections for the staging vehicles/equipment area.

Potential Pollutants

- Oil and hydraulic fluid
- Antifreeze
- Batteries
- Grease
- Fuel

4.3 Vehicle/Equipment Storage

Vehicles and equipment are stored at the base due to seasonal operations (snow removal), infrequent use, etc. Vehicles and equipment are potential sources of pollutants and must be stored appropriately. Maintenance should take place in designated locations indoors or under cover, otherwise special care should be taken to ensure spilled or leaked fluids are contained.

Best Management Practices

- ✓ Store vehicles/equipment inside or under cover, if possible.
- ✓ If vehicles/equipment must be stored outside, locate vehicles away from storm drains should leaking occur.
- ✓ Leaking vehicles/equipment should be placed inside or undercover unless a drip pan can be utilized and disposed of into designated waste containers.
- ✓ Clean up any observed spills or leaks and address the source. Ensure that parking areas are free of sediment and debris. Street sweep or clean as required to reduce mobilization of materials in stormwater.
- ✓ Regularly inspect individual pieces of equipment.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Utilize written checklist inspections at least once monthly, preferably weekly.

Potential Pollutants

- Coolant (Antifreeze) – Typically green, yellow, or orange; sometimes pink or blue
- Oil – Brown or black
- Fuel – Odor
- Brake Fluid – Clear, yellow, blue, or red
- Power Steering Fluid – Red, yellowish brown, reddish brown, or dark brown
- Transmission Fluid – Pink, red, reddish brown, or black
- Washer Fluid – Blue or green

4.4 Fueling

MCINCR-MCBQ utilizes a fleet of vehicles for base maintenance and operations, in addition to other gas-powered equipment. Fuel for fleet vehicles and equipment includes toxic compounds that can impair the water quality of receiving waterways if spilled or leaked. Extra care must be taken to ensure that staff are adequately trained to avoid spills, clean them if they do occur, and prevent them from entering the storm sewer or any receiving waterways. Other Best Management Practices can also be employed to reduce the risk, in addition to other procedures in applicable permits governing storage tanks.

Best Management Practices

- ✓ Refuel vehicles and equipment offsite at locations with designated fuel areas.
- ✓ Onsite refueling locations should be designed to prevent runoff and spills by having an impervious surface graded away from storm sewer inlets.
- ✓ Fuel stations should be covered by a roof at least as large as the grade break or fuel dispensing area, and this cover should direct stormwater to a perimeter drain or away from the area.
- ✓ Install oil control devices in storm drains or basins that may receive contaminated runoff.
- ✓ Install vapor recovery nozzles to reduce drips and vapor.
- ✓ Routinely inspect refueling structures and equipment for proper function and condition, as well as any signs of corrosion or potential failure. Aboveground tanks should be inspected periodically by a professional.
- ✓ Avoid "topping off" or filling beyond the normal fill capacity.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Conduct daily visual inspections of the fuel dispensing operations.
- ✓ Keep a spill kit in the immediate area in the event of a spill.
- ✓ Fuel operator should be present during the entirety of the loading/unloading process.
- ✓ Keep a list of names and telephone numbers of appropriate personnel and procedures for notifying personnel in case of a leak or spill must be posted.
- ✓ Inspect oil/water separator quarterly and document.
- ✓ Clean oil/water separator annually or as needed.

Commonly Generated Pollutants

- Gasoline and Diesel Fuel
- Waste Oil

4.5 Dumpsters - Solid Waste Collection and Recycling

Dumpsters and trash cans are potential producers of illicit discharges if polluted materials leak and travel to the storm sewer or receiving waterways. However, as with other waste and chemical storage, proper storage and careful handling will minimize exposure. Dumpsters and trash cans without lids or cover allow rainwater to mix with the waste inside and produce polluted leachate that could then spill. Dumpsters and trash cans must also remain in good condition to ensure nothing can leak out of the bottom and possibly contaminate the storm sewer and receiving waters.

Best Management Practices

- ✓ Provide only covered containers, rather than those with completely open tops, to reduce the amount of rainwater entering the container and the potential for leaking during normal use.
- ✓ Place recycling containers, cigarette butt receptacles, and trash dumpsters and cans in high pedestrian traffic areas, building entrances, and sidewalks adjacent to parking lots. Increase the number of containers if overfilling is a problem.
- ✓ Install adequate number and size of temporary trash receptacles for special events.
- ✓ Provide adequate containers at service entrances so trash materials from within the buildings are immediately transferred to covered containers during routine cleaning.
- ✓ If collected trash materials are hauled using a vehicle, install an impermeable liner to contain any leakage during transfer. Wash any leakage in designated wash areas that drain directly to the sanitary sewer.
- ✓ Provide a secure area for dumpster loading and unloading to prevent tampering, unwanted dumping, and damage from other vehicles.
- ✓ Routinely inspect dumpster and trash can lids and other surfaces for deterioration or damage that may cause exposure to stormwater or allow leakage.
- ✓ Ensure only proper materials are loaded into the dumpster to avoid accidental mixing of chemicals or introduction of corrosive materials.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Keep all lids on dumpsters closed when not being filled or emptied.

Potential Pollutants

- Leachate
- Trash and Debris

4.6 Chemical Storage

MCINCR-MCBQ has a number of chemicals on site that are related to routine cleaning and maintenance, and contractors possessing chemicals and chemical-dispensing equipment may also be on base. All chemicals that could potentially contaminate stormwater and receiving waters should be clearly marked and stored indoors or in secure secondary containment outdoors.

Best Management Practices

- ✓ Storage areas where loading and unloading occur should be on secondary containment.
- ✓ Schedule periodic pick up of waste chemicals through the NREA hazardous waste program.
- ✓ Conduct inspections according to the NREA Hazardous Waste Program regulations.
- ✓ Plainly label containers that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if a spill occurs.
- ✓ Store materials away from high traffic areas and on structures that keep them from coming into contact with the floor.
- ✓ Storage areas, loading, and unloading areas should be covered or enclosed to reduce potential contact with stormwater.
- ✓ Storage spaces and containers should be routinely checked for leaks or signs of deterioration.
- ✓ Provide contract language that requires contractors to appropriately store chemicals and hazardous materials and to be responsible for safe handling and cleanup of any potential spills.
- ✓ Set up periodic pick-up of waste chemicals through a third-party contractor who can assist with providing the proper storage containers and proper disposal.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Utilize written checklist inspections at least once annually.

Potential Pollutants

- Solvents
- Automotive lubricants
- Pesticides
- Fertilizer

4.7 Outdoor Loading Areas

Outdoor loading areas present the potential for contaminants to leak during transport to/from vehicles and containers.

Best Management Practices

- ✓ Perform outdoor loading under a tarp or covered structure.
- ✓ Preferably load material in dry weather.
- ✓ Position loading areas away from storm drains.
- ✓ Grade loading areas to a dead-end connection or sanitary sewer, rather than a storm drain.
- ✓ Routinely inspect loading areas for leaks or signs of deterioration.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Utilize written checklist inspections at least once quarterly.

Potential Pollutants

- Varies based on material being loaded

4.8 Outdoor Material Storage

Outdoor storage at MCINCR-MCBQ includes metals, plastics, erodible materials in bags, or containers with lids.

Best Management Practices

- ✓ Store all materials in appropriately labeled containers with closed lids.
- ✓ Avoid placing materials near storm drains.
- ✓ If materials are too large to store in containers, cover with a tarp and appropriately label the area to indicate the stored materials that are present.
- ✓ Provide secondary controls for erodible materials such as mulch, sand, and gravel.
- ✓ Routinely inspect outdoor material storage areas for leaking or corrosion.
- ✓ Clean up all migrating materials upon discovery and contain the source of the pollutant.
- ✓ Train staff in spill cleanup so that leaks and spills are addressed in a timely fashion.
- ✓ Utilize written checklist inspections at least once quarterly.
- Potential PollutantsCorroded materials
- Wood preservatives
- Sediment
- Mulch

4.9 Outdoor Material Stockpiling

MCINCR-MCBQ has material stockpiling areas for the storage of bulk materials such as sand, mulch, and gravel. These materials must be stored and handled in accordance with procedures that prevent potential contamination of the MS4 or associated waterbodies. Long-term stockpiling is any material that will remain on site for more than 14 days. Inert demolition debris such as broken asphalt and concrete should only be taken for disposal to approved permitted sites with properly designed, installed, and maintained erosion and sediment perimeter controls in place as determined by the Water Program Manager.

Short-Term Best Management Practices

- ✓ Provide perimeter controls on three sides of the stockpile.
- ✓ Consider placing material on top of an impermeable membrane for quick clean-up.
- ✓ Consider placing an impermeable membrane on top of the stockpile and secure with cinder blocks/weight.
- ✓ When utilizing a portion of the stockpile, remove only a section of the protective covering to prevent moisture absorption and to minimize exposure to precipitation and wind.
- ✓ Store materials sufficiently away from storm drains or waterbodies.
- ✓ Clean up all migrating materials upon discovery and repair the source of the migrating pollutant to prevent potential contamination of stormwater.
- ✓ Routinely inspect outdoor material stockpiles for migrating materials.

Long-Term Best Management Practices

- ✓ For soil stockpile storage over 14 days, cover with a tarp or provide temporary turf stabilization to prevent erosion. Provide perimeter controls on three sides of the stockpile.
- ✓ Store materials sufficiently away from storm drains or waterbodies.
- ✓ Provide three-sided jersey barriers to serve as perimeter controls and sediment barriers. Install additional ESC controls as necessary (e.g., erosion eels, etc.).
- ✓ Provide inlet protection or move stockpile where migrating materials may enter storm drains.
- ✓ Clean up all migrating materials upon discovery and repair the source of the migrating pollutant to prevent potential contamination of stormwater.
- ✓ Routinely inspect outdoor material stockpiles for migrating materials.

Potential Pollutants

- Migrating bulk material

4.10 Salt Storage/Operations

Road treatment materials used during inclement weather, such as deicing salt and sand grit, should be carefully stored and handled to prevent migration into storm drains and waterways. Salt storage at MCINCR-MCBQ should be covered and unexposed to rainfall or stormwater.

No deicing agents containing urea or other forms of nitrogen or phosphorus shall be applied to paved surfaces. For proprietary deicing mixtures, request a letter from the manufacturer stating that no forms of nitrogen or phosphorus are in the product and retain records for three (3) years, or keep a product sheet available for reference.

Best Management Practices

- ✓ Storage, loading, and unloading areas should be covered or enclosed to reduce potential contact with stormwater.
- ✓ Another option for seasonal storage of sand/grit is to cover all outdoor material stockpiling areas with a tarp and secure tarp edges with sandbags or other heavier objects.
- ✓ Clean up all migrating materials upon discovery and repair the source of the migrating pollutant to prevent potential contamination of stormwater.
- ✓ During material delivery or loading, immediately clean spilled or tracked materials.
- ✓ Routinely inspect storage areas for migrating materials or deterioration of containment structures.
- ✓ Any salt spreading equipment and deicing materials should be stored such that they are not exposed to precipitation and subsequent stormwater flows, other than during normal use.
- ✓ Utilize written checklist inspections at least once quarterly.
- ✓ Conduct and document daily visual inspections of the salt storage facility.

Potential Pollutants

- Salts
- Sand and sediment

4.11 Power Washing

Power washing can concentrate organic sediment, precipitates, and surface material into wash water, which is characterized as an illicit discharge if it enters the MS4. Only water is permitted to be used for power washing on base, and cleaning solutions may not be used. Power washing water should not enter the storm sewer system or waterways. Care should be taken to prohibit the wash water from flowing into the storm sewer, including roof drains, downspouts, and any other conveyances leading to them.

Best Management Practices

- ✓ Identify storm drains and possible conveyances to storm drains prior to commencing with cleaning or washing and take measures to prevent wash water from entering them.
- ✓ Use dry cleanup methods to remove debris prior to washing surfaces.
- ✓ Determine where wash water may pool and vacuum up or allow it to evaporate.
- ✓ Water not containing chemicals may be allowed to infiltrate in grass or gravel areas. Wash water that may contain chemical pollutants that were present on the washed surface must be captured and disposed of in the sanitary sewer. Suspended solids and oils must be removed from the wastewater using booms, absorbent pads, or other devices.
- ✓ Apply minimal water and prioritize dirty areas rather than cleaning or pressure washing an entire surface.
- ✓ Inspect work areas after completion to ensure all potential pollutants have been contained and adequately disposed of.

Potential Pollutants

- Sediment

4.12 Pesticide Application

Anywhere pesticides and herbicides, even when used occasionally, are used or loaded into equipment is subject to an accidental discharge into the MS4. Care should be taken to properly store, handle, and apply these chemicals in much the same manner as other hazardous materials, and only adequately trained staff should be responsible for their use. Applications of pesticides and herbicides over waters of the state or at water's edge are governed under a separate National Pollutant Discharge Elimination System (NPDES) permit from DEQ.

Best Management Practices Application:

- ✓ Pesticide and herbicide application must be done by a certified applicator.
- ✓ Apply herbicides and pesticides only after other, non-chemical approaches fail.
- ✓ Determine which products are the most useful and least environmentally harmful for a given situation and use sparingly and in accordance with the manufacturer's recommendations.
- ✓ Use chemical products only during weather conditions appropriate for the application and that will not potentially mix with stormwater in a rain event.
- ✓ Avoid applying chemicals within five (5) feet of pavement, 25 feet of storm drain inlets, or 50 feet from a waterway.
- ✓ Implement the base Pesticide Management Plan and Nutrient Management Plans.
- ✓ Follow EPA label recommendations.
- ✓ Any leftover material must be resealed and labeled in a container.

Spill Prevention:

- Spray equipment must be emptied of solutions before loading into vehicles, transportation, and storage.
- Wash water from application equipment must be disposed of the in the sanitary sewer and any leftover material resealed in a container or disposed of at a hazardous waste collection location.
- Store materials in a secure location and keep containers clearly labeled.
- Routinely inspect storage areas for leaks or signs of deterioration that may cause exposure to stormwater or allow leakage.

Potential Pollutants

- Pesticides

4.13 Street Sweeping

Streets and parking areas are prone to collect and concentrate significant amounts of materials that contribute to polluted runoff into storm sewer systems and waterways. Sediment, debris, trash, automotive fluids, road salt, and trace metals can be minimized by such practices as street sweeping. Standard street sweeping vehicles can be employed for roadways and parking lots with curb and gutter, while smaller equipment can be used in other hardscape areas where material accumulates. In addition to reducing the chance and severity of polluted discharges into downstream waters, the practice also extends the useful life of stormwater basins by reducing the sediment load.

Best Management Practices

- ✓ Establish a schedule that best addresses the rate of accumulation of materials on pavement and hardscapes and adjust the schedule after significant events such as snowfall (sand, salt).
- ✓ Materials collected during street sweeping should be disposed of immediately and not stored onsite. If temporarily stored onsite, dewater the material and store at a location away from waterbodies and drainage systems. Provide perimeter controls until the material can be hauled offsite.
- ✓ Equipment washout areas should be kept clean and inlets free of debris and sediment to prevent bypass. Use the minimum amount of water to wash equipment.

Potential Pollutants

- Sediment
- Trash
- Heavy Metals
- Automotive lubricants

4.14 Parking Structure Cleaning

Parking structures can accumulate the same materials associated with parking lots, roads, and vehicle storage areas. Automotive lubricants, oils, and antifreeze, even in covered areas of a garage, may be swept into the storm drain system or tracked elsewhere by way of stormwater or vehicle tires. An additional, larger concern with parking structures is the need to apply sand and salt more often than regular parking lots, as the structure will freeze before the ground. These materials can accumulate in significant amounts and pose a serious threat to local waterways, clog stormwater inlets, as well as increase the sediment load to stormwater basins. Regular parking structure cleaning will extend the useful life of stormwater basins and reduce accumulation in inlet sumps and downstream transport.

Best Management Practices

- ✓ Use street sweeper to clean accessible areas of the parking structure. Use smaller, more portable machines to access tighter spaces. Clean remaining areas with vacuum recovery surface cleaners, rather than standard power washers. If vacuum recovery cleaners cannot be employed, then conduct removal by hand.
- ✓ If vacuum recovery cleaners cannot be employed, all power washing material and wash water must be prevented from entering the stormwater system. Only water is permitted to be used for power washing on base, and cleaning solutions may not be used. Use a series of dams, berms, and diversions to isolate water and material for recovery. Water may be allowed to evaporate, at which point leftover material can be collected. Only wash water free of oils, grit, and material that could clog pipes should be disposed of in the sanitary sewer.
- ✓ Materials collected should be directly transported to an offsite landfill.
- ✓ Ensure oil leaks and spills are managed appropriately. If leaking vehicles are stored in parking garages or structures, consider moving the vehicle away from storm drains and placing a drip pan beneath the leaking equipment. Captured leaking fluids should be disposed in designated hazardous waste containers.
- ✓ Install inlet protection before performing any maintenance operations where sediment or other pollutants could enter the storm system.

Potential Pollutants

- Oil and hydraulic fluid
- Antifreeze
- Grease
- Fuel

4.15 Storm Drain Maintenance

Storm drains are often the point of entry into the storm sewer system, and they need to be cleaned and maintained on a regular basis to reduce the amount of pollution, trash, and debris into receiving waterways. Clogged drains can overflow, thereby increasing the volume of water flowing into downstream structures and waterways, as well as the chances for damage and erosion.

Best Management Practices

- ✓ Maintain an accurate storm sewer map and information table depicting all components of the MS4 and receiving waterways.
- ✓ Establish a routine inspection schedule for observing structural conditions and for screening potential illicit discharges.
- ✓ Utilize a vacuum truck for emptying materials trapped in drainage inlets and junction sumps or otherwise dispose of materials in accordance with state and federal regulations.
- ✓ Keep impervious surfaces clean of trash, debris, and sediment.
- ✓ Mark drainage inlets to maintain public awareness about illegal dumping.

Potential Pollutants

- Trash and debris
- Sediments
- Oil and Grease
- Antifreeze
- Paints
- Cleaners and solvents
- Pesticides
- Fertilizers
- Animal waste
- Detergents

4.16 Exterior Building Maintenance

Maintenance of building exteriors may involve a number of different practices, from cleaning to resurfacing. Pressure washing, for example, can concentrate organic sediment, precipitates, surface material, and cleaning solutions into the wash water, which is characterized as an illicit discharge if it enters the MS4. Power washing water, cleaning agents, and other compounds should not enter the storm sewer system or waterways. Care should be taken to prohibit fluids from flowing into roof drains, downspouts, and any other conveyances leading to them.

Best Management Practices

Cleaning:

- ✓ Identify storm drains and possible conveyances to storm drains prior to commencing with cleaning or washing and take measures to prevent wash water from entering them.
- ✓ Use dry cleanup methods to remove debris prior to washing surfaces.
- ✓ Determine where wastewater may pool and vacuum up or allow it to evaporate.
- ✓ Water not containing chemicals or cleaning agents may be allowed to infiltrate in grass or gravel areas. Wash water containing low levels of chemical pollutants must be captured and disposed of in the sanitary sewer. Suspended solids and oils must be removed from the wash water using booms, absorbent pads, or other devices.
- ✓ Prioritize dirty areas rather than cleaning or pressure washing an entire area.

Painting:

- ✓ Use water-based paints and thinners instead of oil-based whenever possible.
- ✓ Mix paint indoors before starting work.
- ✓ When spray painting, use smaller paint containers with high pressure sprayers to minimize waste.
- ✓ Clean water-based paint off of brushes in a sink connected to the sanitary sewer. Oil-based paint waste must be reused, recycled, or disposed as hazardous waste.
- ✓ Use impermeable drop cloths.
- ✓ Immediately clean up all spills when they occur.
- ✓ Recycle or donate excess paint.
- ✓ Allow paint containers to completely dry before disposal.
- ✓ Perform all painting operations inside the paint booth.

Potential Pollutants

- Paints and Solvents

4.17 Landscape Management

Typical landscape maintenance practices can produce stormwater contaminants such as pesticides, soil, fertilizers, and debris which can pollute receiving waterways. Steps can be taken to reduce the harmful effects of these practices on the stormwater system and water flowing into waterways by reducing the number of inputs and waste, and by keeping maintenance crews adequately trained in best practices. MCINCR-MCBQ should never apply any de-icing agents containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

The MS4 Permit requires that a turf and landscape nutrient management plan be developed by a certified turf and landscape management planner on all lands owned by MCINCR-MCBQ where nutrients are applied to a contiguous area greater than one acre.

Best Management Practices

- ✓ Compost lawn wastes and re-till into the soil of planting areas or mix into mulch.
- ✓ Minimize turf areas by planting groundcovers, wildflowers, and shrubs, thereby reducing mowing and water requirements.
- ✓ Select drought and heat resistant turf species, and do not cut turf shorter than three (3) to four (4) inches. Mulching mower clippings should be left on the turf as a natural fertilizer, and ensure clippings are swept away from paved surfaces.
- ✓ Replace exotic plant species when necessary with regional, indigenous plants, which are typically more water efficient and disease resistant.
- ✓ Utilize low-volume irrigation methods and only water areas as needed to enhance plant root growth and avoid excessive runoff.
- ✓ Avoid stockpiling materials leftover from landscape maintenance. Install composting facilities for light litter and remove other materials to an offsite recycling/composting facility.
- ✓ Routinely inspect work areas to ensure materials do not migrate to storm sewer inlets or waterbodies.

Potential Pollutants

- Sediment
- Landscape Materials
- Fertilizers & Pesticides

4.18 Road Maintenance

MCINCR-MCBQ roads are traveled frequently by Marines, residents, staff, contractors, and visitors. Vehicles have the potential to contaminate the MS4 and nearby waterways, but careful maintenance of these areas will prevent these consequences from occurring. Road washing at MCINCR-MCBQ is prohibited at all time.

Best Management Practices

- ✓ Do not conduct road washing.
- ✓ Ensure roads are free of sediment and debris. Street sweep or clean as required.
- ✓ Ensure oil drippings and spills are managed appropriately. If leaking vehicles are stored in the street, consider moving the vehicle away from storm drains and placing a drip pan beneath the leaking equipment. Captured fluids should be disposed in designated hazardous waste containers.
- ✓ Park maintenance equipment and portable toilets away from storm sewer connections.
- ✓ Install inlet protection before performing any maintenance operations where sediment or other pollutants could enter the storm system.

Potential Pollutants

- Fuel
- Oil
- Hydraulic Fluids
- Grease

4.19 Dewatering Structures

Dewatering structures are devices designed to temporarily settle and filter water discharged from dewatering activities by means of pumping for utility construction and various maintenance activities. The purpose is to filter the sediment-laden water prior to the water being discharged off-site.

Best Management Practices

- ✓ A well-stabilized, vegetated area onsite may be used to filter sediment, if the area can withstand the velocity of the discharged water without eroding; and a minimum of 75 feet filtering length must be available.
- ✓ Size and operate a dewatering structure to allow pumped water to flow through the filtering device without overtopping the structure.
- ✓ Portable Sediment Tanks, Filter Boxes and Straw Bales/Silt Fence Pits are all dewatering devices with specific design criteria that can be found in the Virginia Erosion and Sediment Control Handbook Standard and Specification 3.26.
- ✓ An excavated basin (applicable to straw bale/sit fence) may be lined with filter fabric to help reduce scour and prevent inclusion of soil within the structure.
- ✓ Manufactured dewatering devices such as filter bags can also be used per manufacturer's recommendations.

Potential Pollutants

- Sediment

This page intentionally left blank.

5.0 WASTE MANAGEMENT & DISPOSAL PROCEDURE

The following sections describe the recommended procedures for managing and disposing of waste materials MCINCR-MCBQ staff may encounter. Refer to available Safety Data Sheets (SDS) for any materials listed below. These Good Housekeeping Procedures are not meant to supersede or replace any Material SDS or manufacturer's instructions, but rather supplement and further reduce stormwater pollution.

5.1 Aerosol Cans

Aerosol cans must be properly disposed of as universal waste. For waste disposal, units on base will contact the MCINCR-MCBQ HazWaste program. Recycling is also an acceptable option; however, cans must be punctured and emptied after final use, and the contents must be separately stored and disposed of as hazardous waste.

The MCINCR-MCBQ HazWaste program will provide a steel drum for collection of aerosol cans, and this container shall be placed at a satellite accumulation area. The container shall remain closed and labeled as "Aerosol Cans." Once the 55-gallon limit is reached, contact the MCINCR-MCBQ HazWaste program within three (3) days for them to transfer the drum to the central accumulation area. Do not move the container to another offsite location. MCINCR-MCBQ HazWaste program will obtain a waste manifest for disposal and keep this record on file for at least three (3) years.

5.2 Animal Carcasses

Roadside and property management of animal carcasses is generally dictated by the location and situation, with priority given to ensuring public safety by immediately removing the carcass from the area. Animal carcasses shall be disposed of at a landfill or in a covered dumpster that is frequently emptied.

5.3 Antifreeze

Place used antifreeze in a drum or tank and clearly label as "Used Antifreeze." These words may be written, stenciled, or labeled on the container. Labels are available from the NREA Branch, Hazardous Waste Program. The container shall remain closed when not in use and must be in good condition, with no other fluids being added. Used antifreeze should be recycled on base, if possible, and will not be handled as a hazardous waste.

5.4 Batteries

MCINCR-MCBQ classifies batteries as Universal Waste, which must be collected, stored, and recycled. These include traditional alkaline batteries (AA, AAA, C, D, 9-volt), Nickel Cadmium, Nickel Metal Hydride, Lithium Ion, Lithium, Mercury, Silver, Lead Acid, Lead Acid Flooded Cell Batteries, Non-Spillable Lead Acid Batteries, Sodium Batteries, and Potassium Hydroxide. Batteries are to be collected and turned in to the MCINCR-MCBQ HazWaste program. Batteries to be recycled shall be clearly marked as "Waste Batteries" or "Used Batteries." The battery collection container shall have the date that the first battery is collected marked on the outside. Batteries can be stored in the container for up to one (1) year of the marked date. Maintain records for the final destination of the batteries once they leave the site to a recycling facility or vendor for three (3) years.

5.5 Empty Containers

All empty containers should be properly stored to reduce degradation until such time as they are recycled or disposed of at a landfill. Best practices include keeping the containers closed and storing them together in a covered area. Label the containers as "Empty."

- Disposal of empty containers previously storing non-hazardous/non-RCRA materials such as oils and diesel fuel:
  - Empty the containers. Use absorbents such as rags or oil dry (no liquids) to help capture the remaining material. Dispose of the containers.
- Disposal of empty containers previously storing hazardous/RCRA non-acute hazardous materials or wastes such as gasoline, low flashpoint solvents, and some paints:
  - Empty the containers so that the remaining residue at the bottom is one inch or less. Use absorbents such as rags or oil dry (no liquids) to help capture the remaining material. Dispose of the containers.

Containers not yet disposed of or recycled can be kept in a central, secure, storage area that is designated as the satellite accumulation area. Containers must be closed and clearly labeled "Empty Container – Hazardous Waste" and inspected weekly. a Units are to schedule a pickup with the MCINCR-MCBQ HazWaste program when disposal is necessary. The MCINCR-MCBQ HazWaste program will dispose of the container through a licensed vendor and obtain a hazardous waste manifest from the vendor. This will be kept on file after disposal for at least three (3) years.

5.6 E-Waste (Monitors and Computers)

All computers, monitors, and other electronic waste should be properly disposed of and/or recycled through coordination with the MCINCR-MCBQ Telecommunications Network Branch (G-6).

5.7 Filters - Oil, Gas, or Diesel

Used filters may either be disposed as solid waste or as hazardous waste under the following conditions:

Used Oil Filters

Oil filters can be disposed of as solid waste when punctured and drained. Drain into an enclosed container labeled "Used Oil Filters." Maintain records of the final destination of the filters from the waste hauler for three (3) years.

Used Diesel Fuel Filters

Diesel fuel filters are non-regulated and can be disposed of as solid waste when punctured and drained. Drain into an enclosed container labeled "Used Diesel Fuel." Maintain records of the final destination of the filters from the waste hauler for three (3) years.

Used Gasoline Filters

Used gasoline filters must be managed according to hazardous waste requirements,at a satellite accumulation area, with storage limits up to 55 gallons. Place drained filters into a container labeled "Used Gasoline Filters". Once the 55-gallon threshold is met, the container must be given to the MCINCR-MCBQ HazWaste program who will schedule disposal through a hazardous waste hauler. Maintain records of the final destination of the filters from the waste hauler for three (3) years.

5.8 Fluorescent, HID, and Metal Halide Lights

Types of lights that are considered Universal Waste under the Resource Conservation and Recovery Act (RCRA) and must be collected, stored, and recycled include: fluorescent, high-intensity discharge (HID), metal halide, neon, mercury vapor, and high-pressure sodium lights.

Lights may be collected in a light bulb tube obtained from the MCINCR-MCBQ HazWaste program.. The lights must be securely stored and unbroken. Label the containers as "Waste Lamps" or "Waste Bulbs" and indicate the date the first light was placed there. Call the MCINCR-MCBQ HazWaste program for disposal when box is full. The MCINCR-MCBQ HazWaste program will maintain a record of disposal for at least three (3) years. Broken lights must be contained inleak proof containers and disposed of as hazardous waste.

5.9 Fluorescent Light Ballasts (PCB and Non-PCB)

Polychlorinated biphenyls (PCBs) can be present in the solid potting material and in the capacitors of fluorescent light ballasts (FLB) manufactured before 1979, and these devices may still be in use with fluorescent lights in buildings from that era[17]. Non-

[17] PCB-containing fluorescent light ballasts that are currently in use have exceeded their designed lifespan and pose significant risk. EPA recommends removing PCB-containing FLBs from buildings as soon as possible to prevent potential inhalation or dermal exposure.

leaking light ballasts are restricted to disposal in sanitary or industrial landfills with leachate collection, liners, and appropriate groundwater monitoring.

A PCB-containing FLB failure, leak, smoking condition, or fire requires the following:

- Isolate the affected area from central ventilation and ventilate the air separately.
- Relocate persons from the affected area.
- Hire experienced cleanup personnel to clean up and decontaminate equipment and surfaces.
- Comply with environmental regulations for proper storage and disposal of contaminated equipment and cleanup materials.
- Storage of Non-Leaking Equipment
- Non-leaking equipment can be stored for 30 days, after which point storage is subject to more stringent requirements.
- Dispose of the non-leaking ballasts as solid waste in a municipal solid waste landfill.

5.10 Freon

The EPA requires service shops to use approved refrigerant recovery equipment for repair of air conditioning systems in motor vehicles. MCINCR-MCBQ staff or contractors using refrigerant recovery equipment must be trained and certified by an EPA-approved organization. To comply with the requirements, service shops must send the Motor Vehicle Air-Conditioning (MVAC) Certification form to EPA along with the facility name and address, name of equipment manufacturer, equipment model and serial number, and a manufacture date. Maintain records for three (3) years of the technician certifications and the name and address of the reclamation facility.

5.11 Landscape Materials

Leaves, twigs, lawn clippings, and brush can accumulate from landscape maintenance activities. Haul landscape waste to a dump that accepts landscape materials.

5.12 Mercury Switches and Equipment

A mercury switch or equipment is any device containing mercury integral to its function (e.g., thermostats, appliances). Spilled or exposed mercury poses significant risk as it can evaporate and become an invisible, odorless, and toxic vapor. They are classified as Universal Waste and must be collected, stored, and recycled while intact in the device.

- Collect unbroken mercury switches and equipment in an empty container marked "Waste Mercury Switch/Equipment" or "Used Mercury Switches/Equipment." Mark the outside of the container with the date the first item is placed in the

container.

- Store for up to one year in an enclosed container onsite within the satellite accumulation area. Call the MCINCR-MCBQ HazWaste program for disposal. MCINCR-MCBQ HazWaste program will contract with a hazardous waste disposal company for proper disposal.
- MCINCR-MCBQ HazWaste program will maintain a record of the final destination of the equipment for at least three (3) years.
- If mercury is spilled or exposed, isolate the area and hire experienced professionals to clean up and decontaminate equipment and surfaces.

5.13 Oil, Gas, Diesel and Cooking Grease Waste

Waste fuels, oils and greases must be stored in separate, enclosed drums or tanks and clearly labeled as "Used Oil," "Used Diesel Fuel," "Used Gasoline" or "Used Grease." Each container shall remain closed unless in use and should remain in a covered, secured area. Contact a waste vendor when the container is full and maintain records from the vendor for three (3) years.

Used oil can be burned provided that:

1. Only used oil that the facility generates or received from household DIYs is burned in the heater;
2. The space heater is rated more than 0.5 million Btu/hr; and
3. Combustion gases from the space heater are vented to the ambient air.

If the space heater does not meet all of the above requirements, Part 279, Subpart G burner standards apply.

5.14 Paint Waste – Latex, Solvent, or Oil-Based

Paints and liquid surface coverings such as polyurethane should be stored in containers that are clearly labeled and remain closed. Store containers in a secure, covered area off the floor.

Latex Paint

Latex paint is non-regulated, and its containers may be discarded once completely empty and do not contain free liquid. Absorbents can be used to remove any remaining free liquid or spread the paint on cardboard or newspaper and allow the container to dry completely before disposal as solid waste.

Solvent or Oil-Based Paints

These paints, including stains, sealers, and associated thinning agents, shall be managed as hazardous waste due to their flammability or hazardous components they may contain. If minor amounts are leftover and cannot be used, use absorbents to remove any remaining free liquid, or spread the paint onto newspaper or cardboard and allow to dry

completely before disposal as solid waste. If the quantity is large, contact the MCINCR-MCBQ HazWaste program for disposal. The MCINCR-MCBQ HazWaste program will maintain records of the disposal for at least three (3) years.

5.15 Parts Cleaners

Low Flashpoint Solvents

Low flashpoint solvents contained in parts washers become hazardous waste once the solvent becomes too contaminated to clean effectively. Unless the parts washers are under a regularly scheduled service agreement, a hazardous waste vendor should be contacted when the solvents become ineffective at cleaning. Maintain records of the final destination from the waste hauler for three (3) years.

High Flashpoint Solvents

Waste solvents with a high flashpoint are not typically hazardous and can be recycled, unless the solvent is tested for pH and toxicity and is determined to be hazardous waste. Contact the vendor for related information or contact a hazardous waste vendor for disposal. Maintain records of the final destination from the waste hauler for three (3) years.

Aqueous Solvents

Waste aqueous solvents are typically not hazardous and can be recycled, unless they have become highly contaminated with materials from the washed parts, such as toxic metals and oils. Unless the spent liquid is tested, it should be assumed that it is hazardous and should be treated as other solvents by a waste vendor. Maintain records of the final destination from the waste hauler for three (3) years.

5.16 Pesticides

Herbicides, insecticides, and fungicides, etc. are all considered pesticides under EPA regulation. Containers shall be stored in a covered area on impervious flooring, and containers should be segregated according to type. Ensure all containers are labeled and kept closed and remove only the amount expected to use until the container is empty.

Never pour leftover pesticides down the sink, into the toilet, or down a sewer or street drain. Pesticides may interfere with the operation of wastewater treatment systems or pollute waterways, where they may harm fish, plants, and other living things. Pesticide containers may be managed as a hazardous waste, recycled, or returned to the vendor, as described below.

Partially Full Containers as Hazardous Waste

- Pesticides that cannot be completely used and the containers are partially full should be marked as “Waste Pesticide” or “Used Pesticide.”
- Contact the local hazardous waste authority for disposal as hazardous waste. Maintain a record of the final destination for used pesticide containers for three (3) years.

Empty Containers for Disposal or Recycling

- Containers should be rinsed three (3) times with potable water and disposed as solid waste or recycled. Save the rinse water in separate container for future applications.

If the rinse water is not reused it must be properly managed. Contact the local hazardous waste authority for guidance on proper disposal.

Partially Full Containers Returned to the Vendor

- Some vendors may accept returned pesticides. Keep all containers clearly marked with original labeling and contact vendor for proper handling and shipment.

5.17 PCB-containing Materials

Dispose of non-liquid PCB-containing materials in a Toxic Substance Control Act (TSCA) approved chemical waste landfill or TSCA-approved incinerator. Dispose of PCB oils in a TSCA-approved incinerator.

5.18 Rags, Wipes, and Absorbents

Disposal methods vary for rags, wipes, and absorbents, depending on the type of substance absorbed. They will either fall under the Used Oil Regulations, the Hazardous Waste Regulations, or the Solid Waste Regulations.

Absorbents Used to Capture Used Oil

Waste rags, wipes, and absorbents containing oil (such as motor oil, hydraulic oil, etc.) are treated as non-regulated waste. Any materials that are saturated with used oil should be kept in a closed container marked "Used Absorbents" and picked up by a used oil vendor for disposal. Maintain records of the final destination of all materials from the waste hauler for three (3) years.

Absorbents Used to Capture Diesel Fuel

Waste rags, wipes, and absorbents containing diesel fuel are treated as non-regulated waste. Materials that are saturated with diesel oil should be kept in a closed container marked "Used Absorbents." Contact a used oil vendor when the container is full and keep records of the final destination from the waste hauler for three (3) years.

Absorbents Used to Capture Hazardous Materials

Waste rags, wipes, and absorbents containing hazardous materials such as gasoline, solvent or oil-based paint, and some solvents and cleaners must be managed as hazardous waste. Collect the materials into a barrel or bucket with a tightly fitting lid and marked as "Material Absorbents" and contact a hazardous waste vendor when full and keep records of the final destination from the waste hauler for three (3) years.

5.19 Scrap Tires

The primary means of scrap tire disposal is recycling through a registered waste tire hauler or at a scrap tire facility. If tires cannot be recycled, they can be taken to a landfill that accepts waste tires. Virginia regulation states that no more than 100 scrap tires may be stored on site at any one time without a Solid Waste Permit. When the tires are transported offsite, keep records of the final destination for three (3) years.

5.20 Solid Waste Trash

All solid items not recycled or managed as hazardous waste may be considered solid waste and disposed of using a trash collection service or municipal landfill. Liquids generally cannot be disposed of in regular trash collection service and the local hazardous waste authority should be consulted if suspect liquids are in the waste collection. Recycling vendors may collect additional liquid wastes that are not listed in this document.

Waste should be collected in bags that are securely closed and transferred to a dumpster in good condition and equipped with a lid or cover. Loose trash from unsecured collection could blow into stormwater drainage areas or come in contact with stormwater and potentially contribute pollutants into receiving waters.

5.21 Surplus and Excess Property

Materials and property that are no longer in use and stored should be managed carefully so that they are expeditiously transferred to their next user or location. Materials should not be stockpiled in locations where they might deteriorate and potentially cause pollutants to enter stormwater.

5.22 Treated Lumber

The priority for treated timber is to first find potential for reuse in another project. If the materials are being discarded, conditions apply based on the chemicals used to treat the wood.

Timber Treated with Chromated Copper Arsenate (CCA)

RCRA exempts CCA treated lumber from hazardous waste regulation provided that the wood is in the same form it was for its intended use. For example, mulch is not exempt and cannot be legally sent to the landfill.

Timber Treated with Creosote

Though not required by EPA regulation on weathered wood, a disposal facility may require a Toxic Characteristic Leachate Procedure (TCLP) be conducted to test timber prior to disposal. New creosote treated timber must be tested to determine if it is hazardous prior to disposal. Contact the local hazardous waste authority for further guidance on testing.

Timber Treated with Pentachlorophenol (PCP)

All PCP treated timber must be tested prior to disposal. Contact the local hazardous waste authority for guidance.

APPENDIX E Stormwater Training Plan

This page intentionally left blank.

CDM - AECOM
Multimedia Joint Venture

STORMWATER TRAINING PLAN

MCBQ FY19 MS4 SUPPORT
NAVFAC Contract Number: N62470-14-D-9016
Delivery/ Task Order Number: N4008019F4941

Prepared for

NAVFAC Washington
Environmental | Utilities & Energy Division
1314 Harwood Street SE, Building 212
Washington Navy Yard, DC 20374

December 2019

This page intentionally left blank.

FINAL
Stormwater Training Plan

PREPARED FOR:

Marine Corps Installations National Capital Region Marine Corps Base Quantico (MCINCR-MCBQ) Quantico, VA

Naval Facilities Engineering Command Atlantic
1314 Harwood St, SE, Bldg. 212
Washington Navy Yard, DC 20374

CONTRACT NO. N62470-14-D-9016

DELIVERY ORDER NO. N4008019F4941

December 2019

PREPARED BY:

CDM - AECOM
Multimedia Joint Venture

AECOM
4800 Westfields Blvd, Suite 400
Chantilly, VA 20151
Telephone: 703-713-1500
Fax: 703-713-1512
www.aecom.com

This page intentionally left blank.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

This page intentionally left blank.

ACRONYM LIST

BMP	Best Management Practice
CETEP	Comprehensive Environmental Training and Education Program
CNMP	Certified Nutrient Management Planner
DCR	Virginia Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
E&SC	Erosion and Sediment Control
EC	Environmental Coordinator
ECPSOP	Environmental Compliance and Protection Standard Operating Procedures
EMS	Environmental Management System
FEAD	Facility Engineering and Acquisition Division
HAZWOPER	Hazardous Waste Operations and Emergency Response
HM	Hazardous Material
HW	Hazardous Waste
LID	Low Impact Development
MCINCR-MCBQ	Marine Corps Installations National Capital Region Marine Corps Base Quantico
MCO	Marine Corps Order
MS4	Municipal Separate Storm Sewer System
NAVFAC	Naval Facilities Engineering Command
NMP	Nutrient Management Plan
NREA	Natural Resources and Environmental Affairs
POC	Point of Contact
POI	Program of Instruction
POL	petroleum, oil, and lubricant
RLD	Responsible Land Disturber
SWM	Storm Water Management
SWMAP	Storm Water Management Action Plan
SWPM	Storm Water Program Manager
SWPPP	Stormwater Pollution Prevention Plan
SWPPT	Stormwater Pollution Prevention Team
USMC	United States Marine Corps
VAC	Virginia Administrative Code
VDACS	Virginia Department of Agriculture and Consumer Services

VPDES	Virginia Pollutant Discharge Elimination System
WPM	Water Program Manager

DEFINITIONS

Best Management Practices (BMP) Structural devices, systems, and procedures implemented to minimize the potential for stormwater contamination. Structural BMPs provide on-site storage and/or quality treatment of stormwater. Nonstructural BMPs are policy and procedural measures that reduce stormwater potential contamination at the pollutant source either through structural means (e.g., indoor storage, secondary containment) or implementation of non-structural means (e.g., periodic inspections, material substitution, work process modification).

Field Personnel Personnel whose job duties affect stormwater, to include those employed: in and around maintenance and public works facilities; during road, street, and parking lot maintenance; and in and around recreational facilities.

High-Ranked Industrial Sites Industrial sites with a history of non-compliance with Industrial VPDES Permit No. VA0002151 in the previous year(s) or that are located in a significant, sensitive area with a medium to high amount of outdoor activity that could cause stormwater pollution. Site rankings are maintained in the most recent version of the SWPPP or SWMAP.

Industrial Activities Activities conducted that have potential for release of pollutants with stormwater discharges.

Low Impact Development (LID) LID is a stormwater management strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfill environmental regulatory requirements. LID employs a variety of natural and engineered features that reduce the rate of runoff, filter out pollutants, and facilitate the infiltration of water into the ground.

Low-Ranked Industrial Sites Industrial sites with no history of noncompliance, and very little outdoor activity that could cause storm water pollution, not in a sensitive area. Site rankings are maintained in the most recent version of the SWPPP or SWMAP.

Medium-Ranked Industrial Sites Industrial sites with no recent history of noncompliance, not in a sensitive area, and very little outdoor activity that could cause stormwater pollution. Site rankings are maintained in the most recent version of the SWPPP or SWMAP.

Potential Pollutant Sources

Sources that may contribute to the contamination of stormwater discharges at MCINCR-MCBQ that include: outdoor industrial activities; process areas; material storage and handling areas that are exposed to stormwater; dust or particulate generating or control processes, areas where hazardous material/hazardous waste/or petroleum, oil, and lubricant products (HM/HW/POL) are stored; land areas where chemicals are applied; weathered or peeling paint; and bird/cat excrement.

FACILITY INFORMATION

Name of Facility	Marine Corps Base Quantico				
Street Address	3250 Caitlin Ave.				
City	Quantico	**State**	VA	**Zip Code**	22134
County	Stafford, Prince William, Fauquier (MS4 in Prince William County only)				

This page intentionally left blank.

SECTION 1 – INTRODUCTION

Marine Corps Installations National Capital Region Marine Corps Base Quantico (MCINCR-MCBQ) is authorized to discharge under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) Permit No. VAR040069, effective 1 November 2018, and the General VPDES Permit for Discharges of Stormwater Associated with Industrial Activity, Permit No. VA0002151 (Industrial Stormwater Permit). Both the MS4 Permit and stormwater pollution prevention plan (SWPPP) associated with the Industrial Stormwater Permit establish training requirements and schedule for applicable personnel.

1.1 Purpose

The purpose of this plan is to document compliance with the MS4 Permit and Industrial Stormwater Permit by providing a summary of required training activities and associated schedule. Training conducted at MCINCR-MCBQ ensures that employees and contractors engaging in activities with the potential to discharge pollutants use appropriate control measures to minimize the discharge of pollutants to the MS4. This plan also documents compliance with other United States Marine Corps (USMC) environmental standards and supplies supplemental guidance and resources.

This plan lays out the training requirements associated with the:

- MS4 Permit, and
- Industrial Stormwater Permit.

1.2 Scope

This plan identifies MCINCR-MCBQ employees and contractors, by job title or job description, that need to be trained; the content of such training; certification requirements; frequency of training; regulatory requirements; and how training is documented.

1.3 Background

Chapter 5 of Marine Corps Order (MCO) P5090.2A, Environmental Training and Education, standardizes "USMC environmental training by requiring all personnel to be trained to perform their jobs and maintain combat readiness in a manner supportive of USMC environmental goals." MCO P5090.2A also establishes and describes the USMC Comprehensive Environmental Training and Education Program (CETEP) and requires that each installation establish its own CETEP.

Chapter 18 of the MCINCR-MCBQ Environmental Compliance and Protection Standard Operating Procedures (ECPSOP) establishes MCINCR-MCBQ's CETEP. The objective of the CETEP is to require "on-duty personnel working with or around regulated materials and/or in

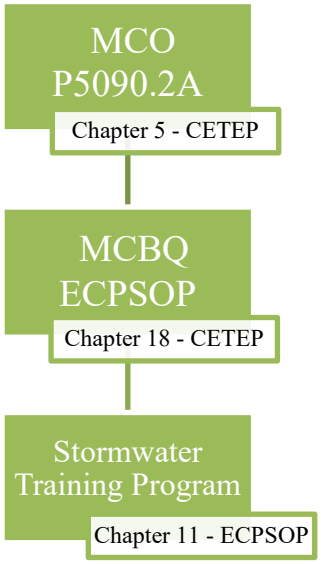
regulated working areas to obtain appropriate environmental training to minimize or eliminate risks to human and environmental health."

THIS PLAN ANSWERS THE BASIC QUESTIONS:

- **WHO** needs training?
- **WHAT** training topics need to be covered?
- **WHY** training must be conducted (regulatory requirements).
- **WHEN** training occurs.
- **HOW** training is conducted and documented.

The purpose of this training plan is to ensure that all MCINCR-MCBQ personnel whose job duties include stormwater management or whose work may affect stormwater pollution have the awareness and the skills needed to perform their job in a manner which minimizes stormwater pollution and is compliant with all applicable regulations and permit conditions. This Plan conforms to and is consistent with the MCINCR-MCBQ CETEP. The USMC training requirements hierarchy is illustrated in **Figure 1**.

Figure 1. USMC Training Requirements Hierarchy



SECTION 2 – ROLES AND RESPONSIBILITIES

The MCINCR-MCBQ Stormwater Management Program is managed by the Environmental Compliance Section of Natural Resources and Environmental Affairs (NREA). Under the Environmental Compliance Section, the Head is directly responsible for the Stormwater Management Program, while the Water Program Manager (WPM) manages the program and serves as the point of contact (POC) for the State.

The WPM works with the Facility Engineering and Acquisition Division (FEAD) concerning construction sites that require stormwater permits, erosion and sediment control (E&SC) plans, and stormwater management plans. The WPM also coordinates with site Environmental Coordinators (ECs), and industrial site POCs on stormwater issues.

MCINCR-MCBQ Public Works has responsibility for the maintenance and repair of all facilities including stormwater conveyance systems and structural BMPs.

Additional responsibilities are listed in Sections 2-1 through 2-6 below.

2-1. Base Commander

- The Commander, through the NREA Branch, is responsible for developing and overseeing CETEP aboard MCINCR-MCBQ, including providing environmental training and education to MCINCR-MCBQ personnel and tenant commands.
- The Commander appoints the CETEP Coordinator to his/her position in writing.

2-2. MCINCR-MCBQ CETEP Coordinator

- Ensure all individuals who require stormwater training at MCINCR-MCBQ receive it.
- Determine the training requirements of base (military and civilians) and tenant personnel aboard MCINCR-MCBQ.
- Prepare and present applicable training sessions in accordance with this Plan.
- Conduct training in accordance with federal, state, and local requirements and this Plan.

IMPORTANT

Identifying and assigning personnel for environmental training

…is the initial step in the training process. Maintain a roster of individuals whose job duties include field work around outfalls, streets and pavement, and any other structure of area where stormwater is conveyed or flows.

Share the roster with the MCINCR-MCBQ CETEP Coordinator so they can plan for the next stormwater training event.

- Maintain accurate records of completed CETEP training classes, including class rosters and completion certificates.
- Maintain the Base Environmental Training Calendar.
- Update the MCINCR-MCBQ CETEP Plan as needed.
- Maintain paper records for all personnel who have enrolled in, and completed, training courses and seminars.
- Publish an electronic calendar of training classes available to personnel at MCINCR-MCBQ. This calendar lists mandatory and voluntary training along with the dates of availability.
- Document, track, and schedule environmental training and evaluate its effectiveness.
- Ensure that stormwater training is structured to identify and address Environmental Management System (EMS), local training, and requirements mandated by Federal regulations.

IMPORTANT

The CETEP Coordinator and the Water Program Manager may be the same person.

Also note, in some supporting documents (e.g., the Comprehensive SWMAP, the Water Program Manager (WPM) is also referred to as the Storm Water Program Manager (SWPM).

2-3. Water Program Manager

- Manages the stormwater management program and serves as the point of contact for the state.
- Coordinates with FEAD and MCINCR-MCBQ Public Works on stormwater matters.
- Reviews, updates, and distributes the SWPPP.
- Conducts quarterly and annual compliance evaluations and any other follow-up inspections.
- Train ECs on SWPPP, good housekeeping, and pollution prevention, who in turn provide training to their industrial site personnel.

2-4. Site Environmental Coordinators

- Train industrial site personnel on SWPPP, good housekeeping, and pollution prevention.
- Maintain training records documenting the date, number of employees, and objective of training. Provide records to the WPM following training.
- Maintain training records for a minimum of three (3) years as required by the MS4 permit.
- Serve as a member of the Stormwater Pollution Prevention Team (SWPPT).

2-5. Stormwater Pollution Prevention Team Members

The purpose of the SWPPT is to assist in the implementation, evaluation, and revision of the SWPPP. The SWPPT is headed by the NREA WPM with team members comprised of site ECs, supervisors, or department heads of industrial activities at MCINCR-MCBQ whose duties are:

- Implementing all SWPPP requirements and BMPs;
- Identifying and correcting potential sources of pollution; and
- Conducting routine stormwater pollution prevention internal audits.

2-6. Other Employees and Contractors

All employees and contractors not specified in Sections 2-1 through 2-4 of this Plan are required to complete the training requirements laid out in Section 3 of this Plan.

This page intentionally left blank.

SECTION 3 – ASSIGNING AND SCHEDULING TRAINING

3-1. Identifying Personnel

Identifying individuals who are required to, or otherwise should, successfully complete stormwater training is a joint effort between the CETEP coordinator/WPM and the:

- Site ECs; and
- POCs for industrial sites and contractors.

LIST OF ECs & INDUSTRIAL SITE POCs

At a minimum, all members of the SWPPT should receive stormwater training. These personnel include ECs, Industrial Site POCs, and any other personnel identified by the team based on job description.

This list is provided as **Appendix A.**

The CETEP Coordinator/WPM should maintain an up-to-date list of the POCs for all activities with personnel whose job description indicates that their duties will affect stormwater. Personnel identified for training and/or required certification will include employees and contractors conducting the following activities:

- Performing road, street, and parking lot maintenance;
- Working in and around maintenance, public works, or recreational facilities;
- Applying pesticides, herbicides, or fertilizer;
- Serving as plan reviewers, inspectors, program administrators, and construction site operators;
- Using, storing or cleaning machinery or vehicles;
- Emergency response;
- Loading/unloading or transporting materials such as rock, salt, or fill dirt;
- Fuel dispensing/management;
- Managing materials or wastes stored outdoors in drums, barrels, tanks, or similar containers with the potential to leak; and
- Otherwise implementing the stormwater management program.

3-2. Scheduling

Training must be scheduled so that it complies with the required frequency. It is the duty of the CETEP Coordinator/WPM to notify via e-mail personnel to be trained of any upcoming stormwater training.

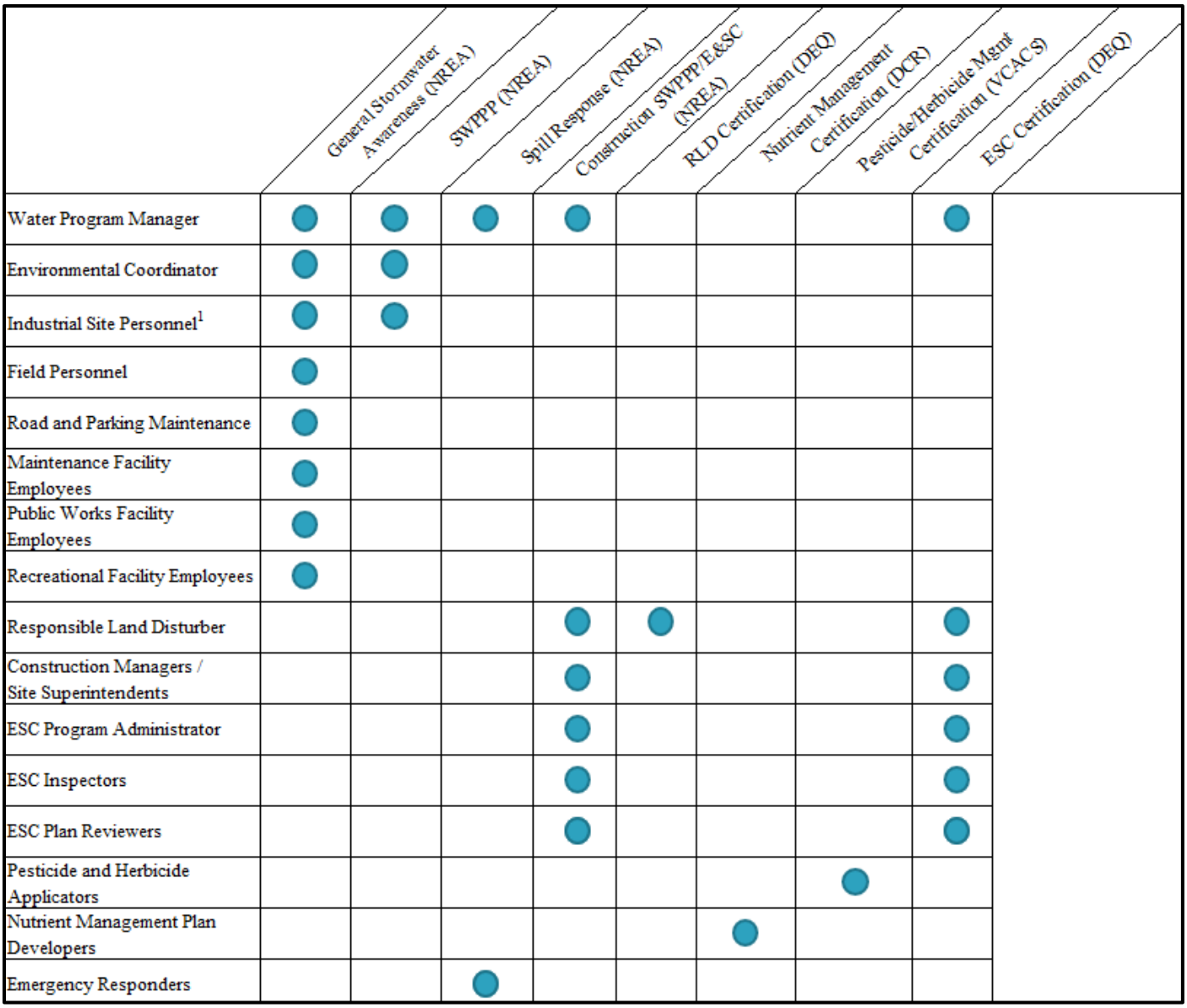
The CETEP Coordinator/WPM may elect to prepare a program of instruction (POI) prior to each training event. The POI provides a detailed description of the course content, curriculum breakdown, duration of instruction, and required resources. While not required, a POI serves as

a valuable tool in engaging attendees by communicating the drivers and logistics associated with a given training event. If this optional tool is developed, the CETEP Coordinator/WPM will attach the POI to the invitation e-mail sent to the training attendees. A sample POI is provided as **Appendix B**.

3-3. Training Requirements and Schedule

The types of training required based on job duties described in Section 2 are presented below on **Figure 2**.

Figure 2. Summary of Training Requirements



[1] ECs or industrial site POCs conduct SWPPP training for industrial site personnel.

Table 1 presents stormwater training conducted by NREA, employees/contractors that should attend the training, training topics, and frequency. These trainings are also identified in **Figure 2**.

Table 3. NREA Stormwater Training Schedule

Training Course	General Topics Covered	Frequency	Personnel to Receive Training	Duration[3]
General Stormwater Awareness Training	• Sources of stormwater pollution • Pollution prevention and good housekeeping • Recognizing and reporting an illicit discharge	New employees within 90 days of hire. Existing employees, every 24 months.	Field personnel Maintenance Public Works Recreational Facilities Road/Parking Maintenance	1 hour
MS4 and Industrial SWPPP Training[1]	• Good Housekeeping • Materials Management • Inspection and Inventory • Spill Prevention and Response	Within 90 days of hire. Annual Every 24 months.	New employees. High-ranked and medium-ranked industrial site personnel. Low-ranked industrial site personnel.	1 hour
Construction SWPPP and E&SC Training	• Erosion & Sediment Control • Implementing Construction SWPPP • Inspections & Enforcement	Prior to working onsite.	Recreational facilities Road, street, parking maintenance	1 hour
Spill Response Training[2]	• Spill response • Handling spill releases	Prior to beginning duties at MCINCR-MCBQ.	Emergency response personnel (e.g., firefighters)	1 hour

[1] MS4 and Industrial SWPPP training includes modules which address good housekeeping as well as spill response.

[2] The Spill Response Training curriculum has been tailored to train emergency responders such as firefighters on the handling of spill releases as part of a larger emergency response training.

[3] This approximate duration time corresponds to the trainings as they are conducted by NREA as of the date of this Training Plan. DEQ has not established minimum training duration requirements.

Table 2 identifies certification requirements for employees and contractors. Employees and contractors are required in their job descriptions and/or contract language to maintain these certifications. However, training is not conducted at MCINCR-MCBQ in support of these certifications.

Table 4. Required Certifications for Stormwater Program

Required Certification	Personnel to Maintain Certification	MCINCR-MCBQ Method of Enforcement
Pesticide Management Training and Certification[1]	Pesticide and herbicide applicators, contracted through a buildings, roads, and grounds contract through Public Works.	MCINCR-MCBQ includes contract language requiring pesticide and herbicide applicators to maintain this certification.
Virginia Department of Environmental Quality (DEQ) Responsible Land Disturbers (RLD) Certificate	Responsible Land Disturbers	MCINCR-MCBQ includes contract language requiring RLDs to maintain this certification.
DEQ Program Administrator for E&SC	Individuals overseeing the implementation of the MCINCR-MCBQ E&SC standards and specifications.	Internal requirement.
DEQ Inspector for E&SC	Individuals conducting E&SC regulatory inspections.	Internal requirement and included in construction contract language.
DEQ Plan Reviewer for E&SC	Individuals reviewing E&SC plans submitted for approval.	Internal requirement.
Virginia Department of Conservation and Recreation (DCR) Certified Nutrient Management Planner (CNMP)	Nutrient management plan developers.	MCINCR-MCBQ includes contract language requiring that individuals preparing nutrient management plans (NMPs) be a CNMP through the DCR nutrient management program.

[1] Certification by the Virginia Department of Agriculture and Consumer Services (VDACS) Pesticide and Herbicide Applicator program shall constitute compliance with this requirement.

3-4. Other Administered Training

This plan focuses on stormwater training required for MCINCR-MCBQ employees and contractors by the MS4 Permit and Industrial Stormwater Permit. However, other trainings are conducted regularly in support of the NREA Environmental Compliance Sections and MCINCR-MCBQ CETEP. Such trainings may include but are not limited to Hazardous Waste Operations and Emergency Response (HAZWOPER), hazardous waste management training, and emergency response training. Additional training and certifications required by the MS4 Permit not conducted at MCINCR-MCBQ at identified in **Table 2**. The details of these trainings are excluded from this plan.

SECTION 4 – DOCUMENTATION AND RECORDKEEPING

The NREA WPM maintains records of all training conducted by MCINCR-MCBQ employees and contractors. Rosters (i.e., sign-in sheets) are provided at each training session and are electronically filed by the NREA WPM at the completion of training to serve as documentation of the date, number of employees attending, and objective of the training event. Training records are maintained by the NREA WPM for a minimum of three (3) years, as required by the MS4 permit. For industrial sites, the site EC is responsible for tracking training completion by applicable employees on an annual basis. NREA and ECs will ensure that all applicable employees at industrial sites complete required training.

A sample roster is provided as **Appendix C**.

This page intentionally left blank.

APPENDIX A
STORMWATER POLLUTION PREVENTION TEAM

Stormwater Pollution Prevention Team			
Name	**Title**	**Phone Number**	**Organization**
Jonmark Sullivan	WPM	703-432-0539	NREA
Lynn Fies	EC	703-432-0600	Security Battalion/Base Fire Stations
Jim Morris	EC	703-784-6703	G-3
Larry Eck	EC	703-784-2883	G-4
John McConnell	EC	703-784-2480	GF
James Whitaker	EC	703-784-5385	Safety Division
Edwin Ventura	EC	703-432-6557	Basic School/Camp Barrett
1stLt Bethany Hayes and GySgt Bradley	EC	703-784-6759	Weapons Training Battalion
Paul Dodd	EC	703-784-1689	Air Facility
GySgt. Jason Akker	EC	571-494-4708/4755	Marine Helicopter Squadron One
Ray Cronin	EC	703-784-5641	Marine Corps Community Services
Kristen Furman	EC	703-432-4478	Marine Corps System Command

This page intentionally left blank.

APPENDIX B
TEMPLATE PROGRAM OF INSTRUCTION

This template may be used to develop a detailed Program of Instruction for each training event.

Section 1. COURSE TITLE	Complete course title
Section 2. LOCATION	Building name/number, room number
Section 3. DATE/TIME	Date and time course will be offered
Section 4. INSTRUCTOR(S)	Name(s) of instructor(s)
Section 5. METHOD/MEDIA	Describes delivery methods and media; classroom/practical
Section 6. PURPOSE	Course intent/training objective
Section 7. SCOPE	All areas of instruction
Section 8. LENGTH/DURATION	Number of hours
Section 9. CURRICULUM BREAKDOWN	Description of training modules
Section 10.MAXIMUM CLASS CAPACITY	Reflects maximum class capacity
Section 11.OPTIMUM CLASS CAPACITY	Reflects optimum class capacity
Section 12.MINIMUM CLASS CAPACITY	Reflects minimum class capacity
Section 13.TARGET POPULATION	Reflects target population
Section 14.PREREQUISITES	List of any prerequisites
Section 15.ATTENDEE MATERIALS	What the attendees are required to bring
Section 16.TRAINING MATERIALS	What the attendees will be provided
Section 17.REPORTING INSTRUCTIONS	Reflects reporting instructions
Section 18.STAFFING REQUIREMENTS	Reflects instructor instructions
Section 19.SPECIAL NEEDS	Addresses SCIFs and other areas of denied access
Section 20.STUDENT EVALUATION	Any testing grades, certificate requirements
Section 21.COURSE EVALUTION	How the attendees will evaluate the course
Attachment 1	PowerPoint slides
Attachment 2	Other handout materials

This page intentionally left blank.

APPENDIX C
SAMPLE ROSTER

Course Title: _____

Course Date: _____

Instructor: _____

Number of Attendees: _____

Training
Objective(s):_____

_____

Attendee Name	Phone	E-mail	Command/Activity

Course Title: _____

Course Date: _____

Attendee Name	Phone	E-mail	Command/Activity

APPENDIX F Summary of MS4 Program Plan Reviews and Updates

This page intentionally left blank

Table F-1. MS4 Program Plan Review Log

Date of Review	Review Conducted By	Summary of Updates Made and Justification of Revisions	Date of Updates	Updates Conducted By
2016	Rasco Inc.	Annual updates to MS4 Program Plan	May 2016	Rasco Inc.
Dec 2017 – Jan 2018	CDM-AECOM JV	Updates to MS4 Program Plan based on annual program updates and new BMPs implemented as part of MCINCR-MCBQ's stormwater program.	Jan 2018	Alaina Armel/Jennifer Solakian/Alicia Cooley (AECOM)
March 2018	CDM-AECOM JV	Updates to MS4 Program Plan based on comments from MCINCR-MCBQ and the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems General Permit Number VAR040069, issued November 1, 2018.	December 2018	Alaina Armel/Alicia Cooley/Jennifer Solakian (AECOM)
Feb-May 2020	CDM-AECOM JV	Updates to MS4 Program Plan based on program updates and new BMPs implemented.	June 2020	Alaina Armel (AECOM)
Feb 2024	CDY & BF - NREA	Updates to the MS4 Program Plan for new MS4 permit and programmatic changes and updates	Feb 2024	Chris Yeager/Ben Foster (NREA)

This page intentionally left blank.