Comprehensive Storm Water Management Action Plan

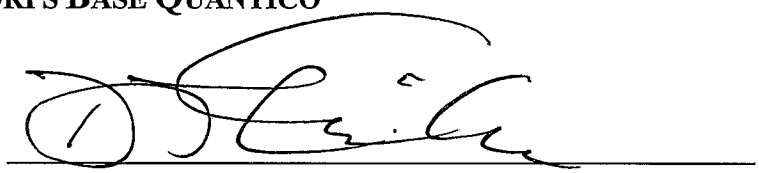
Marine Corps Base Quantico

October 2011

CERTIFICATION STATEMENT

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

MARINE CORPS BASE QUANTICO

Signature: 

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1. INTRODUCTION

Marine Corps Base Quantico and NAVFAC Washington identified the need to develop a document that would facilitate management of MCB Quantico's Storm Water Program. Quantico NREA developed this comprehensive Storm Water Management Plan (SWMAP).

The MCB Quantico Storm Water Program Manager (SWPM) is assigned the important task of managing all aspects related to the discharge of storm water from MCB Quantico to adjacent water bodies and ultimately to the Chesapeake Bay. Essentially the SWPM must ensure that the quantity and quality of the storm water being discharged is in compliance with the requirements established by the Virginia Department of Environmental Quality (VDEQ), which administers the Industrial Storm Water Program, and the Virginia Department of Conservation and Recreation (VDCR), which administers the Municipal Separate Storm Sewer System Program. Refer to Section 1.2 for additional details about these programs.

Prior to this document being developed, the MCB Quantico SWPM was required to develop and maintain two separate documents that contained important information required by aforementioned regulatory agencies administering storm water regulations in Virginia. The purpose of this SWMAP is to provide one comprehensive repository for information that is required to be assembled by both regulatory programs.

1.1 FACILITY BACKGROUND

MCB Quantico encompasses approximately 59,000 acres located roughly 35 miles south of Washington, DC, in northern Virginia, extending from the west bank of the Potomac River through portions of Fauquier, Prince William and Stafford counties (see Figure 1-1). The base consists of two major areas divided by Interstate 95 (I-95), Mainside and Westside. Mainside, located east of I-95, provides numerous administrative services, and

support functions. Westside, west of I-95, is used primarily for military training. All storm water runoff from MCB Quantico eventually discharges into the Potomac River, which itself drains into the Chesapeake Bay.

The majority of the existing development is east of I-95. MCB Quantico is the home of the Marine Corps Combat Development Command and several tenant commands; among them the Marine Corps University, Marine Corps Systems Command, Marine Helicopter One Squadron (HMX-1) and the Marine Corps Air Facility.

The area west of I-95 has four concentrated areas of development: the Federal Bureau of Investigation (FBI) Academy, Camp Barrett, Weapons Training Battalion (WTB) and Camp Upshur. The remainder of the area has been divided into Training Areas. Activities within Training Areas have specific functions, which are centrally regulated by Range Management Branch and/or the Weapons Training Battalion.

Although situated within MCB Quantico property, all storm water activities for the FBI Academy and associated tenants are managed and permitted within their respective organizations independent of MCB Quantico, and thus, are not addressed within this document.

1.2 STORM WATER PERMITS

Storm water discharges have been increasingly identified as a significant source of water pollution in numerous nationwide studies on water quality. To address this problem, the Clean Water Act Amendments of 1987 required the United States Environmental Protection Agency (EPA) to publish regulations to control storm water discharges under the National Pollutant Discharge Elimination System (NPDES) permit program. The EPA has delegated authority to implement the NPDES Storm Water Programs to the Commonwealth of Virginia.

Virginia regulates storm water through the Virginia Pollutant Discharge Elimination System (VPDES). The Virginia Department of Environmental Quality (VDEQ) administers the VPDES program for storm water associated with industrial activities. The Virginia Depart-

ment of Conservation and Recreation (VDCR) administers the VPDES program for municipal separate storm sewer systems (MS4).

The storm water system at MCB Quantico is governed under two separate VPDES permits, the VPDES Phase I Storm Water Associated with Industrial Activities (VPDES Permit No. VA0002151), and the VPDES General Permit for Discharge of Storm Water from a MS4 (VPDES Permit No. VAR040069). Each permit covers unique areas of MCB Quantico. Each permit includes requirements to reduce and/or eliminate pollutants entering the stormwater system. Some of the requirements are duplicated from one permit to the other.

1.2.1 Storm Water Associated with Industrial Activity Permit

Industrial activities at MCB Quantico that may be reasonably expected to contribute to the contamination of storm water discharges include:

- Aircraft/vehicle maintenance, washdown and fueling
- Hazardous material outdoor storage
- Hazardous/solid waste outdoor storage
- Pesticide/herbicide/fertilizer application
- Water/wastewater treatment operations

VPDES Permit No. VA0002151 (issued May 24,2006 and expiring May 23, 2011), requires a Storm Water Pollution Prevention Plan (SWPPP) to document the industrial activities, potential pollutant sources, a pollution prevention team to implement the provisions of the permit, and how those provisions will be implemented at MCB Quantico.

All of the requirements of the SWPPP have been incorporated into this SWMAP. A copy of the VPDES Permit No. VA0002151 is found attached in Appendix A.

1.2.2 Municipal Separate Storm Sewer System Permit

All the storm water outfalls not specifically mentioned in the VPDES permit for storm water associated with industrial activity are managed under the Virginia Storm Water

Management Program MS4 General Permit issued to MCB Quantico on July 15, 2008 and expiring on July 8, 2013.

Virginia, in conjunction with the EPA has drafted a general permit designed to control storm water pollutant discharges from small municipal storm drain systems. MCB Quantico has been granted coverage under the Phase II MS4 general permit and been assigned Permit No. VAR040069. Under conditions of the permit, MCB Quantico is required to implement pollution reduction or elimination programs. The specified program areas or minimum control measures are:

- personnel education and outreach
- public participation and involvement
- illicit discharge detection and elimination
- construction site runoff control
- post-construction runoff control
- pollution prevention/good housekeeping

A MS4 Program Plan is required to document MCB Quantico's program to implement Best Management Practices (BMPs) in each of the six minimum control measures. The BMPs include specific actions that will be implemented, measurable goals that will be used to indicate program progress, and reporting and record keeping requirements.

All of the requirements of the MS4 Program Plan have been incorporated into this SWMAP. A copy of the MS4 general permit is found attached in Appendix A.

1.3 RESPONSIBLE PARTY

The MCB Quantico Storm Water Management Program is managed by the Environmental Compliance Section of the Natural Resources and Environmental Affairs Branch (NREAB). Under the Environmental Compliance Section, the Head is directly responsible for the Storm Water Management Program while the Water Program Manager manages the program and serves as the point of contact for the State. The Water Program Manager works with the Resident Officer in Charge of Construction (ROICC) on Base con-

cerning construction sites that require storm water permits, erosion and sediment control (E&SC) plans, and Storm Water Management Plans. MCB Quantico Public Works has responsibility for the maintenance and repair of all facilities including storm water conveyance systems and permanent Best Management Practices (BMPs). Table 1-1 provides a listing of the contact information for the various entities.

Table 1-1 Points of Contact

	Department	Telephone Number
Stacey Rosenquist	Environmental Compliance Section	(703) 784-4030
Steve Clark	Water Program Manager	(703) 432-0528
John Dorsey	Public Works	(703) 784-2971/2
LTCDR Breitenbach	ROICC	(703) 784-5445
Steve Hundley	Community Planning and Liaison	(703) 784-5927

1.4 STORM WATER REGULATIONS

Storm water regulations, both federal and state, attempt to reduce the quantity, prevent the pollution of, and improve the quality of storm water. Rules and regulations governing the storm water permits issued to MCB Quantico are listed as follows:

- Federal Water Pollution Control Act
  - The Act, also known as the Clean Water Act, establishes the basic structure for regulating discharges of pollutants into the waters of the United States. The Environmental Protection Agency (EPA) has been tasked with implementing the Clean Water Act.
    http://cfpub.epa.gov/npdes/cwa.cfm?program_id=45

- 40 CFR 122 – EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.

  - This is the permitting program set up by the EPA to comply with the Clean Water Act. The Clean Water Act prohibits anybody from discharging "pollutants" through a "point source" into a "water of the United States" unless they have a National Pollutant Discharge Elimination System (NPDES) permit. The permit places limits on what can be discharged, includes monitoring and reporting requirements, and other provisions to ensure that the discharge does not harm water quality or public health. In essence, the permit translates general requirements of the Clean Water Act into specific provisions tailored to the operations of each entity discharging pollutants.

    http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr122_main_02.tpl

- Title 10.1, Chapter 5, Article 4 of the Code of Virginia – Virginia Erosion and Sediment Control Law.
  - This law establishes a program and promulgates regulations for the effective control of soil erosion, sediment deposition, and nonagricultural runoff that must be met in any control program to prevent the unreasonable degradation of properties, stream channels, waters and other natural resources.

    http://198.246.135.1/cgi-bin/legp504.exe?000+reg+4VAC5

- Title 10.1, Chapter 6, Article 1.1 of the Code of Virginia – Virginia Storm Water Management Law.
  - The Virginia Storm Water Management Law seeks to protect properties and aquatic resources from damages caused by increased volume, frequency and peak rate of storm water runoff. Further, the law seeks to protect those resources from increased non-point source pollution carried by storm water runoff.

    http://198.246.135.1/cgi-bin/legp504.exe?000+reg+4VAC5

- Title 10.1, Chapter 21, of the Code of Virginia - Chesapeake Bay Preservation Act.
  - The Chesapeake Bay Preservation Act is a critical element of Virginia's multi-faceted response to the Chesapeake Bay Agreement. The Bay Act establishes a cooperative relationship between the Virginia Department of Conservation and Recreation and local governments aimed at reducing and preventing non-point source pollution by requiring the use of effective conservation planning and pollution prevention practices when using and developing environmentally sensitive lands.

    http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC10010000021000000000000

- Title 62.1, Chapter 3.1, Part 62.1-44.2 et seq. of the Code of Virginia – State Water Control Law.
  - The purpose of this law is to: "(1) protect existing high quality state waters and restore all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them; (2) safeguard the clean waters of [Virginia] from pollution; (3) prevent any increase in pollution; (4) reduce existing pollution; (5) promote and encourage the reclamation and reuse of wastewater in a manner protective of the environment and public health; and (6) promote water resource conservation, management and distribution, and encourage water consumption reduction in order to provide for the health, safety, and welfare of the present and future citizens of [Virginia]."

    http://leg1.state.va.us/000/cod/32.1-164.HTM

- 4VAC50-30 Virginia Erosion and Sediment Control Regulation.
  - The Virginia Erosion and Sediment Control Regulation requires construction site operators to develop and implement a storm water pollution prevention plan that uses best management practices for erosion and sediment control at the construction site. Permits for construction sites require the operator to regularly inspect storm water discharges from the site to ensure that the best management practices are controlling the discharge of pollutants to the maximum extent practicable, and are meeting water quality standards.

    http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+4VAC50-30

- 4VAC50-60 Virginia Stormwater Management Program (VSMP) Permit Regulations.
  - These statutes specifically set forth regulations regarding land development activities to prevent water pollution, stream channel erosion, depletion of groundwater resources, and more frequent localized flooding to protect property value and natural resources. SWM programs operated according to the law are intended to address these adverse impacts and comprehensively manage the quality and quantity of storm water runoff on a watershed-wide basis.

    http://www.dcr.virginia.gov/documents/swmPart13.pdf

- 9VAC 25-151 General Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation for Storm Water Discharges Associated with Industrial Activity.

  - Virginia has been delegated to carryout the EPA's NPDES program. The Virginia program mirroring the NPDES program is the VPDES program. The State of Virginia Department of Environmental Quality and Department of Conservation and Recreation each have responsibilities under the VPDES program.

    http://www.deq.state.va.us/vpdes/

- VPDES General Permit VAR040069 – Storm Water Discharge from Small Municipal Separate Storm Sewer Systems.
  - General permit under which MCB Quantico operates its small municipal separate storm sewer system (population greater than 10,000). The permit is issued under the VPDES permitting program as administered by the Virginia Department of Conservation and Recreation. It requires storm water BMPs to be selected in six minimum control areas. A copy of the permit is included in Appendix A.

    http://www.deq.state.va.us/vpdes/permitfees.html

- Virginia Department of Environmental Quality VPDES Permit Number VA0002151 – Storm Water Associated with Industrial Activity.
  - Individual permit under which MCB Quantico operates its industrial storm sewers. The permit is issued under the VPDES permitting program as administered by the Virginia Department of Environmental Quality. It requires all industrial activities to have and adhere to a Storm Water Pollution Prevention Plan (SWPPP). A copy of the permit is included in Appendix A.

- Virginia Department of Environmental Quality VPDES Permit Number VAR051810 – Storm Water General Permit.
  - General permit under which MCB Quantico operates one industrial storm sewer. This is a temporary permit until the reissuance of VA0002151, where this one storm sewer will then be incorporated into the individual permit. The permit is issued under the VPDES permitting program as administered by the Virginia Department of Environmental Quality. It requires industrial activity at this outfall to have and adhere to a SWPPP. A copy of the permit is included in Appendix A.

- Virginia Department of Environmental Quality VPDES Permit Numbers VA0028363, VA0028371 – Mainside and Camp Upshur Sewage Treatment Plants.

  - Permits under which MCB Quantico operates its sewage treatment plants (Mainside and Camp Upshur, respectively.) These permits are issued under the VPDES permitting program as administered by the Virginia Department of Environmental Quality. Copies are kept on file at the NREA Branch office.

- MCO P5090.2A – Environmental Compliance and Protection Manual.
  - Order outlining the Marine Corps policy on environmental compliance and protection. The policy provides guidance and instruction to Marine Corps installations enabling them to meet stringent environmental legislation. A copy can be found at the NREA offices.
    http://www.usmc.mil/news/publications/Documents/MCO%20P5090.2A.pdf

- USMC Marine Corps Base Quantico Commander's Policy Letter 3-10, dated August 2, 2010
  - Policy letter concerning sewage spill response, reporting and management on Marine Corps Base Quantico. A copy of this letter can be found at the NREA offices.
    http://www.quantico.usmc.mil/

1.5 HYDROLOGIC UNIT CODE

The Hydrologic Unit Codes (HUC) pertaining to MCB Quantico, as identified in the most recent version of Virginia's 6th Order National Watershed Boundary Dataset are:

- PL40 Cedar Run- Slate Run
- PL52 Quantico Creek
- PL53 Chopawamsic Creek
- PL54 Potomac River – Tank Creek
- PL55 Beaverdam Run
- PL56 (Upper) Aquia Creek – Cannon Creek
- PL57 (Lower) Aquia Creek – Austin Run

These codes are available online at http://www.virginiaplaces.org/watersheds/hydrounits.html . All storm water discharges from MCB Quantico eventually enter the Potomac River.

1.6 CONTENT AND ORGANIZATION OF THE STORM WATER MANAGEMENT ACTION PLAN

This SWMAP addresses all the storm water requirements from both VPDES storm water permits. Sections 2 through 7 contain the requirements for a SWPPP. Section 8 contains those requirements unique to the MS4 Program Plan. Sections 9 through 11 contain storm water management specific criteria.

This SWMAP is organized as follows:

- Section 1 contains an introduction to the SWMAP, the permit requirements included in this document, the responsible parties, a listing of the state and federal storm water regulations, an explanation of the Hydrologic Unit Code and a short synopsis of the SWMAP sections.
- Section 2 Pollution Prevention Team. This section introduces the Pollution Prevention Team and team member responsibilities.
- Section 3 Description of Potential Pollutant Sources. This section provides a description of the drainage basins, outfalls, and potential sources that may reasonably be expected to add significant amounts of pollutants to storm water discharges or that may result in the discharge of pollutants during dry weather from separate storm sewers draining MCB Quantico.
- Section 4 Measures and Controls. This section describes the storm water BMPs appropriate for MCB Quantico.
- Section 5 Comprehensive Site Evaluation. This section describes the annual MCB Quantico site compliance evaluation and annual reporting criteria.
- Section 6 Consistency with Other Plans. This section describes additional environmental plans that are included in the SWPPP by reference.
- Section 7 MS4 Specific Requirements. This section outlines the specific requirements pertaining to the MS4 permit.
- Section 8 Storm Water Management Status. This section addresses the status of the storm water program at MCB Quantico and outlines areas for additional effort.
- Section 9 Construction Site Storm Water Runoff Control. This section contains the storm water runoff control requirements for contractors and inspectors.
- Section 10 Total Maximum Daily Load/Waste Load Allocations. This section outlines the TMDL/WLA associated with MCB Quantico and how these requirements can be met using the BMPs in the SWMAP.

- Section 11 Other Storm Water Concerns. This section mentions other concerns that do not fall under the MCB Quantico storm water permits yet and are of interest to MCB Quantico.

Referenced drawings, tables, and forms may be found in Appendices B, respectively unless otherwise noted. Analytical data summaries for the Storm Water Program are presented in Appendix D and site-specific industrial area Standard Operating Procedures (SOPs) are presented in Appendix E. All mappings are securely managed and located at the NREA office by the Water Programs Manager.

1.7 PLAN CERTIFICATION AND REVISIONS

Management signature authority for implementation of this plan (Base Commander or designate) is provided at the beginning of this document.

The SWMAP will be reviewed annually and revised whenever:

- There is a change in design, construction, operations, or maintenance at the Base that has a significant effect on the discharge, or the potential for the discharge of pollutants from the facility
- Inspections, monitoring, or investigations by Base personnel or by local, state or federal officials determines that the SWP3 is ineffective in eliminating or significantly minimizing pollutants from sources identified in the plan, or is otherwise not achieving the general objectives of controlling pollutants in discharges from the Base

Only the most current revision of the SWMAP will be maintained with revisions being noted, by Revision Number, on the front page of the plan, as well as the bottom of each page revised. Following revision of the SWMAP, all other copies must be replaced immediately to ensure that the most-current revision is available to Base personnel. Copies of this SWMAP will be made available to the regional Virginia Department of Environmental Quality (VDEQ) and the Virginia Department of Conservation and Recreation (VCR) Offices upon request.

A Record of Amendments, including the reason for the change, is maintained in Table B-1.

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2. STORM WATER POLLUTION PREVENTION TEAM

The purpose of the Storm Water Pollution Prevention Team (SWPPT) is to assist in the implementation, evaluation, and revision of the SWMAP. Individuals selected to serve on the team represent industrial activities at MCB Quantico and will provide proper coordination of the military commands and support activities.

Implementation of the BMPs described in the SWMAP is the responsibility of the individual operating units, working under the direction of a designated SWPPT member.

2.1 ORGANIZATION OF THE STORM WATER POLLUTION PREVENTION TEAM

The Storm Water Pollution Prevention Team (SWPPT) is headed by the NREAB Water Program Manager with team members comprised of tenant or unit environmental coordinators, supervisors or department heads of industrial activities at MCB Quantico as listed in Table B-2. The pollution prevention team members assist in the implementation, evaluation and revision of the storm water program at MCB Quantico and are responsible for the following:

- Water Program Manager
  - Review, update and distribute the SWMAP
  - Conduct SWPPT quarterly meetings to discuss and review the SW program
  - Conduct annual compliance evaluations and any other follow-up inspections
  - Provide training to all sites
- Other Team Members
  - Implement all SWMAP plan requirements and BMPs
  - Identify and correct potential sources of pollution
  - Conduct routine storm water pollution prevention internal audits

The SWPPT will meet annually to assess the SWMAP, to communicate all new applicable regulations, goals, and operating procedures. Meeting minutes will become part of the required documentation showing implementation of the SWMAP. Meeting minutes will be filed in the NREAB Office.

3. DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

There are a number of potential pollutant sources that may contribute to the contamination of storm water discharges at MCB Quantico. These sources include outdoor industrial activities, process areas, material storage and handling areas that are exposed to storm water, 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. Potential sources of storm water pollution are described in this section and BMPs to control storm water pollution are listed in Section 4.0.

3.1 SITE MAPPING

MCB Quantico consists of both flat and rolling terrain and extends from the west bank of the Potomac River. The Coastal Plain is characterized by relatively flat terrain at the mouth of the Chopawamsic Creek. Maps 1-13 (see Appendix C) illustrate the outfall locations and drainage area of each permitted storm water outfall. In general, most of the storm sewers Base-wide discharge to surface water bodies. All functioning wash racks that previously discharged to the storm sewer (HMX-1, Guad Maintenance, TBS Tracked Vehicle) have been rerouted to sanitary sewer, however the HMX-1 and TBS Tracked Vehicle wash racks are not covered, and some storm water at these wash racks discharges to the Mainside Sewage Treatment Plant (STP) and Aquia STP, respectively.

3.2 INVENTORY OF EXPOSED MATERIAL

Industrial activities conducted at MCB Quantico provide the greatest potential for release of pollutants with storm water discharges. Industrial activities at MCB Quantico with moderate to high significant material inventories potentially affecting storm water discharges include:

- Construction/demolition activities
- Bulk tank storage areas including fueling transfer operations
- Flight line operations including aircraft maintenance areas
- HM/HW/POL management/storage facilities
- Painting operations
- Pesticide and herbicide application operations
- Salt storage facilities
- Vehicle fueling areas
- Vehicle and heavy equipment maintenance areas
- Vehicle and aircraft wash down areas
- Water and wastewater treatment operations

Recreational facilities at the Base include two swimming pools, a marina, stables, a golf course and the Lunga Park. These activities also use materials and generate waste products that must be collected, stored, treated and/or disposed including:

Acids and corrosives

Adhesives

Caustic cleaning compounds and surfactants

Cooling fluids (antifreeze)

Herbicides, pesticides, and fungicides

Paints and paint wastes

POLs

Solvents and thinners

Although the Quantico Riding Club Stables are within the confines of MCB Quantico, the stables are operated separately. Roll-off boxes are used to manage manure and the stables are not considered a pollutant source for this SWMAP. The stable also operates a horse wash rack that drains to an intermittent stream.

MCB Quantico is an EPCRA 313 facility reporting water dissociable nitrates from sewage treatment operations and chemicals associated with fueling and Range operations (benzene, copper, cumene, cyclohexane, ethylbenzene, hexane, lead compounds, toluene, trimethylbenzene, and xylene).

Types of pollutant sources are described in the following sections.

3.2.1 Storage Tanks

MCB Quantico has 109 above ground storage tanks, the majority of which contain petroleum products for fueling purposes, emergency power (i.e., generators) or used product storage (i.e., used oil). Above ground petroleum storage tanks are managed in accordance with Virginia “Facility and Above Ground Storage Tanks Regulations” (9VAC25-91) and federal Spill Prevention Control and Containment (SPCC) regulations, as applicable. Several above ground chemical tanks containing hazardous CERCLA substances are associated with water and wastewater treatment operations. The chemical process tanks are located indoors with secondary containment provided primarily by concrete containment or building floor.

Above ground petroleum tank storage at MCB Quantico is primarily outdoors with secondary containment provided by double-wall construction. Secondary containment structures may also be used and are typically impervious concrete pads with concrete curbs or pallet containment. The containment area typically has either valved drain ports or a drop inlet with a valved drain pipe connection. Spilled material from outdoor tanks, unless otherwise contained via dikes or other means, will flow with the topography of the surrounding area. The rate of flow of a spilled material is dependent upon the viscosity of the material and the weather conditions at the time of release. The maximum quantity of material that could be released from a tank is equivalent to the tank capacity.

MCB Quantico has a total of fifteen underground storage tanks which are managed in accordance with 9VAC25-280, "Underground Storage Tanks; Technical Standards and Corrective Action Requirements", and 40 CFR 112, "Oil Pollution Prevention." Four of

the tanks store heating oil (#2 and #6 fuel oils) for heating purposes; and, eleven tanks (five low-sulfur diesel and six unleaded gasoline) are maintained for dispensing fuel and emergency power generation purposes.

Thirteen of the underground tanks are of double-wall fiberglass construction while two are of double-wall, cathodically protected steel. All tanks are equipped with overfill protection (overfill devices and fill port catchment basins) and interstitial monitoring for leak detection.

All under ground storage tanks at MCB Quantico that are of double wall fiberglass construction are equipped with overfill protection (audible and/or visual alarms and fill port catchments) and interstitial monitoring for leak detection. In the unlikely event that a leak should occur from any one of these tanks, petroleum product would enter the groundwater table and could potentially enter Quantico Creek, Cedar Run, Aquia Creek, Chopawamsic Creek, Tank Creek and Little Creek with the Potomac River being the ultimate discharge. To address potential spills during filling operations, MCB Quantico will use a strong contingency plan including on-site responders to control discharges for all loading/unloading operations. All trucks delivering fuel to MCB Quantico will be required to use wheel chocks to secure the trucks during transfer and prevent premature departure causing a spill.

The Base Petroleum Storage Tank Management Plan (PSTMP) identifies petroleum above and under ground storage tanks and provides a brief description of the units, yearly usage, capacity, and potential spill path.

3.2.2 Integral Generator Tanks

MCB Quantico employs a number of stand-alone generators for emergency power. These units are situated outdoors and are equipped with integral “belly” tanks for diesel fuel storage. The SPCC Plan addresses the integral generator tanks in greater detail and should be referenced for additional information.

3.2.3 Transformers

Scattered throughout MCB Quantico are a number of outdoor, oil-filled transformers and electrical switch boxes. These transformers and switches contain dielectric fluids (mineral oil) and are not considered PCB or PCB – contained transformers. The majority of outdoor transformers at MCB Quantico are situated on concrete pads with no secondary containment. Leaks from the transformers will generally pool in the immediate area, which is often comprised of asphalt, gravel, or grass. The transformers are often located in highly visible areas such that any leaks would be quickly noticed and reported. The SPCC Plan addresses the transformers in greater detail and should be referenced for additional information.

3.2.4 Oil/Water Separators

Oil/water separators are used at MCB Quantico to remove POLs from storm water runoff, spills, and from aircraft/vehicle wash racks. The oil/water separators are essentially "reverse" sedimentation basins. The units are designed using standard sedimentation theory for the determination of an appropriate surface overflow rate; however, oil globules will rise in the water column rather than sink as a solids particle would.

Oil/water separators are listed in Table B-3, which summarizes location of the separators, activities from which the separator receives drainage, materials handled or stored within the drainage area of the separator, the ultimate receptor of the separator discharge, and GPS location coordinates. Oil/water separators are pumped out by contracted vacuum pump operations as required.

3.2.5 Fuel Dispensing Operations

MCB Quantico handles JP-8, diesel fuel, #2 and #6 fuel oil, and gasoline in large quantities. The Fuel Farm is the primary fuel depot for distributing fuels received in bulk from commercial vendors to storage tanks for subsequent fuel dispensing or heating/power purposes and to other miscellaneous equipment (e.g., generators, floodlights, etc.)

throughout MCB Quantico. MCCS activities requiring fuel, such as the Marina and the MCX gas station, obtain fuel directly from commercial vendors.

Bulk fuel transfer operations at MCB Quantico, other than Fuel Farm dispensing, include direct transfer from tanker trucks and gas station dispensing.

Fuel used by HMX-1, in support of executive helicopters and Presidential support requests, is stored in eight 5,000-gallon refueler trucks at the Marine Corps Air Facility's fuel truck parking area adjacent to the Fire and Rescue Area. The lot is constructed of asphalt and bermed to provide containment for the tankers. The bermed lot is equipped with manual valves for storm water discharge to the grass field adjacent to the lot.

Fueling Stations, intended solely for the use of U. S. Government vehicles and other government equipment, are associated with the following locations:

- Building 2056 (Motor Pool)
- Building 24142 (TBS Motor Pool)
- Building 27002 (Guad Maintenance)
- Building 26156 (Camp Upshur)
- Building 24009 (TBS Tracked Vehicle Maintenance)
- Building 3254 (Facilities Logistics Support Services)
- Building 3230 (Amphibious Raids & Recon)
- Building 27067 (Ammo Supply)
- Building 3066 (Golf Course)
- Building 27500 (Lunga Park)
- Building 27212 (WTBN)
- Transportation Demonstration Support Area (TSDA)—Buffalo Area

All of the above fueling stations dispense diesel fuel, unleaded gasoline, or mixed gasoline. Two other fueling stations are located at Building 25 (Marina) and Building 5103 (Aero Club) and are used for recreational purposes dispensing gasoline and aviation gas, respectively. The MCX Gas Station is located along Russell Road for retail fueling of vehicles with unleaded gasoline.

Fueling operations are conducted on impervious surfaces that are bermed or sloped away from any nearby storm drains. All fueling transfer operation locations are shown on Maps 1-13.

The exposure of stored materials and equipment to storm water at MCB Quantico is minimized or eliminated primarily by indoor storage and through the use of concrete containment structures when outdoor storage is necessary. These outdoor sheds are provided for significant HM/HW accumulation and storage sites at MCB Quantico. A standardized design has been used for a number of sites, consisting of a three-sided structural concrete block support system and roof. The covered sheds are enclosed with a locked fence and have concrete floors which slope inward toward a manual drain. These drains are opened only by trained personnel and typically discharge to the immediate surrounding surface. Drums may be stored on containment pallets inside the sheds. These HM/HW storage sheds reduce corrosion and degradation of storage drums and extend their useful life, minimizing spill potential during use. Hazardous materials and storage areas are managed under MCBO 6280.1A (Handling, Transfer, and Disposal of Hazardous Materials) and MCO P5090.2A (Marine Corps Environmental Compliance and Protection Manual). Maps 1-13 show the areas where large quantities of hazardous materials are stored.

The Hazardous Substance Management System (HSMS) maintained by NREAB is the mechanism currently employed to track materials at MCB Quantico. The HSMS tracks HM storage and usage for work centers on a monthly basis and can be queried at any time to obtain HM inventories.

Table B-4 provides a summary of significant hazardous materials inventory storage areas at MCB Quantico. The HSMS should be consulted for detailed inventory information.

3.2.6 Hazardous Waste Generation and Storage

MCB Quantico generates both non-hazardous and hazardous wastes and is considered a RCRA large quantity generator. The facility maintains eight satellite accumulation sites (SAAs), five less than 90-Day sites, and three battery sites that are depicted on Maps 1-

13. A summary of typical hazardous materials and hazardous wastes generated as a result of routine facility operations by MCB Quantico is included with the significant materials inventory on Table B-4.

Accumulation sites (satellite and 90-Day) are managed in designated areas only and provided with secondary containment in the form of building floors, concrete dikes/berms, or containment pallets. Fire extinguishers, eye/shower stations, and spill equipment are maintained at each 90-day site. Accumulation sites are visually inspected at least daily as part of routine operations. Area personnel are responsible for the daily operation and management of the HW program at the individual generator/storage activity (SAAs and 90-Day sites) in accordance with the respective orders/instructions, with technical assistance provided by NREAB.

Wastes for disposal are transferred to the Hazardous Waste Storage Facility, Building 27401. This facility meets the regulatory requirements for 90-day storage of hazardous wastes. Hazardous waste handling and storage areas are managed under MCBO 6280.1A (Handling, Transfer, and Disposal of Hazardous Waste) and MCO P5090.2A (Marine Corps Environmental Compliance and Protection Manual) and the Base Hazardous Waste Management Plan.

3.2.7 Pesticide and Herbicide Applications

Pesticide and herbicide application at MCB Quantico is authorized only for MCCS Golf Course, Department of Defense (DoD) Schools, and Forestry operations as pesticides and herbicides may contain materials that are listed in 40 CFR 302 or are extremely hazardous substances. The MCB Quantico Pesticide Management Plan sets policy and provides guidance for all of the pesticide and herbicide applications in accordance with federal laws, DoD, and Marine Corps regulations. In addition to pesticide management, the golf course manager has been trained in nutrient management by the VDCR. The golf course manager applies fertilizer, primarily comprised of phosphorous and nitrogen, to the course in accordance with the MCB Quantico Nutrient Management Plan and the EPA label recommendations located on the packaging of the material applied; such as only

applying during dry weather conditions. Application of pesticides and herbicides for buildings, roads, and grounds is handled by contract through the Public Works Branch. Lincoln Housing also holds a contract for pesticides and herbicides application. No other specific use of pesticides, herbicides and rodentcides is authorized at MCB Quantico.

3.3 INDUSTRIAL ACTIVITIES

MCB Quantico has ten key industrial areas where multiple activities, as those discussed in Section 3.2, are conducted. Table B-5 provides a listing of these areas and tabulates activities conducted in each; specific operations in these areas are described in detail below.

3.3.1 Marine Helicopter Squadron One (HMX-1)

HMX-1 is responsible for maintaining the executive helicopters in support of Presidential requests. This largely consists of performing day-to-day operations of the aircrafts, including maintaining aircraft engines, logbooks of service/flight times, flight schedule, and inspections. All communication, navigation, and electrical equipment pertaining to the aircrafts are also maintained by HMX-1.

The main HMX-1 complex is located off Rowell Road adjacent to the airfield in Buildings 2101-2109. Industrial storm water pollutant source activities performed in this area include aircraft washing and storage, indoor/outdoor storage, and loading/unloading of HM and HW. Runoff from aircraft wash down operations is conveyed to an oil/water separator that is connected to the sanitary sewer system. Floor drains located within hangar areas are also connected to the sanitary sewer system. Outdoor storm drains generally are conveyed directly to the Potomac River or small tributaries of the waterway. Chemical and oil absorbent mats are placed in the inlet to storm drains in areas (indoor or outdoor) where high volumes of HM are stored or transported as an added measure to prevent HM or POL from entering the storm sewer drainage system.

Outlying support areas associated with HMX-1 include the Ground Support Equipment and Power Plant units at Building 2112, and HMX-1 Supply at Building 2121. Building 2112 has a wash rack system and oil/water separator connection that is connected to the sanitary sewer system. The HM/HW outdoor storage shed is enclosed by a locked fence and the concrete floor slopes towards a locked drain. HMX-1 Supply's industrial storm water pollutant source activities consist of a large quantity of indoor storage and loading and unloading of HM.

3.3.2 Marine Corps System Command

The Marine Corps System Command (MCSC) includes the following sites:

- Amphibious Raids and Recon (Building 3230)
- Transportation Demonstration Support Area (TDSA) (Buildings 28000, 28004, 28005, 28009)

3.3.2.1 Amphibious Raids and Recon

The Amphibious Raids and Recon facility tests marine water craft for all military aspects of warfare and is located on Hanson Avenue in a low lying flood zone with area drainage direct to the Potomac River. Industrial storm water pollutant source activities performed in this area include boat maintenance, washing and storage, fuel dispensing operations, and outdoor storage of HM and HW. Boat maintenance is performed indoors in Building 3230. Boat staging areas and fuel dispensing are conducted in designated areas outside. Fuel transfer operations are only performed by Amphibious Raids and Recon personnel. Boat washing consists of a water rinse to remove residual from the boats prior to staging. Any vehicle washing is done using the wash rack facility at Building 3185. This wash rack is connected to the sanitary sewer system. The HM/HW shed is enclosed by a fence and has a concrete floor which slopes toward a manual drain.

3.3.2.2 TDSA – Buffalo Area

The TDSA – Buffalo Area, located off of George Mason Road on Buffalo Road, previews and tests military vehicles for warfare using an all-terrain course. Industrial storm water

pollutant source activities performed in this area include vehicle/equipment maintenance and storage, fuel dispensing operations, and indoor/outdoor storage of HM and HW. The drainage area for TDSA – Buffalo Area has been graded to flow away from the structural buildings and vehicle/equipment storage locations. Vehicle/equipment staging on a gravel ground surface is enclosed by a locked fence outside of Building 28005. Only light maintenance of vehicles/equipment is performed inside of Building 28004; vehicles requiring additional heavy maintenance are sent to TBS Motor T Maintenance (Building 24009). All HM is stored indoors in Building 28009 and consists of small quantities of paints, degreasers, and lubricants. The HW shed is enclosed with a locked fence and has a concrete floor which slopes toward a manual drain. The wash down operation along with the oil/water separator was currently out of service during the time of this Revision to the SWP3. Vehicle fueling operations are situated such that drainage from the area flows downhill to a Seabee Training Field.

3.3.3 Marine Corps Community Services

The Marine Corps Community Services (MCCS) is responsible for recreational facilities at MCB Quantico including swimming pools. The following MCCS sites are addressed within this document:

- Auto Repair Hobby Shop (Building 2080)
- Medal of Honor Golf Course (Building 3063, 3066, 3303, 3306)
- Maintenance and Motor Support (Building 2112)
- Quantico Marina (Building 25, 3215)
- Motor Pool Transport (Building 2056, 3016)

3.3.3.1 Auto Repair Hobby Shop

The Auto Hobby Shop is located on Anderson Avenue with drainage from the shop and surrounding area entering a storm water management basin before discharge to the Potomac River. Industrial storm water pollutant source activities performed in this area include vehicle maintenance and storage, painting operations and indoor/outdoor storage of HM and HW. All vehicle maintenance and painting operations are performed indoors.

Floor drains in the Auto Hobby Shop drain to the sanitary sewer. A vehicle storage area is located behind the shop and consists of a paved, fenced area that drains to the storm water management basin. The HW shed is enclosed with a locked fence and has a concrete floor.

3.3.3.2 Medal of Honor Golf Course

The Medal of Honor Golf Course is an 18-hole course complete with Clubhouse and Pro Shop on Fuller Road. Industrial storm water pollutant source activities performed in this area include equipment storage, fuel dispensing operations, indoor storage of HM, and pesticide/herbicide applications. All maintenance activities such as oil fluid changes and small engine maintenance are performed in covered areas; equipment washing is performed outside. On a daily basis, preventive maintenance is done on all grounds equipment checking for any leaks. Only golf course personnel are allowed to use fuel dispensing operations. Pesticide/herbicide applications performed by the Golf Course are discussed in Section 3.2.7.

3.3.3.3 Maintenance and Motor Support

Maintenance and Motor Support is located off Bauer Road in Building 2112. The work center provides roads and grounds maintenance for MCCS facilities at MCB Quantico. Industrial storm water pollutant source activities performed in this area include equipment storage as well as indoor and outdoor storage of HM. Grounds equipment is stored indoors with maintenance activities on the equipment, such as oil fluid changes, performed inside the work center. Fueling of grounds equipment (manual fuel transfer from 5-gallon containers or less) is performed outside adjacent to the fuels storage locker.

3.3.3.4 Quantico Marina

The Quantico Marina, for service members' privately owned watercraft, is northeast of Quantico Town located on Potomac Avenue. The Quantico Marina consists of three building structures; Marina Office (Building 25), Marina Storage (Building 3215), and a newly constructed building used for training and watercraft maintenance. Industrial

storm water pollutant source activities performed in this area include watercraft storage and maintenance, fuel dispensing operations, painting operations, and outdoor storage of HM and watercraft septic waste. Watercraft are winterized and stored in designated areas of the Marina property. Watercraft maintenance, watercraft washing, and painting operations are performed indoors of the newly constructed building where floor drains discharge to the sanitary sewer system. Some general rinsing of the watercraft is performed by patrons directly in their slips. Maintenance is completed by Marina personnel consisting of minor structural repairs and engine service. Fuel transfer is a controlled operation between Marina personnel and the watercraft patron owner. Spill response material is kept at the Marina as well as on the individual watercraft. Enough floating boom is kept on hand to cover the breach way of the Marina in the event of a significant release.

3.3.4 Facilities Logistics Support Services

FLSS is responsible for all grounds and maintenance services throughout MCB Quantico. The following sites are included in the Facilities Logistics Support Services:

- Construction Equipment Repair – CER (Building 27054)
- Guad Maintenance (Building 27000, 27001, 27002)
- Facilities Maintenance (Building 3252)
- Motor Transport Maintenance (Building 2013)
- Mainside Water Treatment Plant (Building 1303, 1314)
- Mainside Sewage Treatment Plant – STP (Building 660)
- Camp Barrett Heating Plant (Building 24162)
- Camp Upshur Sewage Treatment Plant (Building 2666)

3.3.4.1 Construction Equipment Repair (CER)

The CER facility is located on MCB-4 and has the responsibility of repairing large FLSS vehicles/equipment. Maintenance is performed indoors with floor drains connected to the outside oil/water separator that ultimately discharges to the Stafford County POTW. All vehicles/equipment are washed prior to being sent to CER; however, a vehicle/equipment

wash down area is located at the facility that also is conveyed to the oil/water separator. The northeast parking area behind Building 27054 is designated for all vehicle/equipment staging where CER personnel inspect daily and utilize drip pans if necessary. A HW concrete shed is located in the far northwest corner. The covered shed is enclosed with a locked fence and the concrete floor slopes toward a manual drain. Drainage from the CER area flows towards Outfall 075 and an unnamed tributary to Beaverdam Run.

3.3.4.2 Guad Maintenance

Guad Maintenance is also located on MCB-4 adjacent to CER. The primary responsibilities of the facility are maintenance and services of grounds and roads throughout MCB Quantico, including grass cutting and snow removal. Industrial storm water pollutant source activities performed in this area include vehicle/equipment washing and storage, fuel dispensing operations, indoor/outdoor storage and loading/unloading of HM/HW, and a salt storage facility. Runoff from vehicle/equipment wash down operations is conveyed to an oil/water separator that is ultimately discharged to the Stafford County POTW. Vehicle/equipment maintenance is not performed in this area; vehicles are taken to CER for repairs. Only Guad Maintenance personnel are allowed to conduct fuel dispensing operations. A covered HW shed is enclosed with a locked fence and has a concrete floor which slopes toward a manual drain. A salt storage dome (Building 27000) is also located at the facility. The dome entrance area is graded to prevent runoff and run-on. Drainage from Guad Maintenance area flows towards Outfall 075 and an unnamed tributary to Beaverdam Run.

3.3.4.3 Facilities Maintenance

Facilities Maintenance is located on Barnett Avenue and consists of multiple trades in one complex, such as a sign/paint shop, electric shop, machine shop, grounds/maintenance shop, and refrigeration shop. Industrial storm water pollutant source activities performed at this facility include vehicle/equipment storage, fuel dispensing operations, outdoor painting operations, indoor storage and loading and unloading of HM/HW. All equipment maintenance is completed indoors. Vehicle washing is performed in the designated

area at Guad Maintenance or at the Motor Pool. Vehicle/equipment storage is staged in the back parking area of the facility. Additionally, Facilities Maintenance is responsible for the salt storage facility located on South Mainside of MCB Quantico in Building 3236. The area around the entrance to the salt dome is graded to prevent runoff and run-on.

3.3.4.4 Motor Transport Maintenance

Motor Transport Maintenance is located on Barnett Avenue and is responsible for maintaining/servicing MCB Quantico vehicles (e.g., Military Police vehicles and school buses). The facility is segregated into three bays, two of which are attended by civilians and the other attended by Marines. Industrial storm water pollutant source activities performed in this area include vehicle washing and maintenance, painting operations, and indoor/outdoor storage of HM and HW. All vehicle washing and maintenance is performed indoors along with painting operations. All floor drains in the facility discharge to an oil/water separator which ultimately discharges to the Mainside STP, and drip pans are employed during maintenance activities within the bays. The HW shed is enclosed with a locked fence and has a concrete floor which slopes toward a manual drain. Spill kits are placed throughout the facility containing chemical and oil absorbent pads and dry sweep material.

3.3.4.5 Mainside Water Treatment Plant

The Mainside Water Treatment Plant is located off Russell Road adjacent to I-95. The security locked fenced area consists of multiple storage and control buildings and above ground storage tanks. Industrial storm water pollutant source activities performed in this area include indoor storage and loading/unloading of HM. Building 1303 is equipped with a loading dock for all receipt of HM. Magnetic drain mats are located in the area for placement over a storm sewer inlet situated at the base of the dock. Water treatment chemicals (e.g., alum, lime, soda ash, sodium bicarbonate, sodium fluorosilicate, sodium hexametaphosphate, sodium sulfite) are stored in bulk in Buildings 1303 and 1314.

3.3.4.6 Mainside Sewage Treatment Plant (STP)

The Mainside STP, located off Epperson Avenue, is the primary wastewater treatment facility at MCB Quantico with an average daily influent of 1.2 million gallons. The facility, comprised of multiple storage and control buildings and above ground storage tanks, has perimeter fencing for security. Drainage from the primary treatment area is conveyed back to the head works. Drainage from the south end of the facility in the vicinity of the STP Admin Building is conveyed directly to the Potomac River.

Industrial storm water pollutant source activities performed in this area include indoor storage as well as loading and unloading of HM. Water treatment chemicals (e.g., alum, polymer, soda ash, sodium hydroxide) are stored in bulk in Buildings 659, 660, and 667. In addition, the facility maintains outdoor diesel storage tanks to fuel emergency generators. An outdoor flammable locker and shed are used for storage of petroleum products (e.g., diesel, gasoline, greases and oils). Both units are self contained and situated on impervious surfaces.

Sludge generated from the treatment process is dumped directly into a roll off box for transfer and disposal off site.

3.3.4.7 Camp Barrett Heating Plant

The Camp Barrett Heating Plant supplies heat to TBS buildings. The primary industrial storm water pollutant source at this area is indoor storage of HM and loading/unloading of boiler underground fuel tanks. Drums of various boiler and water treatment chemicals (i.e., Coastline Formula 3018, Coastline Formula 6400) are stored inside Building 24162. Drainage from the building is conveyed via a sump pump from the basement drains out the east side of the building. Drainage from the fuel tank unloading area flows generally down gradient toward the Heating Plant.

3.3.5 The Basic School (TBS)

TBS trains and educates newly commissioned or appointed officers to prepare them for duty as company grade officers in the operating forces, with particular emphasis on the duties, responsibilities and war fighting skills required of a rifle platoon commander. The TBS area is comprised of various classroom buildings and work centers including the following:

- Tracked Vehicle and Motor T Maintenance (Building 24009)
- Maintenance (Building 24101)
- Armory (Building 24018)
- Auto Vehicle Maintenance and Maintenance (24141 & 24142)

3.3.5.1 Tracked Vehicle and Motor T Maintenance

The Tracked Vehicle and Motor T Maintenance Complex, located on MCB-3, is responsible for maintaining all terrain military vehicles. This consists of performing all aspects of maintenance of the track vehicles. Building 24009 is comprised of two units, Tracked Vehicle and Motor T.

Industrial storm water pollutant source activities performed on the Tracked Vehicle side include vehicle washing and storage, indoor/outdoor storage of HM and HW, fuel dispensing operations. Runoff from vehicle wash down operations is conveyed to an oil/water separator that ultimately discharges to the Stafford County POTW. Floor drains and some storm drains located within the complex are connected to an oil/water separator that also discharges to the Stafford County POTW. Both the HM/HW outdoor storage sheds are enclosed by a locked fence and a concrete floor that slopes towards manual drains. In the event of a spill, the HM/HW storage sheds and vehicle staging area are graded to flow to the oil/water separator. The fuel dispensing operation is also graded toward the oil/water separator.

Industrial storm water pollutant source activities being performed on the Motor T side include vehicle maintenance and storage and indoor/outdoor storage of HM and HW. All

maintenance is performed inside where floor drains discharge into an oil/water separator. Vehicle staging is maintained outside within the complex. Vehicle washing goes through an oil/water separator and is directed to the Stafford County POTW. The HW outdoor storage shed, enclosed by a locked fence, includes a concrete berm containing any spills within the storage shed.

3.3.5.2 TBS Maintenance

TBS Maintenance is located in Building 24101. Industrial storm water pollutant source activities performed in this area include indoor/outdoor storage of HM. The majority of HM (e.g., paints, carpentry adhesives/sealants) is stored indoors. Fuel storage for equipment is maintained in outdoor flammable lockers on the backside of the building.

3.3.5.3 Armory

The TBS Armory is a new facility located on Belleau Avenue across from Bldg. 24164. Industrial storm water pollutant source activities performed in this area include weapons parts washing and storage of HM. Two overhang areas are the primary areas for parts washing, with the parking area as a potential backup. Drains from this area go to two OWS and then to the sanitary sewer. The parking area and roof drains are directed to a storm water management pond on the southeast side of the facility. Another OWS is located inside the building and drains to the sanitary sewer.

3.3.5.4 Auto Maintenance/Maintenance

The maintenance buildings in question store various quantities of gasoline, paint and solvents. The storage is in outdoor lockers surrounded by sand berms and some secondary containment. Storage of materials in this area must be constantly checked to ensure that correct procedures are in place.

3.3.6 Weapons Training Battalion (WTBN)

WTBN's industrial storm water pollutant source activities include the weapon precision lab and HM storage, grounds maintenance equipment staging, fuel dispensing operations, and outdoor weapons cleaning. A new state of the art precision weapons lab has been constructed with all activities performed indoors under high security. The precision weapons lab does maintain an outdoor HM storage consisting of a locked connex box complete with a fire sprinkler system.

The grounds maintenance unit for WTBN stages the grounds equipment in the grassy area by Building 27212. All equipment washing is performed at Guad Maintenance in the designated wash down area. The fuel dispensing operations located at Building 27223 are used strictly for the grounds maintenance equipment. An emergency shut off switch is in the fuel dispensing area areas along with a spill kit in the event of an emergency. Small plastic bottles of CLP are used for cleaning operations at an outdoor weapons cleaning station at Building 27211. Nominal amounts are used in the process such that spill potential is minimal.

3.3.7 4th Light Armored Reconnaissance (LAR) at Camp Upshur

The 4th LAR is located at Camp Upshur on the Northwest portion of MCB Quantico. Industrial storm water pollutant source activities at the 4th LAR include vehicle washing and storage, indoor/outdoor storage of HM and HW, and fuel dispensing operations. The facility is primarily paved, with storm sewers in the area draining to a storm water management pond (dry pond). A vehicle wash rack is attached to an oil/water separator which discharges to the Camp Upshur STP.

Vehicle maintenance is performed both inside and outside with drip pans used during outside maintenance activities. Vehicles are staged in the lot at the entrance to the facility and daily walkthroughs are conducted to check for leaks.

The facility employs an outdoor storage shed with a concrete berm and is enclosed by a locked fence for storage of waste materials. A locked connex box with integral secondary containment is used for storage of HM adjacent to the main maintenance bay.

A fuel dispensing area is located in a grassy area to the northeast of the facility.

3.3.8 Communications School

The Communications Support Platoon of the Communications School (CS) is located on Hanson Road just north of MCSC Raids and Recon. The unit provides communications training and maintenance for CS and the Officer Candidate School (OCS). Industrial storm water pollutant source activities at CCSS include vehicle washing and storage and indoor/outdoor storage of HM and HW. General area drainage is to the Potomac River running east along the facility

The facility vehicle storage lot is paved with storm sewers in the area connected to the oil/water separator located at the wash rack. Discharge from the oil/water separator is conveyed to the Mainside STP.

Other than checking oil levels, no vehicle maintenance is performed at the facility. Vehicles are staged in the lot on the north end of the facility and daily walkthroughs are conducted to check for leaks.

The facility employs an outdoor storage shed with a concrete berm. The shed is enclosed by a locked fence for storage of HM and waste materials. The unit also maintains an outdoor flammable locker for spray paint storage. Idle mobile generators and flood lights are stored along the area fence line on the south side of the facility. Drainage from this area is generally down gradient to the Potomac River.

3.3.9 Hazardous Waste Storage Facility

The Hazardous Waste Storage Facility is a <90-day storage site located on MCB-1 across from the Fire Station. The facility is a secure building enclosed by an eight-foot high

chain-link fence. Seven bays are separated by masonry block walls inside the building. Waste materials are segregated, maintained in boxes, cans and drums, all of which are stored within secondary containment prior to off-site disposal by an outside contractor. Discharges from any of the containers in the hazardous waste storage facility are contained by the berms, floor trench drains, and walls. The quantity of material stored varies with the operational requirements of the activities conducted on MCB Quantico. If a spill were to occur outside the building, the surrounding soil would be contaminated, which could result in contamination of the down gradient storm water channel.

3.3.10 Logistics Division

3.3.10.1 Transportation Branch

The Transportation Branch lot is located off of McCawley Avenue. Industrial storm water pollutant source activities being performed in this area include vehicle washing and storage, equipment storage, and fuel transfer operations. This fenced area consists of a large parking area for MCB Quantico transportation (e.g., school buses and fleet vehicles). Runoff from vehicle wash down operations is conveyed to an oil/water separator that is connected to the sanitary sewer system. The equipment storage, an additional Facilities Logistics Support Services (FLSS) storage area for old equipment (i.e., tanks, generators), is located in the northeast corner of the parking area. The fuel dispensing operations are for government vehicles only. The west side of the parking area has a trench to redirect any runoff from the parking areas up-gradient of the Transportation Branch.

3.3.10.2 Fuel Farm

The Fuel Farm is located on Fuel Farm Road off of MCB-1. The security locked fenced area consists of a personnel building containing fuel farm controls, an asphalt paved service road, pumps and equipment pads with associated above ground fuel piping, above ground storage tanks, a tanker truck loading and unloading area, and a tank truck parking area. Containment surrounds all storage tanks. All drainage discharge from the process

areas (i.e., tank farm and tanker loading/unloading area) is conveyed to an oil/water separator which discharges through Outfall 072 to an unnamed tributary of Beaverdam Run.

The primary method of spill prevention at the Fuel Farm is the electronic tank monitoring system as well as diligent and frequent inspections of storage tanks, pumps, filters, pipes, valves, and other fittings.

3.4 SPILLS AND LEAKS

There have been a limited number of significant spills and leaks at MCB Quantico since 2003. U.S. EPA has defined significant spills and leaks as releases of hazardous substances in excess of their reportable quantities within a 24-hour period. Table B-6 provides a summary of reportable spill incidents from 2003-present.

3.5 SAMPLING DATA

Analytical monitoring and quarterly visual inspection results for permitted outfalls are maintained by the NREAB Environmental Compliance Section. Historical summaries of storm water analytical data are provided in Appendix D.

4. MEASURES AND CONTROLS

In accordance with permit guidelines, MCB Quantico must identify and document in the SWMAP, Best Management Practices (BMPs) to minimize the potential for storm water contamination. BMPs are policy and procedural measures that reduce storm water 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). This section presents the BMPs, both Base-wide and area-specific (industrial activity –specific), identified for implementation at MCB Quantico.

Generalized BMPs, applicable to all command and tenant facilities, include:

- Good housekeeping
- Preventive maintenance
- Emergency notification and response to spills
- Inspections
- Erosion and sediment control/Construction management
- Monitoring
- Personnel training
- Record keeping and reporting
- Illicit discharge investigations
- Sediment and erosion control
- Management of runoff

These general BMPs, as described in the following sections, are to be included as part of routine daily operations conducted at MCB Quantico.

4.1 GOOD HOUSEKEEPING

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

The following housekeeping practices are employed at all command and tenant industrial facilities and HM/HW accumulation sites:

- Discharge Control
  - No HM or HW is to be discharged to storm sewers or sanitary sewers
  - Discharge all janitorial cleaning rinse waters into sanitary sewers only
  - Visually inspect and document secondary containment discharge prior to release
- General Area Practices
  - Maintain a clean and orderly work area
  - Sweep up litter and debris from sidewalks, driveways and parking lots
  - Remove garbage and waste materials at regularly scheduled intervals and place in proper closed containers
  - Place scrap metal in covered containers
  - Maintain spill response equipment on site at HM/HW storage areas and fueling areas
  - Ensure prompt containment and removal of spills
  - Conduct periodic inspections of storm sewers and structural BMPs
  - Conduct periodic visual inspection of rooftops where industrial combustion particulate emissions occur
- Container Storage
  - Store HM and waste (hazardous and solid) containers on a covered, impervious surface with secondary containment
  - Maintain neat and orderly storage of HM and HW with proper spacing for pathways and walkways between containers and drums

- Use indoor storage of HM and HW to the extent practicable
- Keep lids on garbage and waste containers (i.e., dumpsters, drums, waste collection tanks) closed when not being filled or emptied
- Lock all outdoor locker and connex storage boxes when not in use

- Vehicle and Equipment Storage/Maintenance
  - Wash all government vehicles and equipment in designated wash racks only
  - Wash personal vehicles at commercial car washes whenever possible, such as the MCX Car Wash or 7-Day Store
  - Use biodegradable materials for vehicle/equipment wash down
  - Conduct all maintenance of government vehicles and equipment indoors to the extent practicable; outdoor maintenance is to be performed on impervious surfaces in designated work center areas only
  - Conduct maintenance of personal vehicles and equipment indoors to the extent practicable; outdoor maintenance is to be performed on impervious surfaces in designated areas only (i.e., MCCS Auto Hobby)
  - Place drip pans or drip pads under vehicles/equipment during maintenance activities
  - Drain fluids from wrecked vehicles and decommissioned equipment prior to storage
  - Store cracked, leaking vehicle batteries in covered secondary containment
  - Do not “top off” vehicles/equipment (i.e., overfill)
- General Facility Maintenance
  - Use tarps or vacuums during outdoor sanding/blasting operations
  - Use drip pans and tarps during outdoor painting operations
  - Maintain salt piles indoors with bermed or graded entrances to prevent run-on and run-off
- Construction Sites
  - Inspect sites periodically for any erosion and sediment control issues

4.2 PREVENTIVE MAINTENANCE

Routine inspection and maintenance of equipment and storm water controls are key aspects of pollution prevention. Preventive maintenance and inspections performed in support of the Storm Water Management Program are itemized below:

- Storm Water Controls
  - Visually inspect oil/water separators monthly and clean annually or as needed
  - Inspect permitted storm water outfalls quarterly as outlined in Section 4.4 of this document, and maintain as needed. Storm water pathways are to be free of debris, free of erosion, and fully functional
  - Inspect secondary containment structures as needed for maintenance and repair and prior to discharge of accumulated rainwater. Before draining, a documented visual inspection will occur to ensure the secondary containment area is not contaminated
- Equipment Maintenance
  - Perform equipment/vehicle/aircraft maintenance in accordance with appropriate manufacturer specifications and unit military specifications
  - Manage tanks in accordance with applicable regulations and policies outlined in the Petroleum Storage Tank Management Plan (PSTMP) and SPCC Plan
- Facility Area Inspections
  - Conduct inspections, including the annual Comprehensive Site Compliance Evaluation and the facility area inspections, as outlined in Section 4.4 and Section 5 of this document.

4.3 EMERGENCY NOTIFICATION AND RESPONSE

Emergency notifications and response for oil and hazardous substance spills is dependent on the nature of the emergency incident. This section details notifications required and initial responses to be implemented as outlined in the Base Oil and Hazardous Substance Spill Response Plan.

4.3.1 Workstation Spills

For small workstation spills where a localized spill of a nominal amount of a material occurs that has no chance of escaping to air, water or soil and can be cleaned up and disposed by the personnel in the area who are familiar with the material involved, no notifications are required. Immediate initial response measures may include, but are not limited to the following tasks:

- Returning overturned containers/drums to an upright position
- Application of absorbent materials to the spilled material
- Shutting down or deactivating the operation that is the source of the spill

4.3.2 Emergency Incidents

In the event of an oil or hazardous substance spill at MCB Quantico that has escaped to the air, water or soil and is beyond the capabilities of qualified, trained area personnel emergency notifications and initial response are to be conducted as outlined in the **RED PLAN** (available in area workcenters and on the NREAB website). The **RED PLAN** serves as the "jump start" to get response actions started and coordinated quickly in the early stages of a spill. Should the spill progress to a large scale incident, emergency response will transition to that described in the Oil and Hazardous Substance Spill Response Plan.

In accordance with the **RED PLAN**, the following are to be implemented during a non-workstation spill event:

- Notify MCB Quantico **Fire Department – 911**
- Warn personnel by sounding alarms
- Shut off ignition sources, motor, electric currents, open flames (only if trained and it is safe to do so)
- Evacuate upwind/upgrade to a safe distance
- Notify site supervisor
- Notify **NREAB – 703.784.4030**

- Notify **Command Duty Officer (CDO) – 703.784.2707/4096**
- Standby until Fire Department arrives and provide information

Following implementation of the immediate, initial response procedures, qualified personnel shall assess the situation, identify potential drainage routes, and direct personnel to take whatever additional steps are necessary to arrest, contain, minimize, or divert the spill.

4.3.3 Spill Response Equipment

Spill response equipment is maintained at command and tenant workcenters throughout MCB Quantico and consists primarily of oil absorbents (sweeping compound, booms, pads, socks, etc) to be used primarily for workstation spills. The MCB Quantico Fire Department maintains greater quantities and more advanced equipment for larger scale emergency incidents. Annex F of the current Oil and Hazardous Substance Spill Response Plan provides a summary of emergency response equipment available. Table B-7 provides a summary of spill response equipment at industrial areas of MCB Quantico addressed within this plan.

4.4 INSPECTIONS

Regular inspections are a way to ensure that all of the elements of the SWMAP are in place and working properly. Routine inspections are not meant to be a comprehensive evaluation, but rather a survey to identify possible sources of storm water pollution prior to each use of an area or equipment. MCB Quantico is required to perform storm water inspections of industrial areas as well as those areas where spills and leaks have occurred within the past three years. The industrial areas are ranked annually for high, medium, or low importance, depending upon their history of violations or location in sensitive areas. Table 4-1 outlines the criteria for determining whether a site merits a low, medium or high ranking, and the actions taken at each type of site to ensure compliance.

Table 4-1. Site Ranking Definitions

Ranking	Reason for the Ranking	Site Requirements
High	History of noncompliance with the permit in the previous year(s) or location in a significant sensitive area with a medium to high amount of outdoor activity that could cause storm water pollution.	Annual Comprehensive Site Compliance Evaluation, quarterly internal audits, annual storm water training.
Medium	No recent history of noncompliance, not in a sensitive area, very little outdoor activity that could cause storm water pollution.	Same as above, but the site will be eligible for a low ranking the next calendar year, if no violations are accrued.
Low	No history of noncompliance, very little outdoor activity that could cause storm water pollution, not in a sensitive area.	NREA will conduct as-needed inspections. Annual training for this site is not required; however it is still recommended that new employees receive initial training on the subject via the Website Storm Water Training Module

Annually, all industrial sites are re-evaluated to determine if their ranking should be changed. This determination is made by the Storm Water Pollution Prevention Team at the annual meeting, and the SWPPP is updated to reflect the changes that will take effect in the next calendar year. A list of the sites and their ranking can be found in Table B-5.

There are a variety of inspections to be performed under the SWMAP. The following is a list of the inspections.

4.4.1 Annual Comprehensive Site Compliance Evaluation

Industrial sites at MCB Quantico are visually inspected on an annual basis. For high ranked industrial areas, an annual Comprehensive Site Compliance Evaluation is required. These inspections are further discussed in Section 5.

4.4.2 Informal Inspections

In addition to the required annual Comprehensive Site Compliance Evaluation, sites in high or medium industrial areas of the Base perform area inspections as part of routine operations. These informal inspections vary by work center, but typically are performed on a routine basis and include visual inspections of the following:

- Hazardous material (HM)/hazardous waste (HW) storage areas
- Equipment storage areas
- General area evaluation for evidence of or the potential for pollutants entering the drainage system

4.4.3 Quarterly Equipment Inspections

Quarterly, the high or medium ranked industrial sites identified within this Plan will perform a formal internal audit using the checklist in their individual standard operating procedure (SOP) as presented in Appendix E, and will fax the results to NREAB at 703-784-4953.

For medium ranked industrial areas, NREA will perform a quarterly drive-by (visual) inspection of the site to ensure that the site is staying in compliance and no new problems are detected.

Quarterly equipment inspections are performed by site managers to ensure that equipment is working properly without leaks. When equipment is not found to be working properly, the equipment will be repaired or replaced. All leaks will be immediately cleaned up. This inspection is conducted in the industrial areas.

4.4.4 BMP Inspections

BMP inspections are done on an annual basis. This inspection ensures that the post-construction structural BMPs, such as vegetated swales, storm water ponds, and other BMPs are functioning as designed. Any follow-up repair or maintenance work will also be documented. A list of the BMPs to be inspected is found on Table B-14.

4.4.5 Dry Weather Inspections

Dry weather inspections of all the storm water outfalls on MCB Quantico, done on a 5-year basis, are performed to detect potential illicit discharges. The inspector notes flow characteristics and attempts to identify the source of the potential illicit discharge. Follow-up to the inspection is necessary to identify, locate, and eliminate any illicit discharge.

4.5 EROSION AND SEDIMENT CONTROL/CONSTRUCTION MANAGEMENT

The primary source of construction pollution is sediment-laden runoff from disturbed areas of the site. The following is required for either: construction sites with limits of disturbance of one acre or greater or construction sites with limits of disturbance greater than 2500 square feet that fall within a designated resource protection area (RPA) or are located within 100 feet of a water body (i.e., stream, river, tributary, wetland, etc.)

- Storm Water Construction Permit
- SWPPP
- Storm Water Management Plan (SWMP) for any construction site greater than 1 acre

In addition, for those sites where an area greater than 10,000 square feet is disturbed, an Erosion and Sediment Control (E&SC) Plan is required.

To maintain compliance with storm water regulations, it is the responsibility of the contractor or responsible land disturber to:

- Complete the Virginia Department of Conservation and Recreation (DCR) DCR01 permit application and fee form
- Prepare the SWPPP
- Prepare the E&SC Plan
- Prepare the SWMP, if needed
- Conduct Quantico Web-Based Storm Water Awareness training

- Submit the DCR01 permit application, fee form and payment to NREAB Water Program Manager for review and forwarding to DCR.
- Submit the SWPPP, SWMP, and E&SC Plan to NREAB Water Program Manager for review and approval
- Maintain permit, SWPPP, SWMP and E&SC Plan on site
- When site has reached final stabilization, send Notice of Termination form to NREAB Water Program Manager for review and forwarding to DCR. Final stabilization means two 3”-inch cuttings and 90% coverage with grass.

No land disturbance will be allowed to take place unless the above conditions are met.

The NREAB Water Program Manager oversees storm water compliance for all construction sites at MCB Quantico. In this capacity, the NREAB Water Program Manager will perform the following:

- Review the DCR01 permit application package and forward to Virginia Department of Conservation and Recreation (VCR)
- Review the SWPPP
- Review and approve the E&SC Plan
- Review and approve the SWMP

All plans and permit applications must be submitted to NREAB for review at least two weeks prior to the start of work; no land disturbing activity may commence without NREAB approval of required plans and receipt of DCR written notice of permit coverage.

4.6 MONITORING REQUIREMENTS

Storm water discharges at MCB Quantico are managed in accordance with VPDES Permit Nos. VA0002151, VAR051810, and VAR040069. The monitoring and administrative recordkeeping requirements of this permit are outlined in the following sections.

4.6.1 Outfall Summary

MCB Quantico currently operates 16 outfalls under VA0002151 that discharge waters from vehicle maintenance, floor drains, steam condensate, filter backwash, cooling tower runoff, old landfill sites, and storm drains from various Base areas. Fourteen outfalls have been classified by VDEQ as storm water outfalls. Ten outfalls discharge storm water only and four outfalls discharge both storm water and process water. Table B-8 provides a summary of permitted, industrial storm water outfalls at the Base.

All other storm water outfalls are operated under VPDES Permit No. VAR040069.

4.6.2 Quantitative Monitoring

Under the VPDES storm water associated with industrial activities permit , eleven different parameters require monitoring and documentation. However, these parameters and their monitoring frequency vary by outfall as outlined in the permit. Table B-8 summarizes storm water analytical monitoring required under the MCB Quantico VPDES storm water permits. Analyses are collected and conducted in accordance with US EPA analytical laboratory test methods as promulgated in 40 CFR 136 and undergo quality control and quality assurance review to ensure the validity of the results. The results from these samples are sent monthly to the Virginia Department of Environmental Quality (VDEQ) with the Discharge Monitoring Report (DMR).

Two of these outfalls require quarterly visual inspections only. Outfall 018 and 075, which are covered under VA0002151.

Analytical monitoring and quarterly visual inspection results for permitted outfalls at MCB Quantico are maintained by the NREAB Environmental Compliance Section. Historical summaries of storm water analytical data are provided in Appendix D.

4.6.3 Qualitative Monitoring

The VPDES storm water permit requires qualitative monitoring of outfalls. Qualitative monitoring efforts to be conducted as part of the Storm Water Management Action Plan at MCB Quantico are described below.

The NREAB Water Program Manager will perform qualitative monitoring consisting of a visual inspection of each permitted storm water outfall at least once per quarter. The discharge characteristics to be monitored during the inspection of each outfall include:

- Color
- Odor
- Clarity
- Floating solids
- Settled solids
- Suspended solids
- Foam
- Oil sheen
- Other obvious indicators of storm water pollution

The visual observations are to be conducted within the first 30 minutes of a storm event or as soon as practicable, but not more than one hour after the rain event starts (greater than 0.1 inch that occurs at least 72 hours from the previously measurable storm event).

Observations made during the qualitative monitoring are to be recorded using Form F-1 found in Appendix F.

For monitoring quarters where storm events did not result in runoff, documentation must be maintained indicating that no runoff occurred. This documentation must be signed and certified in accordance with permit requirements. Quarterly visual inspection results are kept in a separate binder along with site inspections and training records.

4.7 PERSONNEL TRAINING

Training is essential for effective implementation of the Storm Water Program. The NREAB Water Program Manager is responsible for providing storm water training to appropriate MCB Quantico personnel. Records of the training program will be maintained by the NREAB Water Program Manager and the individual training recipients. Specific goals of the Employee Storm Water Training Plan are as follows:

- To teach personnel the components and goals of the SWPPP
- To minimize the occurrence and extent of spills

All appropriate personnel will receive Storm Water Pollution Prevention Training within 90 days of the date of hire/assignment, and on an annual basis. NREAB provides both classroom and on-line storm water training (see link below) and also distributes several video tapes dealing with storm water issues.

http://www.quantico.usmc.mil/activities/display.aspx?PID=1786&Section=NREA

The training program consists of a review of the SWMAP with an emphasis on pollutant source identification and spill prevention and response measures pertaining to specific, assigned work areas. Topics highlighted during the training include but are not limited to:

- Good Housekeeping
  - Maintaining a neat, organized workcenter
  - Pollution prevention
  - Area inspections
  - Drainage of secondary containment structures
  - Authorized workcenter activities (e.g., vehicle washing in designated areas only)
- Materials Management
  - Container labeling
  - Area material types
  - Material storage/organization
- Spill Prevention and Response

- Spill prevention
- Emergency notifications
- Spill response equipment

Training can be fulfilled by site personnel in several different ways, including:

- On-line training
- Site-specific training done by Water Program personnel at the site
- Videos/DVD's, available from the Environmental Compliance Section

4.8 RECORD KEEPING AND REPORTING

Each storm water permit has its own requirements for record keeping and reporting. The following sections include the record keeping and reporting requirements for each permit.

4.8.1 Storm Water Associated with Industrial Activity

The storm water associated with industrial activities requires documentation of quantitative/qualitative outfall monitoring, facility inspections, training records, and site compliance evaluations. Table B-9 summarizes records to be maintained and duration of record retention.

4.8.2 MS4

The MS4 permit requires documentation of BMPs chosen, goals met, schedules for implementation of the chosen BMPs, and associated costs. MCB Quantico has chosen to record these items in a commercial software database named MS4 Permit Manager. Section 7.4 gives additional information concerning this database. An annual report are to be sent to the VDCR outlining the year's progress in meeting the BMP goals and schedules, any new or modified BMPs selected for the next year, and monitoring data and annual outfall characterization for WLA associated with the TMDL. Table B-13 lists the specific information to be included in the MS4 permit annual report.

All reports required by the MS4 permit, and other information requested by the VDCR will be signed and certified according to the MS4 permit requirements found in Section III.K of the MS4 permit.

4.8.3 Construction

All construction site inspections conducted by the NREAB are documented and kept on file at the NREAB. Additional information is found in Section 9 of this plan.

4.9 ILLICIT DISCHARGE INVESTIGATION

Illicit discharges are defined as drainage from storm drains that have measurable flow during dry weather containing pollutants and/or pathogens. Each illicit discharge has a unique frequency, composition, and mode of entry into the storm drain system. Illicit discharges are frequently caused when sewage disposal systems interact with the storm drain system. Some illicit discharges are not due to incorrect plumbing, but other factors, such as illegal dumping, car washing in non-approved areas, sewage overflows, etc. Allowable non-storm water discharges include:

- Discharges from fire fighting activities
- Fire hydrant flushings
- Potable water sources including waterline flushings
- Uncontaminated air conditioning or compressor condensate
- Irrigation drainage
- Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with manufacturer's instructions
- Routine external building wash down water that does not use detergents
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used.
- Uncontaminated ground water or spring water
- Foundation or footing drains where flows are not contaminated with process materials such as solvents

- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but NOT intentional discharges from the cooling tower (e.g. "piped" cooling tower blowdown or drains)

MCB Quantico conducted an illicit discharge survey of Mainside in 2009, and a survey of the West side of the base in 2007. Although these two surveys showed no significant illicit discharges, the surveys will be conducted again in FY2012. Due to the amount of construction on base, and the possibility for future illicit discharges to the system, the procedure of checking the system on a routine basis is deemed necessary. Records of these discharges are maintained by NREA. Should illicit discharges be found to exist, measures will be implemented to eliminate the discharge to the storm water sewer system. Appropriate BMPs will be implemented to control the discharge and remove the pollutant source.

4.10 MANAGEMENT OF RUNOFF

Varying run-on and runoff controls are utilized at MCB Quantico to redirect or reduce storm water flows and pollutant loadings. Examples of measures employed include:

- Grass swales
- Buffer strips to control and filter runoff from parking lot areas
- Rip-rap at outfall discharges where required
- Detention ponds
- Sedimentation ponds
- Vegetative landfill covering

These permanent structural BMPs are inventoried and inspected on an annual basis, and are maintained as needed. Records of inspection are maintained by the NREAB Storm Water Program Manager.

5. COMPREHENSIVE SITE EVALUATION

Beginning in FY2012, MCB Quantico will conduct an annual Comprehensive Site Compliance Evaluation consisting of visual inspections in the high and medium ranked industrial areas. Tasks completed during the site evaluation include:

- Inspection of areas contributing to storm water pollution for the presence of, or potential for pollutants entering the storm water system
- Inspection of emergency response equipment and supplies
- Evaluation of structural storm water management measures, sediment and erosion control measures and other BMPs identified in the SWP3
- Evaluation of the appropriateness of the BMPs to reduce pollutant loadings. Additional measures are suggested if required to reduce pollutant loadings.
- Development of a summary inspection report

The SWPPP Team Leader or his designee conducts the annual site compliance evaluation and inspection. This comprehensive site evaluation and inspection may be done in lieu of one of the quarterly equipment inspections.

A summary report will be prepared. The annual comprehensive site evaluation report includes the following items.

- Scope of evaluation
- Name of the evaluator
- Date of evaluation
- Major observations relating to the implementation of the storm water pollution prevention plan
- Any instance of non-compliance
- Description of corrective actions taken in response to instances of non-compliance
- Certification of no instances of non-compliance, if none were identified.

Should the results of the site compliance evaluation indicate that the BMPs are not sufficient to reduce pollutant loadings, or that changes are required to the SWMAP, the SWMAP will be modified as necessary. In accordance with permit requirements, the plan

must be amended within 14 days of the inspection; plan amendments must be implemented in a timely manner, but in no case more than 90 days following the inspection. If the Comprehensive Site Compliance Evaluation does not identify any incidents of non-compliance, the inspection report must contain a certification indicating the Base is in compliance with the SWPPP and the storm water permit.

Based on the findings, the individual sites will receive either the summary report with recommended corrective actions, or a copy of the summary report and a Warning Letter or Notice of Violation letter (see Table 5-1). If any deficient findings are noted in the summary report, the site will have 14 days to respond. The area will be re-inspected within 30-45 days of the original findings.

Table 5-1. Inspection Discrepancies and Responses

TYPE OF DISCREPANCY	RESPONSE
Good Housekeeping Issues	
First Offense	Report of findings and recommended corrective actions
Second Offense	Warning Letter
Third Offense	Notice of Violation
SOP Not Posted On-Site	
First Offense	Report of findings and recommended corrective actions
Second Offense	Warning Letter
Third Offense	Notice of Violation
Internal Audit	
Not turned in for one quarter	Warning Letter
Not turned in for two consecutive quarters	Notice of Violation
Training Not Completed by End of Calendar Year	Notice of Violation
SWPP Not Kept On-Site	Notice of Violation

Signed copies of the comprehensive site evaluation reports will be maintained for 3 years. A blank site evaluation form with explanation sheet is included in Appendix F.

6. CONSISTENCY WITH OTHER ENVIRONMENTAL PLANS

Although this SWMAP is a stand-alone document, references to existing pollution prevention plans and policies are included (to the extent practicable) to maintain consistency among the documents and facilitate plan maintenance. Brief summaries of existing plans, policies and programs are provided in the following sections.

6.1 HAZARDOUS MATERIALS AND WASTE HANDLING

Marine Corps Order P5090.2A (Marine Corps Environmental Compliance and Protection Manual) sets forth policies for management of environmental issues and compliance with environmental regulations at Marine Corps facilities. In compliance with this order, MCB Quantico issued Marine Corps Base Order MCBO 5090.2B, as well as MCBO 6280.1B, which details the handling, transfer, and disposal of hazardous materials and hazardous waste.

6.2 OIL AND HAZARDOUS SUBSTANCE SPILL PREVENTION AND RESPONSE PLAN

The MCB Quantico OHS Spill Prevention and Response Plan is an operational, single source document for the prevention and management of oil, hazardous substance, hazardous material, and hazardous waste spills. The plan provides essential guidance in addressing the following federal, Commonwealth of Virginia, and United States Marine Corps (USMC) planning requirements in regards to pollution prevention and spill response:

- Facility Response Plan (FRP)
- Spill Prevention Control and Countermeasures (SPCC) Plan
- Virginia Oil Discharge Contingency Plan (ODCP)
- Hazardous Waste Contingency Plan
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Emergency Planning and Community Right-to Know Act (EPCRA)

- Resource Conservation and Recovery Act (RCRA)
- Occupational Safety and Health Administration (OSHA)
- MCO P5090.2A

6.3 SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

The Oil Pollution Prevention Regulations (40 CFR 112) require facilities with greater than 1,320 gallons of aboveground oil storage capacity and/or 42,000 gallons of underground storage capacity to prepare an SPCC Plan outlining the equipment, methods, and procedures to be utilized to prevent the discharge of oil from shore activities into or on the navigable waters of the United States or adjoining shorelines. The current SPCC plan (April 2005) contains an inventory of petroleum, oil and lubricant (POL) handling facilities, a description and inventory of existing containment structures and operational practices, and requirements for inspections and recordkeeping. The SPCC Plan is integrated within the MCB Quantico Oil and Hazardous Substance Spill Prevention and Response Plan.

6.4 FACILITY RESPONSE PLAN

Under the Oil Pollution Act of 1990, as regulated in 40 CFR 9 and 40 CFR 112, facilities that meet any of the following criteria are required to develop and implement a facility response plan (FRP):

- The facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gallons
- The facility has a total oil storage capacity greater than or equal to 1 million gallons and lacks secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area
- The facility has a total oil storage capacity greater than or equal to 1 million gallons and is the facility located such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments

- The facility has a total oil storage capacity greater than or equal to 1 million gallons and is located such that a discharge from the facility would shut down a public drinking water intake
- The facility has a total oil storage capacity greater than or equal to 1 million gallons and experienced a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the last 5 years

Because MCB Quantico meets the third criteria, the Base is required to develop and maintain a facility response plan. Required elements of the FRP, as mandated by 40 CFR 9, 40 CFR 112, MCO P5090.2A, and MCBO 6240.4B are integrated within the MCB Quantico Oil and Hazardous Substance Spill Prevention and Response Plan.

6.5 POLLUTION PREVENTION PROGRAM

The purpose of the MCB Quantico Pollution Prevention (P2) program is to help ensure compliance with Executive Orders 12856 and 13148 requiring development of a P2 program and quantified reductions in pollutant releases. The P2 program is managed by the NREAB with support and participation from other tenants and organizations aboard the Base. The P2 policy at MCB Quantico is based upon the P2 hierarchy of source reduction, recycling, and treatment, with disposal as a last option. In support of the P2 policy, MCB Quantico has developed its own P2 Plan, which is updated on a regular basis and documents historical P2 successes, identifies and analyzes potential P2 opportunities, and presents a path forward for the P2 program.

6.6 HAZARDOUS WASTE MINIMIZATION PROGRAM

In conjunction with Base Pollution Prevention Plan, MCB Quantico has implemented a Hazardous Waste Minimization Program which employs methods such as the use of alternative materials, process modifications, employee suggestions, and alternative disposal procedures to reduce the generation of hazardous wastes.

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7. MS4 SPECIFIC REQUIREMENTS

MCB Quantico has been granted coverage under the VDCR MS4 general permit. A copy of the general permit is included in Appendix A. The MS4 permit requires a MS4 Program Plan be implemented that describes how MCB Quantico will meet the permit requirements. This permit covers all of the storm water outfalls that are not associated with industrial activities. See Maps 14 and 15 in Appendix C for outfall locations. The MS4 permit specific requirements include the following;

- The permit requires the creation and implementation of a storm water management program and the adoption of BMPs in six categories called minimum control measures. The six minimum control measures are:
    1) Public education and outreach on storm water impacts.
    2) Public involvement and participation.
    3) Illicit discharge detection and elimination.
    4) Construction site storm water runoff control.
    5) Post-construction storm water management in new development or redevelopment.
    6) Pollution prevention/good housekeeping for military operations.
- TMDL WLA semiannual monitoring to be used to calculate the annual characterization that estimates the volume of storm water discharged, in cubic feet, and the quantity of the pollutant identified in the WLA.
- The development and implementation of an outfall reconnaissance program to identify potential sources of the pollutant identified in the TMDL WLA.
- An evaluation of the MS4 program to be conducted following the EPA Guidance Document entitled “Municipal Stormwater Program Evaluation Guidance, EPA-833-R-07-003, once during the 5-year permit period.
- Record keeping and reporting. Annual report of the progress made of the MS4 program minimum control measures, goals, and schedules during the year.

7.1 MINIMUM CONTROL MEASURES

The minimum control measures, and the BMPs selected by MCB Quantico and approved by the Virginia Department of Conservation and Recreation (VDCR), are out-

lined in Table B-10. These BMPs, along with their measurable goals, implementation schedules, and estimated costs are documented using spreadsheets maintained by NREA's Water Program Manager, and are included in an annual report to the VDCR. BMP implementation schedules and estimated implementation costs are found in Appendix H.

Annual reporting requirements are included in the MS4 permit. Section 4 of the SWMAP discusses reporting requirements.

7.1.1 Public Education and Outreach

Public education and outreach is handled at MCB Quantico by a variety of programs:

- A web-based training site, that provides modules for industrial sites, construction sites, family housing and children. (website: http://nreabweb.emainc.com/NREA/DEFAULT.ASPX)
- Classroom training at the schools, using the Enviroscape module.
- Storm Water and other Water Program related articles and information published in the base newspaper and on the NREA website.
- Brochures given out to the hosts and clients of approved charity car washes.
- Classroom Training for Base Personnel

Documentation of training is kept at the NREA office and is supplied to DCR with the annual report.

7.1.2 Public Involvement and Participation

Each year the NREA Branch displays and manages display space during several installation functions such as during Earth Day and the Annual Children's Health and Fitness Day. In addition, there are roadside clean-up operations which are ongoing around the installation. One such roadside cleanup involves prisoners of the Brig.

7.1.3 Illicit Discharge Detection and Elimination

The goal of illicit discharge detection and elimination is to ensure that only storm water is conveyed through the storm sewer system. MCO P5090.2B provides the authority to prevent any illicit discharges. MCB Quantico conducted an illicit discharge survey of Mainside in 2009, and a survey of the West side of the base in 2007.

Although these two surveys showed no significant illicit discharges, the surveys will be conducted again for the entire installation in FY2012. Due to the amount of construction on base, and the possibility for future illicit discharges to the system, the procedure of checking the system on a routine basis is necessary.

Some illicit discharges are not due to incorrect plumbing, but other factors, such as illegal dumping, car washing in non-approved areas, sewage overflows, etc. Records of these discharges are maintained by NREA. MCO 5090.2C establishes the authority to prevent illicit discharges from occurring on the installation.

7.1.4 Construction Site Storm Water Runoff Control

Construction site storm water runoff is controlled at MCB Quantico through permits and pollution prevention plans. See Section 9 for a description of the requirements.

7.1.5 Post Construction Storm Water Management

All storm water management structures constructed as part of new construction projects are required to have annual inspections and maintenance as needed. Storm water management structures are currently kept track of in an excel spread sheet and will be uploaded into the MS4 Manager Software. Inspections and maintenance are normally performed under an installation-wide maintenance contract.

Annually, any additional new structures must be added to the contract to ensure that they are inspected and maintained beginning the following year. A list of all active structures, including the date of last inspection and any maintenance performed, is submitted with the MS4 Annual Report.

7.1.6 Pollution Prevention and Good Housekeeping.

MCB Quantico has a Storm Water Pollution Prevention Plan (SWPPP) for all of its industrial sites. This plan outlines pollution prevention and good housekeeping at these sites. Additionally, informal inspection of the sites is conducted by NREA personnel.

The SWPPP is updated annually as part of this minimum control measure. Dates of the updates are provided with the MS4 Annual Report.

Other areas that do not fall under this SWPPP, such as housing areas, are inspected occasionally by NREA personnel. Education is provided to these areas on storm water pollution prevention and good housekeeping measures via the website and classroom demonstrations, as described in Section 2.2 of this Plan.

7.2 TMDL WASTE LOAD ALLOCATION

MCB Quantico discharges to the Lower Potomac River. A TMDL for PCBs has been developed for this section of the Potomac River. Section 10 of this report outlines the requirements associated with this TMDL. It includes the historical research done to identify the potential PCB impacted areas and outlines the monitoring program.

7.3 MS4 PROGRAM SELF-EVALUATION

An evaluation of the MS4 program will be conducted in accordance with the EPA Guidance Document entitled “Municipal Stormwater Program Evaluation Guidance, EPA-833-R-07-003, once during the permits 5-year cycle. This guidance document can be found on the EPA website. The evaluation is scheduled for FY2011.

7.4 MS4 PERMIT MANAGER SOFTWARE

MCB Quantico has chosen to use a commercial software database as its record repository. This software program, named MS4 Permit Manager, stores the minimum control measure BMPs, tasks, goals, schedules, and cost estimates. It has the ability to

link to photos and other documents. This enables MCB Quantico to keep all the outfall photos, construction and post construction inspection forms, WLA monitoring results, and other documents used to fulfill the MS4 permit requirements. The annual report section of the MS4 Permit Manager constructs a report on the year's accomplishments. Not all the elements required to be in the annual report are included in the MS4 Permit Manager software. Table B-13 contains an annual report required elements matrix and where these items can be found. A copy of the annual report can be found in Appendix I. Section 4.8 of this SWMAP contains further discussion of the annual report requirements.

7.5 MS4 PROGRAM IMPLEMENTATION BY OTHERS

The MCB Quantico is not relying on another government entity or any qualifying local programs to satisfy any permitting requirements.

The construction site storm water control minimum control measure is fulfilled by the existing MCB Quantico construction site permit program as outlined in Section 9 of this SWMAP.

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8. STORM WATER MANAGEMENT STATUS

The ultimate goal of storm water management is to eliminate pollutants discharging to the receiving waters of the states of Virginia and Maryland. The storm water associated with industrial activities permit, the MS4 permit, and the construction site permits facilitate a step-wise approach to reaching this goal. MCB Quantico has encountered some issues during implementation of the requirements of the storm water permits. Table B-11 contains a listing of the MCB Quantico storm water issues, their current status, any foreseeable problems, and solutions being implemented. Table B-12 contains the implementation schedule for the solutions in Table B-11 with an estimated cost for implementation.

Numbered solutions in Table B-11 correspond to numbered solutions found in Table B-12. Table B-12 contains a listing of the solutions, an implementation schedule and an estimated cost of solution implementation.

Solution estimated costs should be included in NREA budgetary planning. These costs were developed by estimating the level of effort required and applying an hourly rate. Some of these tasks can be performed by utilizing existing MCB personnel. Implementing the above solutions to the issues raised will enable MCB Quantico to remain in compliance with the requirements of the various storm water permits.

8.1 LOW IMPACT DEVELOPMENT (LID)

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. "This Department of Navy policy sets a goal of no net increase in storm water volume and sediment or nutrient loading" from all construction sites.

8.1.1 LID Background Information

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.

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.

MCB Quantico began reviewing construction plans for adherence to the UFC in 2009 and will require LID integration into each land disturbing project with a Storm Water Management element beginning in FY2011.

8.1.2 LID Implementation Criteria

The Department of Defense (DoD) has published, under its "United Facilities Criteria", a document entitled "Design: Low Impact Development Manual" (UFC 3-210-10, 25 October 2004). This design manual incorporates LID information from a multi-

tude of sources. The DoD requires that all facilities development projects use the United Facilities Criteria (UFC). The incorporation of LID into the general construction requirements will provide for increased storm water management of both quantity and quality, thus protecting rivers, streams and water bodies of the country. The following information is taken from DoD's "Design: Low Impact Development Manual" (UFC 3-210-10), 25 October 2004.

Additionally, on November 16, 2007, the Department of the Navy's (DON) policy for Storm Water Management, or LID policy letter, was issued. It sets a goal that major renovation and construction projects are to have no net increase in storm water volume and sediment or nutrient loading, and to reduce reliance on traditional storm water treatment options and collection systems. Major construction is defined by DON as any project exceeding $750,000.00. To meet this goal, the policy letter instructs that LID options must be considered and implemented where possible during FY2009 and FY2010. Starting FY2011, all projects are to incorporate LID practices. The DON policy also directs that LID will be considered in the design for all projects that have a Storm Water Management element.

On 19 December 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. A provision located in Title IV ("Energy Savings in Building and Industry"), Subtitle C "(High Performance Federal Buildings") will require projects involving a Federal facility with a footprint that exceeds 5,000 square feet to "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." This will most likely shift the focus of storm water management to Low Impact Development (LID) in the very near future. NREA ensures compliance with the DON policy and/or EISA, whichever may be applicable, for all projects within MCB Quantico. NREA also recommends LID on any project that does not fall within the limits of requiring LID.

8.1.3 Development and Implementation of LID Waiver Policy

A waiver process must be used if LID is not determined appropriate for the planned site. To date, this waiver process has not been implemented but will be incorporated into the FY2011 project reviews on an as-needed basis only until final program development has been achieved.

8.1.4 Annual LID training

NREA water program personnel conduct annual LID training for applicable MCB Quantico personnel to update them on LID requirements. Applicable personnel may include NAVFAC, Public works, EC's, facility managers, etc. In November 2010, 86 ROICC, Contract Officers, Facility Managers, NAVFAC CO's, Ft Belvoir, Dahlgren, and others participated in the first Quantico sponsored LID training workshop. Numerous vendors provided brief presentations on LID practices. NREA and other Base personnel provided guidance on the NEPA process as well as LID practices being utilized around the stormwater industry.

8.1.5 LID Design Guidance

NREA is compiling a LID Design Guidance Package to help aid MCB Quantico and their contractors when designing LID components into their Storm Water Pollution Prevention Plans (SWPPP).

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9. CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

Unlike the storm water associated with industrial activities and the MS4 storm water permits, storm water associated with construction activities require an individual storm water permit for construction sites with land disturbance greater than or equal to 1 acre (or greater than or equal to 2,500 square feet if located within a resource protection area (RPA)). A permit application must be submitted to the Virginia Department of Conservation and Recreation for these sites. The application, along with a site-specific SWPPP and an E&SC Plan, must be submitted through NREA. NREA will review and approve the E&SC Plan, and will review the SWPPP and permit application for accuracy before submitting the permit application to DCR. Construction sites greater than or equal to 1 acre which include the construction of structural BMPs must also submit a site SWMP to NREA for review and approval.

Additionally, MCB Quantico requires that all construction sites greater than or equal to 10,000 square feet and less than one acre must have an E&SC Plan approved by NREA. The E&SC Plan will be based on the requirements found in the latest version of the Virginia Erosion and Sediment Control Handbook.

Storm water drainage from MCB Quantico ultimately enters the Potomac River - a major tributary to the Chesapeake Bay which is protected by various programs under the Chesapeake Bay Preservation Act (CBPA). The CBPA discusses two types of areas to be protected and managed, watershed areas that drain to the Bay or its tributaries, and sensitive areas along the Bay and its tributaries. According to the CBPA, sensitive areas are those consisting;

> "…of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of state water. In their natural condition, these lands provide for the removal, reduction or assimilation of sediments, nutrients and potentially harmful or toxic substances in runoff entering the Chesapeake Bay and its tributa-

ries, and minimize the adverse effects of human activities on state waters and aquatic resources." (9VAC 10-20-10 et seq.)

These sensitive areas "shall include:

1. Tidal wetlands;

2. Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;

3. Tidal shores;

4. 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; (ex: county delineated RPAs) and

5. 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." (9VAC 10-20-10 et seq.).

Under the premise of the CBPA, construction sites of 2,500 square feet and greater that encroach these designated areas must obtain an approved E&SC Plan, a SWPPP, and a VDCR General Permit before any disturbance of soil can commence.

The NREA Branch reviews all construction site applications for completeness before sending them to the VDCR for approval and permit coverage. The NREA Branch also reviews and approves all construction site E&SC Plans and SWMPs.

Additionally, NREA inspects construction sites to ensure the site operators are complying with all aspects of this program. Construction sites are inspected for:

- Proper documentation (VSMP, SWPPP, SWMP E&SC Plan) is kept on site.
- Up-to-date inspections (the site Responsible Land Disturber should have documentation of all inspections for every 14 calendar days or within 48 hours of a rain event 0.5 inches or greater.)
- Proper E&S control installation and maintenance at the site, as outlined in the site's E&SC Plan.
- Proper storm water pollution prevention measures at the site, as outlined in the site's SWPPP.
- Absence of any illicit discharges (sediment or other chemical) from the site.

Warning Letters or Notices of Violation are issued by NREA for certain offences. Table 9-1 provides a list of these discrepancies and a timeline of when Warning Letters or Notices of Violations should be issued:

Table 9-1. Violations at Construction Sites

Violation	NREA Response
Failure to obtain a VSMP permit for the site	Notice of Violation
Failure to obtain approval for E&SC, SWM or SWP2 plans prior to beginning land disturbance	Notice of Violation
Failure to install E&SC measures as a first step before any other land disturbance	Notice of Violation
Improper maintenance of E&SC structures	1st violation: e-mail warning 2nd violation: Warning Letter 3rd or continuing violations: NOV
Release of any substance causing a reportable spill (including concrete wash down, paint runoff, or excess sediment)	Notice of Violation
Absence of an assigned Responsible Land Disturber at the site	Notice of Violation
Failure to maintain complete inspection records	1st violation: Warning Letter 2nd violation: Notice of Violation
Other Violations	Up to the inspector's discretion, as needed.

Determination of Final Site Stabilization will be made by the NREA Water Programs Manager or trained NREA Staff only. Final stabilization will consist of two 3-inch cuttings of grass, plus 90% grass coverage.

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10. TOTAL MAXIMUM DAILY LOAD/WASTE LOAD ALLOCATIONS

Under Section 1 of the MS4 General Permit (Discharge Authorization and Special Conditions) "a total maximum daily load (TMDL) approved by the State Water Control Board may include a wasteload allocation (WLA) to the regulated small MS4 that identifies the pollutant for which stormwater controls are necessary for the surface waters to meet water quality standards." If a WLA has been assigned to an MS4, the operator of the MS4 must provide schedules and strategies to ensure the MS4 program is "consistent with the assumptions of the TMDL WLA, within 18 months of permit coverage."

This section provides details on the schedules and strategies MCB, Quantico will implement to meet these WLA goals. This section also provides a listing of any impaired waters that are part of MCB Quantico's watershed and the schedule date for any associated TMDL allocations for these waters.

10.1 ASSIGNED TMDLS

The Virginia Storm Water Control Board has issued a WLA for Polychlorinated Biphenyls (PCBs) for the Potomac River Basin. According to the Tidal Potomac PCB TMDL Final Regulation, the only portion of MCB, Quantico listed in the regulation is the portion in Prince William County (see Table 10 of the Final Regulation.) Therefore, this is the only part of the base that will be discussed in this section.

The impaired segments listed in the Final Regulations that are affected by MCB, Quantico are Quantico Creek, Chopawamsic Creek and the Potomac River Middle. Table 10-1 shows the Annual Baseline and TMDL PCB loads to each of these impaired segments.

Table 10-1. Annual Baseline and TMDL PCB Loads

Water Quality Limited Segment	Baseline (g/year)	TMDL (g/year)	Reduction
Chopawamsic Creek	7.56	5.32	29.6%
Quantico Creek	22	15.3	30.5%
Potomac River Middle	454	56.2	87.6%

Table 12 in the Final Regulations, however, shows the direct drainage loads by watershed and FIPS code. Quantico Creek, Chopawamsic Creek, and the Potomac River Middle are all designated as Watershed Code 5491, with a percent reduction of 5.0%. According to the Final Regulations, "For those watersheds where the percent reduction is 5%, all of that reduction is due to the Margin of Safety (MOS). It is expected that the proposed 93% reduction in atmospheric deposition of PCBs will accomplish the 5% reduction in loads represented by the MOS." While the reduction in atmospheric deposition will significantly reduce possible PCB contamination, it is important to determine areas of current and historic PCB storage at Quantico, and test these areas accordingly.

10.2 HISTORIC AREAS OF PCB STORAGE

In the early1990's, MCB, Quantico, began the process of removing and disposing of all transformers that contained PCBs, including those transformers still in service. The last two known transformers that contained PCBs were disposed off-base in the year 2000. Additionally, all old equipment containing PCBs has also been removed and disposed off-base, as they were found. The NREAB keeps records of all PCB disposal manifests.

Below is a summary of each impaired waterway segment and any areas of PCB storage associated with these waterways.

10.2.1 Quantico Creek

The only areas of storm water outfall discharge to Quantico Creek are at the old "Hospital Point" area. This area used to accommodate the Quantico Naval Clinic, but currently only administrative buildings are at the site. There are no known historic areas of PCB storage in this area.

10.2.2 Chopawamsic Creek

Areas of storm water outfall drainage to Chopawamsic Creek are the PX/Exchange areas, which include a McDonalds, the PX, and a gas station, the Marine Federal Credit Union, parking lots from administrative buildings, the clubs and Hostess House, the old rifle range, parts of the airfield, the Buffalo Pond area, and some family housing. There are no known historic areas of PCB storage in these areas.

10.2.3 Potomac River Middle

There are two areas of significant historical PCB storage on the Potomac River. These areas were both CERCLA sites and have had extensive clean-up work, as described below.

10.2.3.1 Old DRMO Landfill

Site 4 (Old Landfill) is a 24-acre landfill located on the banks of the Potomac River. Site 4 is bound to the north and west by industrialized portions of MCB Quantico. The base sewage treatment plant borders the site to the north. The Richmond, Fredericksburg, and Potomac (RF&P) railroad tracks, barracks, and several offices are located along the western site boundary. The southern edge of the site is surrounded partially by wetlands and barracks used by airfield personnel.

This area was used as a landfill, scrap yard, and PCB transformer storage and disposal area. PCB storage and disposal took place on this site from approximately the 1950's to 1979. The area contained significant PCB contamination, and in 1998, an interim re-

medial action (IRA) was conducted at the site. During the IRA, the site was significantly re-graded, and all existing structures were removed. The site also contains a constructed wetland that was created in the area of an unnamed tributary to replace wetlands that were destroyed during implementation of the IRA.

Because the old landfill was situated directly next to the river, additional measures were put in place to ensure stabilization of the site. The shoreline was covered with riprap to prevent erosion. Chain-link fencing was installed around the perimeter, except along the river, to discourage use of the area. The base has a fish advisory posted for waters in the Quantico Embayment, which is adjacent to the site. The advisory warns against ingesting fish and shellfish species that are caught in the Quantico Embayment.

There is no delineated outfall for the Old Landfill, rather there is only a sheet flow from this area to the Quantico Bight. Therefore, sampling at this site under the MS4 permit is not required. However, additional PCB cleanup at this site continues—there is a project scheduled to begin in 2009 that will address dredging, removing contaminated sediment, and recapping parts of the bight in an effort to removed PCB contamination from this area.

10.2.3.2 Old Batch Plant

Site 5, Old Batch Plant is the former location of a concrete pad (formerly a concrete batch plant) where electrical transformers were stored in the 1970s. Other site features included two drop inlets on the concrete pad and a separate drop inlet down gradient from the site that drained to a channel. Some of the transformers contained PCB's. The PCB contamination in the soil and concrete pad was removed in 1990. Confirmation sampling was conducted in the channel for pesticides and PCBs. PCB concentrations were greater than the risk-based screening levels at one location near the drop inlet closest to the site. It was determined that the PCBs may have accumulated in the drop inlets and could act as a potential source of contamination to downstream portions of the drainage channel and the Potomac River. Sediment around the drop inlets were removed during 2005. The drainage channel immediately downstream of the culvert was stabilized by clearing out

vegetation and placing riprap on the stream bottom and sides. Concurrent with the removal action, a 0.15 acre tidal wetland was constructed near the Potomac River, where the drainage channel discharges to the river. Removal action and stream restoration was conducted two times; the latest being in 2005. This was necessary to mitigate residual sediment contamination in the catch basins and associated drop inlets. A "No Further Action" ROD was signed in July 2007.

The constructed wetlands in this area serve as a BMP to control any potential residual contamination that may be present in the draining channel, and to prevent any residual contamination from reaching the Potomac River. Due to the extent of mitigation and CERCLA permit sampling conducted, no further PCB sampling is necessary at this location.

10.3 PROPOSED ACTIONS

Table 10-2 shoes a proposed a timeline for actions to be put in place at MCB, Quantico, to comply with the TMDL WLA regulations.

Table 10-2. Proposed Timeline to Comply with PCB TMDL WLA Regulations

Action	Schedule	Cost
1) Update the SWMP to include TMDL allocations, and present information to DCR	January 5, 2009	None
2) Conduct a background investigation of the area to determine if there were any other areas of PCB storage/disposal that drain to each affected segment (Quantico Creek, Chopawamsic Creek, and the Potomac River.)	July, 2009	Minimal – data review
3) Perform an outfall reconnaissance inventory (ORI) of each affected segment	Illicit Discharge Survey Conducted December 2009	$32,000
4) Conduct fall/spring sampling. Method 1668A should be used.	Not Required	n/a
5) Determine if BMPs currently being used are sufficient to address PCB issues, if not, develop a plan to address ongoing issues.	BMP inspections conducted September 2010	$48,000
6) Conduct annual characterizations for each segment.	Not required	n/a

10.3.1 Updates

Future corrections and additions to this plan will be logged as appropriate.

10.3.2 Background Investigation

Historically, the areas listed in Section 10.2 are the only known areas where PCB equipment was stored within the urbanized area. However, the rest of the installation is maintained and/or permitted under multiple environmental regulations such as CERCLA and RCRA. A background review was implemented in-house to ensure that there are no other "hot spots" where PCB contamination may have occurred. This was accomplished with a simple background check of the records on file.

10.3.3 Outfall Reconnaissance Inventory

An Outfall Reconnaissance Inventory (ORI) was performed in all areas affected by the TMDL regulations. These areas included:

- Quantico Creek: Hospital Point, Geiger Ridge
- Potomac River: All areas along the river from Hospital Point to the Raids and Recon area
- Chopawamsic Creek: Areas from Russell Road landfill to the end of Chopawamsic Creek.

Basically, an ORI would be a walk of the stream/river area to determine where all outfalls are, and if there is a dry-weather discharge. This can be accomplished in conjunction with the Illicit Discharge Survey of Mainside, which was last conducted in December 2009.

10.3.4 Sample Collection

Due to the coverage from environmental permits, monitoring, and current permitting procedures, no PCB sampling is required for this installation's outfalls and affected waterways.

10.3.5 Annual Evaluation

Beginning in fiscal year 2011, an evaluation study will be conducted to determine the following:

- Estimate of the volume of storm water discharged from MCB Quantico, to each water body affected by the TMDL
- The estimated quantity of pollutant discharged by the Base into this water body.

10.3.6 Program Determination

For properties where there is found to be a discharge of PCBs, a schedule to minimize the discharge of the pollutant will be developed in a manner consistent with the approved TMDL. Any/All updates shall be submitted with the Annual Report.

Additionally, close monitoring of possible future TMDL limits should be enforced, as any new regulations must be incorporated into this Plan. Currently, the installation is in compliance with the CWA regulations and the State of Virginia.

10.4 IMPAIRED WATERS AND POTENTIAL FUTURE TMDLS

The following table lists any impaired waters listed on the most recent Virginia Water Quality Assessment Integrated Report, and a description of the land use of each drainage area. The most recent final report was issued in 2009. Table 10-3 does not include the PCB TMDL requirements, which have already been addressed in Section 10.3 of this plan.

Table 10-3. Impaired Waters

Watershed	Impairment	Approx. Size (Acres)	Land Use	TMDL Development Date
Beaverdam Run	E. coli, Fecal coliform	12800	Military use (ranges, airfield, fuel storage, etc.)	2018
Chopawamsic Creek	pH, E. coli	26880		pH – 2014 E. coli – 2016
Little Creek	E. coli	2240		2018
Quantico Creek	E. coli	1280		2016

10.5 ADDITIONAL BACKGROUND ON THE TMDL PROGRAM

DEQ extensively tests Virginia's rivers, lakes, and tidal waters for pollutants. Over 130 different pollutants are monitored annually to determine whether the waters can be used for swimming, fishing and drinking. Most rivers, lakes and estuaries in Virginia do meet standards as described in our biennial 305(b) Water Quality Assessment Reports. Waters that do not meet standards are reported to the citizens of Virginia and the US Environmental Protection Agency (EPA) in the 303(d) Impaired Waters Report. Those impaired waters are the subject of this web site.

DEQ has developed lists of impaired waters in every even year since 1992. The most recent list was published in 2008. It individually describes segments of streams, lakes, and estuaries that exhibit violations of water quality standards. The report details the pollutant responsible for the violations, and the cause and source of the pollutant. Since 1998, DEQ has developed plans, with public input, to restore and maintain the water quality for the impaired waters. These plans are called "Total Maximum Daily Loads," or TMDLs.

TMDL is a term that represents the total pollutant a waterbody can assimilate and still meet standards.

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11. PROGRAM CHALLENGES

This section discusses emerging issues that may affect the storm water management program at MCB Quantico. This section is updated annually to include new issues that affect the storm water program, and should be considered for future inclusion in the plan.

11.1 LAND COVER

Land cover at MCB Quantico varies greatly, from high intensity developed to forest, pasture, and wetland. The slope instability throughout the installation, primarily on the Main Side, is a concern during each construction project. Some slopes, such as the Commissary and the Credit Union, failed after stabilization appeared to have been finalized.

11.2 WATERSHED MANAGEMENT PLANNING

The EPA issued a policy statement concerning NPDES permitting on a watershed basis (January 7, 2003) to the Water Division Directors for Regions I through X. This policy statement describes the benefits of a watershed-based permitting system, includes some implementing mechanisms, and encourages the Directors to move watershed permitting from the concept stage to the implementation stage. NPDES permitting on a watershed basis encourages communities to use a more holistic planning process, encompassing a watershed rather than an artificial boundary such as zoning districts.

The Commonwealth of Virginia formed a Watershed Advisory Committee which has published a guidance manual “Local Watershed Management Planning in Virginia” to help localities with their watershed planning. This guidance manual outlines a procedure to implement watershed management on a local level. The planning effort identifies specific actions to restore habitat and water quality, identify lands for conservation and development, identify and reduce non-point sources of pollution and prioritize pollution reduction actions. The guidance manual emphasizes the inclusion of all stakeholders in a wa-

tershed in all phases of initiating a watershed management plan. The manual can be found on the internet at:

http://www.dcr.virginia.gov/sw/docs/wshedguideb2b.pdf

Components of a watershed plan include;

- An assessment of the watershed including environmental and land use data.
- A vision statement of what the watershed goals are.
- A review of the natural resources planning documents that address areas in the watershed.
- A review of the regulatory responsibilities in the watershed. These responsibilities may include such programs as TMDL, Storm Water Management, NPDES Permits, and Local Comprehensive Plans.
- An evaluation of data and goal setting to achieve the vision.
- A development of objectives and implementation strategies.
- An assessment of the resources needed to implement the plan.
- An evaluation of progress at regular intervals. Update and modify plans based on progress evaluation.

Watershed management planning can provide a framework to identify resource issues and constraints that impact development and land use decisions. It can help localities prioritize resources such as money, time and staff. A watershed plan will provide a vehicle for regional cooperation as it is based on natural rather than jurisdictional boundaries. Effective watershed management can help communities ensure that surface and ground water supplies do not become degraded over time, drinking water supplies are sustained, soil and stream bank erosion is reduced, and wildlife habitat is restored.

11.3 CAR WASHES

Car washing is a common pastime for residents and a popular way for organizations such as scout troops, schools, and sports teams to raise funds. Outdoor car washing has the potential to result in high loads of nutrients, metals and hydrocarbons during dry weather conditions, as the detergent-rich water used to wash cars flows down the street and into the storm drain. Commercial car wash facilities often recycle their water or are required

to treat their wash water discharge prior to release to the sanitary sewer system, so most storm water impacts from car washing are from residents, businesses and charity car wash fundraisers that discharge wash water to the storm drain system.

The solution to this problem is to minimize all detergent use, particularly those uses that are not treated before reaching water bodies, like vehicle washing. Personal vehicles should be washed at a self-serve or commercial car wash, if at all practicable. The water polluted with minerals, oil and detergents is funneled into a drain that is then either piped to a water pollution control plant for treatment or recycled. This may not be practical for all situations. However, the following standard operating procedures should be used when washing vehicles on base:

- Approved areas include local self-serve or commercial car wash facilities.
- Approved areas may also include grassy areas or on other pervious or porous surfaces such as gravel so that the water can filter through layers before going into the ground or where runoff goes overland rather than into a collection system in the event commercial facilities are not available.
- Use very mild detergent or biodegradable soap, or if the vehicle is not too dirty, use just water and a sponge.
- Use a bucket of water and dispose of the water in a nearby sanitary sewer drain (so that the water will be treated)
- Buy carwash labeled environmentally friendly, biodegradable and low phosphate cleaners (while this is better than using regular detergents, these phrases do not mean free of toxins).
- Look for detergents with less than 0.5% phosphates.
- Use as little soap as possible.
- Conserve water by using a shut off nozzle on hoses.
- Do not directly discharge or allow wash water to be indirectly discharged down any storm drain.

Charity car wash brochures, tracking and procedures have been developed as a goal under Public Awareness. Forms are also available on the NREA website.

11.4 CHESAPEAKE BAY PRESERVATION ACT

Section 10.1 of the Code of Virginia provides for the local governments in the Tidewater area of Virginia to plan and implement the provisions of the Chesapeake Bay Preservation Act (CBPA). Prince William County and Stafford County have enacted legislation in conjunction with the CBPA using the guidelines as created by the local assistance board appointed by the governor. The Department of Defense and the Department of the Navy are partners in the restoration effort of the Chesapeake Bay, and as such, have enacted restoration projects on the military installations which exist in the Bay's watershed. MCB Quantico is one of the military installations whose storm water runoff enters the Chesapeake Bay and its tributaries. MCB Quantico is a federal facility and not subject to local county regulations, yet it is committed to doing its part to further the Chesapeake Bay restoration effort.

11.5 SUMMARY

MCB Quantico takes a proactive approach to storm water issues and concerns. The above mentioned storm water issues will be closely followed to ascertain potential impacts to MCB Quantico's storm water management practices.

Table 11-1 lists future storm water concerns and MCB Quantico's plan of action with regard to these concerns.

Table 11-1 MCB Quantico Action Plans

Storm Water Concerns	MCB Quantico Action Plan
LID	Incorporate LID practices in construction contracts, where practicable, and educate contracting officers.
Watershed Management	Track and analyze applicability for MCB Quantico.
Chesapeake Bay	Assess future CBPA requirements and determine how they pertain to the Base.

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Table ES-1
Plan Guide Matrix

Stormwater Pollution Prevention Plan Requirement	VPDES Permit No. VA0002151 Section	Location in SWMAP
Pollution prevention team	Part I.D.2.b.1	2.0
Description of potential pollutant sources	Part I.D.2.b.3	3.0
Site map	Part I.D.2.b.2.b	3.1 / App. C
Inventory of exposed materials	Part I.D.2.b.3.b	3.2
Spills and leaks	Part I.D.2.b.4	3.4
Sampling data summary	Part I.D.2.b.5	3.5 / App. D
Summary of potential pollutant sources	Part I.D.2.b.3	3.3 / Table B-5
Measures and controls	Part I.D.2.b.6.b	4.0
Good Housekeping	Part I.D.2.b.6.b(i)	4.1
Preventive maintenance	Part I.D.2.b.6.b(iii)	4.2
Spill prevention and response procedures	Part I.D.2.b.6.b(iv)	4.3
Inspections	Part I.D.2.b.6.b(v)	4.4
Employee training	Part I.D.2.b.6.b(vi)	4.7
Recordkeeping and internal reporting procedures	Part II.B	4.8 / Table B-9
Sediment and erosion control	Part I.D.2.b.6.b(vii)	4.5 / 9.0
Management of runoff	Part I.D.2.b.6.b(viii)	4.10
Comprehensive site compliance evaluation	Part I.D.2.b.6.d	5.0
Site visit requirements	Part 1.D.2.b.6.d.1	5.0
SWPPP update due to site visit results	Part 1.D.2.b.6.d.2	5.0
Site visit report	Part 1.D.2.b.6.d.3	5.0 / App. G
Inspection overlaps with site evaluation	Part 1.D.2.b.6.d.4	5.0
Allowable Non-Stormwater Discharges	Part 1.D.1.f	4.9
Allowable non-stormwater sources	Part 1.D.1.f.1	4.9
Likely discharge location	Part 1.D.1.f.1	4.9
Appropriate BMPs	Part 1.D.2.b.6.a	4.9
Certification	Part 1.D.2.b.6.e	Certificate page at beginning of SWMAP
Operation and Maintenance (O&M) Manual	Part 1.E.3	
Sample Collection, Preservation, and Analysis		
Procedures for handling		
MS4 Program Plan Requirements	**VPDES Permit No. VAR040069 Section**	**Location in SWMAP**
Special conditions	4VAC50-60-1240.I.B	
WLA from TMDLs	4VAC50-60-1240.I.B.1	7.2 / 10.0
TMDL WLA consistency with MS4 program	4VAC50-60-1240.I.B.2	10.0
Awareness campaign	4VAC50-60-1240.I.B.3	7.1.1
Outfall reconnaissance for TMDL pollutant	4VAC50-60-1240.I.B.5	10.3.3
Site evaluation for TMDL pollutant presence	4VAC50-60-1240.I.B.6	10.2
Annual characterization of sites	4VAC50-60-1240.I.B.7	10.3
Additional annual report requirements	4VAC50-60-1240.I.B.9	10.3.5
Minimum control measures	4VAC50-60-1240.II.B	7.1

Table ES-1
Plan Guide Matrix

MS4 Program Plan Requirements	VPDES Permit No. VAR040069 Section	Location in SWMAP
Public education	4VAC50-60-1240.II.B.1	7.1.1
Public involvement/participation	4VAC50-60-1240.II.B.2	7.1.2
Illicit discharge detection and elimination	4VAC50-60-1240.II.B.3	7.1.3
Construction site stormwater runoff control	4VAC50-60-1240.II.B.4	7.1.4 / 9.0
Post-construction stormwater management in new development and redevelopment	4VAC50-60-1240.II.B.5	7.1.5
Pollution prevention/good housekeeping for municipal operations	4VAC50-60-1240.II.B.6	7.1.6
Existing program requirements	4VAC50-60-1240.II.C	7.5
Other entities	4VAC50-60-1240.II.D	7.5
Evaluation and assessment	4VAC50-60-1240.II.E	7.3
Evaluation	4VAC50-60-1240.II.E.1	7.3
Record keeping	4VAC50-60-1240.II.E.2	4.8.2
Annual reports	4VAC50-60-1240.II.E.3	4.8.2 / Table B-13 / App. I
Certification	4VAC50-60-1240.III.K.4	4.8.2

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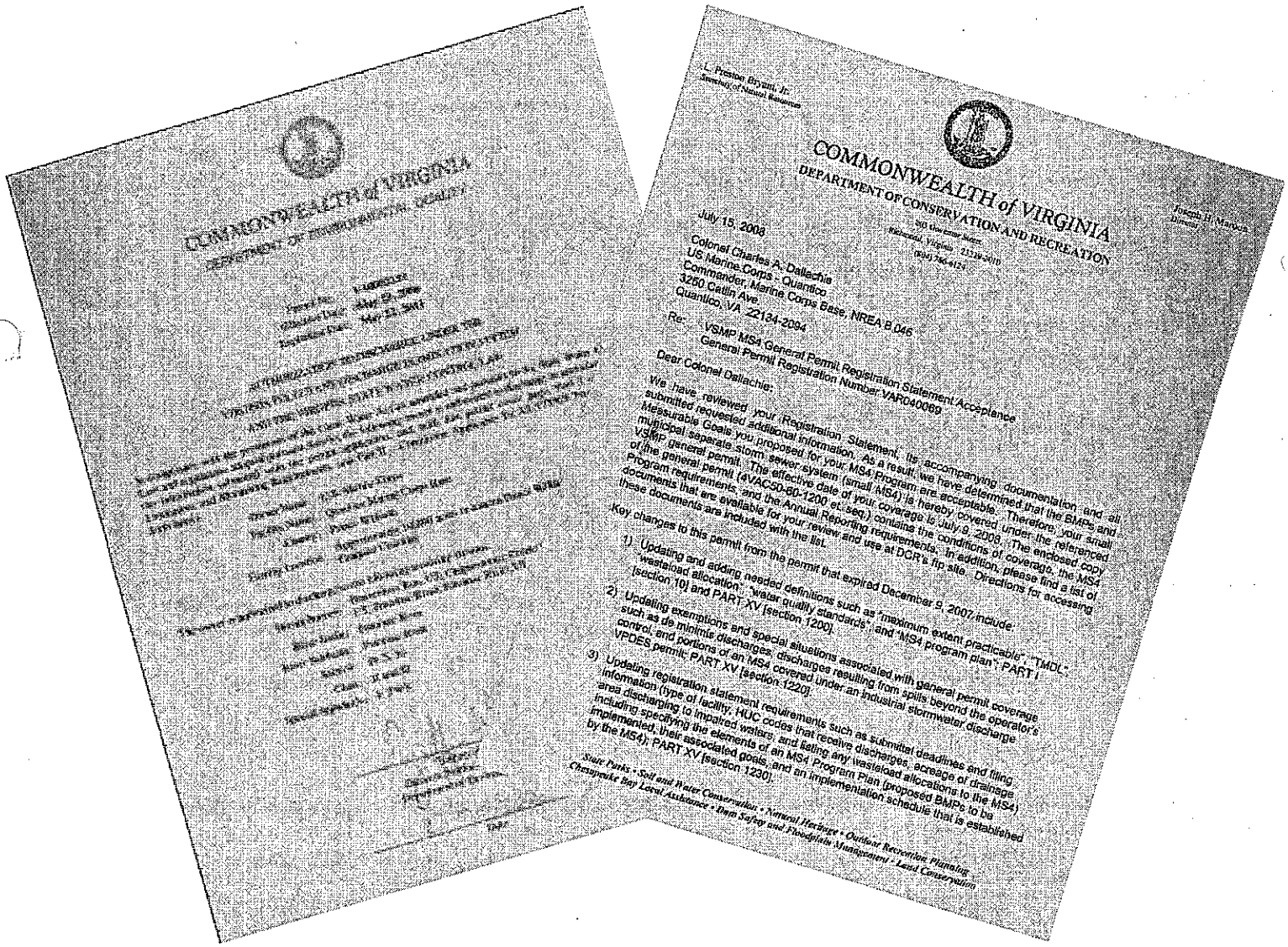
APPENDIX A
STORM WATER PERMITS

VPDES Permit No. VA0002151

VPDES Permit No. VAR040069



COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

July 15, 2008

Colonel Charles A. Dallachie
US Marine Corps - Quantico
Commander, Marine Corps Base, NREA B 046
3250 Catlin Ave
Quantico, VA 22134-2094

Re: VSMP MS4 General Permit Registration Statement Acceptance
General Permit Registration Number: VAR040069

Dear Colonel Dallachie:

We have reviewed your (Registration Statement, its accompanying documentation and all submitted requested additional information. As a result, we have determined that the BMPs and Measurable Goals you proposed for your MS4 Program are acceptable. Therefore, your small municipal separate storm sewer system (small MS4) is hereby covered under the referenced VSMP general permit. The effective date of your coverage is July 9, 2008. The enclosed copy of the general permit (4VAC50-60-1200 et. seq.) contains the conditions of coverage, the MS4 Program requirements, and the Annual Reporting requirements. In addition, please find a list of documents that are available for your review and use at DGR's ftp site. Directions for accessing these documents are included with the list.

Key changes to this permit from the permit that expired December 9, 2007 include:

1) Updating and adding needed definitions such as "maximum extent practicable", "TMDL", "wasteload allocation", "water quality standards", and "MS4 program plan" PART I [section 10] and PART XV [section 1200].

2) Updating exemptions and special situations associated with general permit coverage such as de minimis discharges, discharges resulting from spills beyond the operator's control, and portions of an MS4 covered under an industrial stormwater discharge VPDES permit: PART XV [section 1220].

3) Updating registration statement requirements such as submittal deadlines and filling information (type of facility; HUC codes that receive discharges; acreage of drainage area discharging to impaired waters; and listing any wasteload allocations to the MS4) including specifying the elements of an MS4 Program Plan (proposed BMPs to be implemented, their associated goals, and an implementation schedule that is established by the MS4): PART XV [section 1230].

L. Preston Bryant, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

203 Governor Street
Richmond, Virginia 23219-2010
(804) 786-6124

Stour Parks • Soil and Water Conservation • Natural Heritage • Outdoor Recreation Planning
Chesapeake Bay Local Assistance • Dam Safety and Floodplain Management • Land Conservation

rec'd 8-5-11
NREA

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 2, 2011

Major Adam Gutshall
USMC – Quantico Marine Corps Base
NREA, 3049 Bordelon St
Quantico, VA 22134

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Reissuance of VPDES Permit No. VA0002151
USMC – Quantico Marine Corps Base, Prince William/Fauquier/Stafford Counties

Dear Major Gutshall:

The Department of Environmental Quality (DEQ) has approved the enclosed effluent limitations and monitoring requirements for the above-referenced permit. This permit supersedes the previous VPDES Permit VA0002151 issued to this facility. Copies of your permit and fact sheet are enclosed.

A Discharge Monitoring Report (DMR) form is no longer included in the reissuance package. You are already enrolled in the electronic DMR (e-DMR) program that allows you to submit the effluent monitoring data electronically. The first electronic DMR submittal for the month of September 2011 is due by September 10, 2011. Please reference the effluent limits in your permit and report monitoring results in e-DMR to the same number of significant digits as are included in the permit limits for the parameter. The regional contact for e-DMR is Rebecca Vice; she can be reached at (703) 583-3922 or by e-mail at Rebecca.Vice@deq.virginia.gov.

With this reissuance DEQ-NRO is launching a self-certification approach for O&M Manual approvals. We expect every permittee to self-certify their O&M Manual status as permits are reissued. The application for self-certification is enclosed. The application is to be signed and submitted by the permittee, not by a consultant. This submission is due no later than November 2, 2011. Please note that DEQ maintains the ability to review and comment on the O&M Manual with inspections and to require updates to the O&M Manual as warranted.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty days from the date of service (the date you actually received this decision or the date it was mailed to you, whichever occurred first) within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Department of Environmental Quality. In the event that this decision is served on you by mail, three days are added to that period.

Alternately, any owner under §§ 62.1-44.16, 62.1-44.17, and 62.1-44.19 of the State Water Control Law aggrieved by any action of the State Water Control Board taken without a formal hearing, or by inaction of the Board, may demand in writing a formal hearing of such owner's grievance, provided a petition requesting such hearing is filed with the Board. Said petition must meet the requirements set forth in §1.23(b) of the Board's Procedural Rule No. 1. In cases involving actions of the Board, such petition must be filed within thirty days after notice of such action is mailed to such owner by certified mail.

If you have questions about the permit, please contact Alison Thompson at (703)583-3834, or by E-mail at Alison.Thompson@deq.virginia.gov.

Respectfully,

Bryant Thomas
Water Permits Manager

Enc.: Permit for VA0002151
Fact Sheet for VA0002151

cc: DEQ-Water, OWPP
EPA-Region III, 3WP12
Department of Health, Culpeper
Water Compliance, NRO

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit No. **VA0002151**
Effective Date: **August 2, 2011**
Expiration Date: **August 1, 2016**

AUTHORIZATION TO DISCHARGE UNDER THE
VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM
AND THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the information submitted with the permit application, and with this permit cover page, Part I – Effluent Limitations and Monitoring Requirements, and Part II – Conditions Applicable To All VPDES Permits, as set forth herein.

Owner Name:	US Marine Corps
Facility Name:	USMC – Quantico Marine Corps Base
County:	Fauquier, Prince William, and Stafford
Facility Location:	Various outfalls in Prince William and Stafford Counties

The owner is authorized to discharge to the following receiving stream:

Stream Name:	Beaverdam Run, UT; Chopawamsic Creek; Chopawamsic Creek, UT; Potomac River; Smith Lake, UT
River Basin:	Potomac River
River Subbasin:	Potomac River
Section:	4b, 5, 5a
Class:	II and III waters
Special Standards:	PWS, b, y

Thomas A. Faha
Director, Northern Regional Office
Department of Environmental Quality

August 1, 2011
Date

A. Effluent Limitations and Monitoring Requirements

1. Outfall 003 – Mainside WTP backwash water

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date the permittee is authorized to discharge from Outfall Number 003. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/Dis/M	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/Dis/M	Grab
Total Suspended Solids, TSS	30 mg/L	NA	NA	60 mg/L	1/Dis/M	5G/8H
Total Residual Chlorine	0.038 mg/L	NA	NA	0.038 mg/L	1/Dis/M	Grab

[1] See Part I.B.

[2] The average flow is 0.053 MGD.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/Dis/M = Once every discharge each month.

5G/8H = 5 Grab/Eight Hour Composite - Consisting of five (5) grab samples collected at hourly intervals until the discharge ceases or five (5) grab samples taken at equal time intervals for the duration of the discharge if the discharge is less than 8 hours in length.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

2. Outfall 007 – Stormwater from the Mainside Sewage Treatment Plant

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 007. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency[3]	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/YR	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Total Suspended Solids, TSS (mg/L)	NA	NA	NA	NL	1/YR	Grab
Total Petroleum Hydrocarbons* (mg/L)	NA	NA	NA	NL	1/YR	Grab

(1) See Part I.B.

(2) Flow dependent on rainfall amount.

(3) The annual monitoring period shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
1/YR = Once every year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

A. Effluent Limitations and Monitoring Requirements

3. Outfall 009 – NCO Swimming Pool

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 009. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD) (May-Sept)	NL	NA	NA	NL	1/M	EST
pH (May-Sept)	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Total Residual Chlorine (May-Sept)	0.038 mg/L	NA	NA	0.038 mg/L	1/M	Grab

(1) See Part I.B.

(2) Maximum flow of this discharge is 0.07 MGD.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
1/M = Once every month.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

4. Outfall 010 – Mainside Drainage North

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration , the permittee is authorized to discharge from Outfall Number 010. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/M	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Temperature	NA	NA	NA	32°C	1/M	IS
Total Residual Chlorine (May-Sept)	0.19 mg/L	NA	NA	0.19 mg/L	1/M	Grab
Chronic Whole Effluent Toxicity (TU_c)[3]	NA	NA	NA	NL	1/YR	Grab

(1) See Part I.B.

(2) Maximum flow of this discharge is 0.323 MGD.

(3) See Part 1.C. for toxicity monitoring requirements. Whole Effluent Toxicity shall occur when the cooling towers are in operation and are discharging.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion Stabilization
EST = Estimate.

1/M = Once every month.
1/YR = Once every year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

5. Outfall 014 – HMX-1 Hangars and Maintenance

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 014. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/M	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Temperature	NA	NA	NA	32°C	1/M	IS

(1) See Part I.B.

(2) Maximum discharge is 0.092 MGD.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
IS = Immersion Stabilization.
S.U. = Standard units.
EST = Estimate.
1/M = Once every month.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

6. Outfall 016 – Mainside Drainage South

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 016. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/M	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/M	Grab
Total Suspended Solids, TSS (mg/L)	NA	NA	NA	NL	1/M	Grab
Temperature	NA	NA	NA	32°C	1/M	IS
Total Petroleum Hydrocarbons*	NA	NA	NA	30 mg/L	1/3M[4]	Grab
Total Residual Chlorine (May-Sept)	NA	NA	NA	0.19 mg/L	1/M	Grab
Acute Whole Effluent Toxicity[3]	NA	NA	NA	2.94 TU_a	1/3M[4]	Grab

(1) See Part I.B.

(2) Maximum flow for this discharge is 0.76 MGD.

(3) See Part 1.C. for toxicity monitoring requirements

(4) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion Stabilization
EST = Estimate.

1/M = Once every month.
1/3M = Once every three months

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

A. Effluent Limitations and Monitoring Requirements

7. Outfall 018 – HMX-1 Supply Depot

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 018. Such discharges shall be limited and monitored by the permittee as specified below.

THERE SHALL BE NO DISCHARGE OF PROCESS WASTEWATERS FROM THIS DRAINAGE AREA.

A. Effluent Limitations and Monitoring Requirements

8. Outfall 030 – Bobo Hall

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 030. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/3M[3]	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/3M[3]	Grab
Total Suspended Solids, TSS (mg/L)	NA	NA	NA	NL	1/3M[3]	Grab
Oil & Grease (mg/L)	NA	NA	NA	NL	1/3M[3]	Grab
Temperature	NA	NA	NA	32°C	1/3M[3]	IS

(1) See Part I.B.

(2) Maximum flow for this discharge is 0.0023 MGD.

(3) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
IS = Immersion Stabilization.
S.U. = Standard units.
EST = Estimate.
1/3M = Once every three months.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

9. Outfall 035 – HMX-1 Airfield BOQ

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 035. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/3M[3]	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/3M[3]	Grab
Total Suspended Solids, TSS (mg/L)	NA	NA	NA	NL	1/3M[3]	Grab
Temperature	NA	NA	NA	32°C	1/3M[3]	IS
Total Residual Chlorine (May-Sept)	0.038 mg/L	NA	NA	0.038 mg/L	1/M	Grab

(1) See Part I.B.

(2) Maximum flow from this discharge is 0.016 MGD.

(3) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
IS = Immersion Stabilization
S.U. = Standard units.
EST = Estimate.

1/M = Once every month.
1/3M = Once every three months.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

10. Outfall 072 – Fuel Farm Stormwater

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 072. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/3M[3]	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/3M[3]	Grab
Total Suspended Solids, TSS	NA	NA	NA	60 mg/L	1/3M[3]	Grab
Total Petroleum Hydrocarbons*	NA	NA	NA	15 mg/L	1/3M[3]	Grab

(1) See Part I.B.

(2) Flow is dependent on rainfall.

(3) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

1/3M = Once every three months.

S.U. = Standard units.

EST = Estimate.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

A. Effluent Limitations and Monitoring Requirements

11. Outfall 721 – Hydrostatic Test Water

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 721. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	2/Dis	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	2/Dis	Grab
Total Suspended Solids, TSS (mg/L)	NL	NA	NA	NL	2/Dis	Grab
Total Petroleum Hydrocarbons*	NL	NA	NA	15 mg/L	2/Dis	Grab
Total Residual Chlorine	NA	NA	NA	0.019 mg/L	2/Dis	Grab
Total Organic Carbon (mg/L)	NL	NA	NA	NL	2/Dis	Grab
Benzene	NA	NA	NA	50 ug/L	2/Dis	Grab
Ethylbenzene	NA	NA	NA	320 ug/L	2/Dis	Grab
Toluene	NA	NA	NA	175 ug/L	2/Dis	Grab
Total Xylenes	NA	NA	NA	33 ug/L	2/Dis	Grab
Naphthalene**	NA	NA	NA	10 ug/L	2/Dis	Grab

(1) See Part I.B.

(2) Flow is dependent on the tank tested.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

EST = Estimate.

2/Dis = Two samples per tank tested

2/Dis Contingent, 2 samples per tank tested. The first sample shall be collected during the initial discharge or be a representative sample collected and analyzed prior to discharge. The second sample shall be collected during the discharge of the final 20% by volume or the last two feet of hydrostatic tank test water.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

**Naphthalene monitoring shall only be required when hydrostatic testing occurs on tanks containing aviation gasoline, jet fuel, or diesel.

A. Effluent Limitations and Monitoring Requirements

12. Outfall 073 and 074 – Stormwater from Old Landfill Site

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Numbers 073 and 074. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA.	NL	1/YR[3]	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/YR[3]	Grab
Total Suspended Solids, TSS (mg/L)*	NA	NA	NA	NL	1/YR[3]	Grab

(1) See Part I.B.

(2) Flow is dependent on rainfall.

(3) The annual monitoring period shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

1/YR = Once every year.

S.U. = Standard units.

EST = Estimate.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*The monitoring endpoint criteria for TSS has been established as 100 mg/L. If concentrations exceed this endpoint, the permittee shall re-evaluate the Best Management Practices utilized in the drainage area.

A. Effluent Limitations and Monitoring Requirements

13. Outfall 075 – Construction Equipment Repair

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 075. Such discharges shall be limited and monitored by the permittee as specified below.

THERE SHALL BE NO DISCHARGE OF PROCESS WASTEWATERS FROM THIS DRAINAGE AREA.

A. Effluent Limitations and Monitoring Requirements

14. Outfall 086 and 090 – Stormwater from Russell Road Landfill

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Numbers 086 and 090. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/3M[3]	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/3M[3]	Grab
Total Suspended Solids, TSS	NA	NA	NA	NL	1/3M[3]	Grab

(1) See Part I.B.

(2) Flow is dependent on rainfall.

(3) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

1/3M = Once every three months.

S.U. = Standard units.

EST = Estimate.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

A. Effluent Limitations and Monitoring Requirements

15. Outfall 091 – Stormwater from the Jet Engine Test Pads

a. There shall be no discharge of floating solids or visible foam in other than trace amounts.

b. During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall Number 091. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations				Monitoring Requirements	
	Monthly Average[1]	Daily Maximum[1]	Minimum	Maximum[1]	Frequency[3]	Sample Type
Flow[2] (MGD)	NL	NA	NA	NL	1/YR	EST
pH	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Total Petroleum Hydrocarbons* (mg/L)	NA	NA	NA	NL	1/YR	Grab
Temperature	NA	NA	NA	32°C	1/YR	IS

(1) See Part I.B.

(2) Flow dependent on rainfall.

(3) The annual monitoring period shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion Stabilization
EST = Estimate.
1/YR = Once every year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

B. Additional Monitoring Requirements, Quantification Levels and Compliance Reporting

1. Quantification Levels

   a. The quantification levels (QL) shall be less than or equal to the following concentrations:

Characteristic	Quantification Level
TSS	1.0 mg/L
TRC	0.10 mg/L
TPH	0.50 mg/L

   b. The QL is defined as the lowest concentration used to calibrate a measurement system in accordance with the procedures published for the method. The permittee shall use any method in accordance with Part II A of this permit.

   c. It is the responsibility of the permittee to ensure that proper quality assurance/quality control (QA/QC) protocols are followed during the sampling and analytical procedures. QA/QC information shall be documented to confirm that appropriate analytical procedures have been used and the required QLs have been attained.

2. Compliance Reporting for parameters in Part I.A.

   a. Monthly Average – Compliance with the monthly average limitations and/or reporting requirements for the parameters listed in Part I.B.1.a. shall be determined as follows: All concentration data below the QL of the measurement system shall be treated as zero. All concentration data equal to or above the QL shall be treated as it is reported. An arithmetic average shall be calculated using all reported data for the month, including the defined zeros. This arithmetic average shall be reported on the Discharge Monitoring Report (DMR) as calculated. If all data are below the QL, then the average shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported monthly average concentration is <QL, then report "<QL" for the quantity. Otherwise use the reported concentration data (including the defined zeros) and flow data for each sample day to determine the daily quantity and report the monthly average of the calculated daily quantities.

   b. Daily Maximum - Compliance with the daily maximum limitations and/or reporting requirements for the parameters listed in Part I.B.1.a. shall be determined as follows: All concentration data below the QL of the measurement system shall be treated as zero. All concentration data equal to or above the QL shall be treated as reported. An arithmetic average shall be calculated using all reported data, including the defined zeros, collected within each day during the reporting month. The maximum value of these daily averages thus determined shall be reported on the DMR as the Daily Maximum. If all data are below the QL, then the maximum value of the daily averages shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported daily maximum concentration is <QL, then report "<QL" for the quantity. . Otherwise use the reported daily average concentrations (including the defined zeros) and corresponding daily flows to determine daily average quantities and report the maximum of the daily average quantities during the reporting month.

   c. Single Datum - Any single datum required shall be reported as <QL if it is less than the QL as defined above above. Otherwise the numerical value shall be reported.

   d. Significant Digits - The permittee shall report at least the same number of significant digits as the permit limit for a given parameter. Regardless of the rounding convention used (i.e., 5 always rounding up or to

the nearest even number) by the permittee, the permittee shall use the convention consistently, and shall ensure that consulting laboratories employed by the permittee use the same convention.

C. Toxics Monitoring Program Requirements

1. Biological Monitoring for Outfall 010

a. In accordance with the schedule in Part I.C.2. below, the permittee shall conduct annual chronic toxicity tests for the duration of this permit. The permittee shall collect grab samples of final effluent from Outfall 010.

The chronic tests to use are:

Chronic 3-Brood Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia*

Chronic 7-Day Static Renewal Survival and Growth Test using *Pimephales promelas*

These chronic tests shall be conducted in such a manner and at sufficient dilutions (minimum of five dilutions) to determine the "No Observed Effect Concentration" (NOEC) for survival and reproduction or growth. Results which cannot be quantified (i.e., a "less than" NOEC value) are not acceptable and a retest will have to be performed. The NOEC as determined by hypothesis testing shall be converted to TU_c (Chronic Toxic Units) for DMR reporting where $TU_c = 100/NOEC$. Report the LC_{50} at 48 hours and the IC_{25} with the NOEC's in the test report.

b. The permittee may provide additional samples to address data variability. These data shall be reported. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3.

c. The test dilutions shall bracket and include the following endpoints:

A Chronic NOEC $\geq$ 4% is equivalent to a $TU_c \leq 25$

d. Should the results of any test exceed the endpoint cited above, the permittee must conduct a retest of the effluent within 30 days.

e. The results of the test and the test report shall be reported with the DMR for the month following the receipt of the testing results. In no case shall this exceed 45 days from the completion of the test.

2. Reporting Schedule for Outfall 010

The permittee shall monitor during the specified period, shall report the results on the DMR and shall supply one copy of the toxicity test report specified in this Toxics Management Program in accordance with the following schedule:

Period	Sampling Period	DMR/Report Submission Dates
Annual 1	May 1, 2012 – September 30, 2012	October 10, 2012
Annual 2	May 1, 2013 – September 30, 2013	October 10, 2013
Annual 3	May 1, 2014 – September 30, 2014	October 10, 2014
Annual 4	May 1, 2015 – September 30, 2015	October 10, 2015

3. Biological Monitoring for Outfall 016

a. A WET limitation of 2.94 TU_a ($LC_{50} \geq 34\%$) applies to this outfall.

b. In accordance with the schedule in Part I.C.4. below, the permittee shall conduct quarterly acute toxicity tests for the duration of this permit. The permittee shall collect a grab sample of the final effluent from Outfall 016.

The acute tests to use are:

48-Hour Static Acute test using *Ceriodaphnia dubia*

48-Hour Static Acute test using *Pimephales promelas*

The acute tests are to be conducted using five (5) geometric dilutions of effluent with a minimum of 4 replicates, with 5 organisms in each. The NOAEC as determined by hypothesis testing shall be converted to TU_a (Acute Toxicity Units) for DMR reporting where $TU_a = 100/NOAEC$. The LC_{50} should also be determined and noted on the submitted report. Tests in which control survival is less than 90% are not acceptable.

c. The permittee may provide additional samples to address data variability. These data shall be reported. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3

d. This permit may be modified or revoked and reissued to include pollutant specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.

e. The results of the test and the test report shall be reported with the DMR for the month following the receipt of the testing results. In no case shall this exceed 45 days from the completion of the test.

4. Reporting Schedule for Outfall 016

The permittee shall monitor during the specified period, shall report the results on the DMR and shall supply one copy of the toxicity test report specified in this Toxics Management Program in accordance with the following schedule:

Period	Sampling Period	DMR/Report Submission Dates
Quarter 1	October 1, 2011 – December 31, 2011	January 10, 2012
Quarter 2	January 1, 2012 – March 31, 2012	April 10, 2012
Quarter 3	April 1, 2012 – June 30, 2012	July 10, 2012
Quarter 4	July 1, 2012 – September 30, 2012	October 10, 2012
Quarter 5	October 1, 2012 – December 31, 2012	January 10, 2013
Quarter 6	January 1, 2013 – March 31, 2013	April 10, 2013
Quarter 7	April 1, 2013 – June 30, 2013	July 10, 2013
Quarter 8	July 1, 2013 – September 30, 2013	October 10, 2013
Quarter 9	October 1, 2013 – December 31, 2013	January 10, 2014

Quarter 10	January 1, 2014 – March 31, 2014	April 10, 2014
Quarter 11	April 1, 2014 – June 30, 2014	July 10, 2014
Quarter 12	July 1, 2014 – September 30, 2014	October 10, 2014
Quarter 13	October 1, 2014 – December 31, 2014	January 10, 2015
Quarter 14	January 1, 2015 – March 31, 2015	April 10, 2015
Quarter 15	April 1, 2015 – June 30, 2015	July 10, 2015
Quarter 16	July 1, 2015 – September 30, 2015	October 10, 2015
Quarter 17	October 1, 2015 – December 31, 2015	January 10, 2016
Quarter 18	January 1, 2016 – March 31, 2016	April 10, 2016
Quarter 19	April 1, 2016 – June 30, 2016	July 10, 2016

D. Storm Water Monitoring Requirements

1. General Storm Water Special Conditions

a. Sample Type

For all storm water monitoring required in Part I.A or other applicable sections of this permit, a minimum of one grab sample shall be taken. Unless otherwise specified, all such samples shall be collected from the discharge resulting from a storm event that occurs at least 72 hours from the previously measurable storm event (a "measurable storm event" is defined as a storm event that results in an actual discharge from the site). The required 72-hour storm event interval is waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the permittee shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable. If storm water discharges associated with industrial activity commingle with process or non-process water, then where practicable permittees must attempt to sample the storm water discharge before it mixes with the non-storm water discharge.

b. Recording of Results

For each measurement or sample taken pursuant to the storm event monitoring requirements of this permit, the permittee shall record and report with the Discharge Monitoring Reports (DMRs) the following information:

(1) The date and duration (in hours) of the storm event(s) sampled;

(2) The rainfall total (in inches) of the storm event which generated the sampled discharge; and

(3) The duration between the storm event sampled and the end of the previous measurable storm event.

In addition, the permittee shall maintain a monthly log documenting the amount of rainfall received at this facility on a daily basis. A summarization of this information shall also be submitted with the DMRs.

c. Sampling Waiver

When a permittee is unable to collect storm water samples required in Part I.A or other applicable sections of this permit within a specified sampling period due to adverse climatic conditions, the permittee shall collect a substitute sample from a separate qualifying event in the next period and submit these data along with the data for the routine sample in that period. Adverse weather conditions that may prohibit the

collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

d. Representative Discharges

When a facility has two or more outfalls that discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and storm water management practices occurring within the drainage areas of the outfalls, the permittee may test the effluent of one of such outfalls and report that the quantitative data also apply to the substantially identical outfall(s) provided that: (1) the representative outfall determination has been approved by DEQ prior to data submittal; and, (2) the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents.

e. Quarterly Visual Examination of Storm Water Quality

(1) The permittee must perform and document a quarterly visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination(s) must be made at least once in each of the following three-month periods: January through March, April through June, July through September, and October through December. The visual examination must be made during daylight hours (e.g., normal working hours). If no storm event resulted in runoff from the facility during a monitoring quarter, the permittee is excused from visual monitoring for that quarter provided that documentation is included with the monitoring records indicating that no runoff occurred. The documentation must be signed and certified in accordance with Part II.K (Signatory Requirements) of this permit.

(2) Visual examinations must be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of when the runoff or snowmelt begins discharging from the facility. The examination must document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All samples (except snowmelt samples) must be collected from the discharge resulting from a storm event that results in an actual discharge from the site (defined as a "measurable storm event"), and that occurs at least 72 hours from the previously measurable storm event. The 72-hour storm interval is waived if the permittee is able to document that less than a 72-hour interval is representative for local storm events during the sampling period. Where practicable, the same individual should carry out the collection and examination of discharges for the entire permit term. If no qualifying storm event resulted in runoff during daylight hours from the facility during a monitoring quarter, the permittee is excused from visual monitoring for that quarter provided that documentation is included with the monitoring records indicating that no qualifying storm event occurred during daylight hours that resulted in storm water runoff during that quarter. The documentation must be signed and certified in accordance with Part II.K (Signatory Requirements) of this permit.

(3) The visual examination reports must be maintained on-site with the Storm Water Pollution Prevention Plan (SWPPP). The report must include the outfall location, the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

(4) If the facility has two or more outfalls that discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and storm water management practices occurring within the drainage areas of the outfalls, the permittee may conduct visual monitoring on the effluent of just one of the outfalls and report that the observations also-apply to the substantially identical outfall(s), provided that the permittee includes in the storm water pollution

prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area (i.e., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)) shall be provided in the plan.

(5) When the permittee is unable to conduct the visual examination due to adverse climatic conditions, the permittee must document the reason for not performing the visual examination and retain this documentation onsite with the records of the visual examinations. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

f. Allowable Non-Storm Water Discharges

(1) The following non-storm water discharges are authorized by this permit provided the non-storm water component of the discharge is in compliance with f(2) below.:

(a) Discharges from fire fighting activities;

(b) Fire hydrant flushings;

(c) Potable water including water line flushings;

(d) Uncontaminated air conditioning or compressor condensate;

(e) Irrigation drainage;

(f) Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with manufacturer's instructions;

(g) Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed);

(h) Routine external building wash down which does not use detergents;

(i) Uncontaminated ground water or spring water;

(j) Foundation or footing drains where flows are not contaminated with process materials; and

(k) Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but NOT intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains).

(2) Except for flows from fire fighting activities, the Storm Water Pollution Prevention Plan must include:

(a) Identification of each allowable non-storm water source;

(b) The location where the non-storm water is likely to be discharged; and

(c) Descriptions of appropriate BMPs for each source.

(3) If mist blown from cooling towers is included as one of the allowable non-storm water discharges from the facility, the permittee must specifically evaluate the discharge for the presence of chemicals used in the cooling tower. The evaluation shall be included in the SWPPP.

g. Releases of Hazardous Substances or Oil in Excess of Reportable Quantities

The discharge of hazardous substances or oil in the storm water discharge(s) from the facility shall be prevented or minimized in accordance with the storm water pollution prevention plan for the facility. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill. This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117 and 40 CFR

302 or § 62.1-44.34:19 of the Code of Virginia. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117 or 40 CFR 302 occurs during a 24-hour period:

(1) The permittee is required to notify the Department in accordance with the requirements of Part II.G (Reports of Unauthorized Discharges) of this permit as soon as he or she has knowledge of the discharge;

(2) Where a release enters a municipal separate storm sewer system (MS4), the permittee shall also notify the owner or the MS4; and

(3) The storm water pollution prevention plan required by this permit must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

h. Additional Requirements for Salt Storage

Storage piles of salt or piles containing salt used for deicing or other commercial or industrial purposes shall be enclosed or covered to prevent exposure to precipitation. The permittee shall implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. All salt storage piles shall be located on an impervious surface. All runoff from the pile, and/or runoff that comes in contact with salt, including under drain systems, shall be collected and contained within a bermed basin lined with concrete or other impermeable materials., or within an underground storage tank(s), or within an above ground storage tank(s), or disposed of through a sanitary sewer (with the permission of the treatment facility). A combination of any or all of these methods may be used. In no case shall salt contaminated storm water be allowed to discharge directly to the ground or to state waters.

2. Storm Water Pollution Prevention Plan

A storm water pollution prevention plan (SWPPP) for the facility was required to be developed and implemented under the previous permit. The existing storm water pollution prevention plan shall be reviewed and modified, as appropriate, to conform to the requirements of this section.

Permittees shall implement the provisions of the storm water pollution prevention plan as a condition of this permit.

The storm water pollution prevention plan requirements of this permit may be fulfilled, in part, by incorporating by reference other plans or documents such as a spill prevention control and countermeasure (SPCC) plan developed for the facility under Section 311 of the Clean Water Act, or best management practices (BMP) programs otherwise required for the facility, provided that the incorporated plan meets or exceeds the plan requirements of Part I.D.2.b (Contents of the Plan). All plans incorporated by reference into the storm water pollution prevention plan become enforceable under this permit. If a plan incorporated by reference does not contain all of the required elements of the SWPPP of Part I.D.2.b the permittee shall develop the missing SWPPP elements and include them in the required plan.

a. Deadlines for Plan Preparation and Compliance

(1) The facility shall prepare and implement the plan as expeditiously as practicable, but not later than 270 days from the effective date of the permit.

(2) Measures That Require Construction. In cases where construction is necessary to implement measures required by the plan, the plan shall contain a schedule that provides compliance with the plan as expeditiously as practicable, but no later than 3 years after the effective date of this permit. Where a construction compliance schedule is included in the plan, the schedule shall include appropriate nonstructural and/or temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure.

b. Contents of the Plan

The contents of the SWPPP shall comply with the requirements listed below. The plan shall include, at a minimum, the following items:

(1) Pollution Prevention Team. The plan shall identify the staff individuals by name or title that comprise the facility's storm water pollution prevention team. The pollution prevention team is responsible for assisting the facility or plant manager in developing, implementing, maintaining, revising, and ensuring compliance with the facility's SWPPP. Specific responsibilities of each staff individual on the team shall be identified and listed.

(2) Site Description. The plan shall include the following:

(a) Activities at the Facility. A description of the nature of the industrial activities at the facility.

(b) General Location Map. A general location map (e.g., USGS quadrangle or other map) with enough detail to identify the location of the facility and the receiving waters within one mile of the facility.

(c) Site Map. A site map identifying the following:

(i) The size of the property (in acres);

(ii) The location and extent of significant structures and impervious surfaces (roofs, paved areas and other impervious areas);

(iii) Locations of all storm water conveyances including ditches, pipes, swales, and inlets, and the directions of storm water flow (use arrows to show which ways storm water will flow);

(iv) Locations of all existing structural and source control BMPs;

(v) Locations of all surface water bodies, including wetlands;

(vi) Locations of potential pollutant sources identified under Part I.D.2.b.3;

(vii) Locations where significant spills or leaks identified under Part I.D.2 b.4 have occurred;

(viii) Locations of the following activities where such activities are exposed to precipitation: fueling stations; vehicle and equipment maintenance and/or cleaning areas; loading/unloading areas; locations used for the treatment, storage or disposal of wastes; liquid storage tanks; processing and storage areas; access roads, rail cars and tracks; transfer areas for substances in bulk; and machinery;

(ix) Locations of storm water outfalls and an approximate outline of the area draining to each outfall, and location of municipal storm sewer systems, if the storm water from the facility discharges to them;

(x) Location and description of all non-storm water discharges;

(xi) Location of any storage piles containing salt used for deicing or other commercial or industrial purposes; and

(xii) Locations and sources of runon to the site from adjacent property, where the runon contains significant quantities of pollutants. The permittee shall include an evaluation with the SWPPP of how the quality of the storm water running onto the facility impacts the facility's storm water discharges.

(d) Receiving Waters and Wetlands. The name of all surface waters receiving discharges from the site, including intermittent streams, dry sloughs, and arroyos. Provide a description of wetland sites that may receive discharges from the facility. If the facility discharges through a municipal separate storm sewer system (MS4), identify the MS4 operator, and the receiving water to which the MS4 discharges.

(3) Summary of Potential Pollutant Sources. The plan shall identify each separate area at the facility where industrial materials or activities are exposed to storm water. Industrial materials or activities include, but are not limited to: material handling equipment or activities, industrial machinery, raw materials, industrial production and processes, intermediate products, byproducts, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For each separate area identified, the description shall include:

(a) Activities in Area. A list of the activities (e.g., material storage, equipment fueling and cleaning, cutting steel beams); and

(b) Pollutants. A list of the associated pollutant(s) or pollutant constituents (e.g., crankcase oil, zinc, sulfuric acid, cleaning solvents, etc.) for each activity. The pollutant list shall include all significant materials handled, treated, stored or disposed that have been exposed to storm water in the three years prior to the date this SWPPP was prepared or amended. The list shall include any hazardous substances or oil at the facility.

(4) Spills and Leaks. The SWPPP shall clearly identify areas where potential spills and leaks that can contribute pollutants to storm water discharges can occur and their corresponding outfalls. The plan shall include a list of significant spills and leaks of toxic or hazardous pollutants that actually occurred at exposed areas, or that drained to a storm water conveyance during the three-year period prior to the date this SWPPP was prepared or amended. The list shall be updated if significant spills or leaks occur in exposed areas of the facility during the term of the permit. Significant spills and leaks include releases of oil or hazardous substances in excess of reportable quantities, and may also include releases of oil or hazardous substances that are not in excess of reporting requirements.

(5) Sampling Data. The plan shall include a summary of existing storm water discharge sampling data taken at the facility. The summary shall include, at a minimum, any data collected during the previous permit term.

(6) Storm Water Controls.

(a) BMPs shall be implemented for all the areas identified in Part I.D.2.b.3 (Summary of Potential Pollutant Sources) to prevent or control pollutants in storm water discharges from the facility. All reasonable steps shall be taken to control or address the quality of discharges from the site that may not originate at the facility. The SWPPP shall describe the type, location and implementation of all BMPs for each area where industrial materials or activities are exposed to storm water. Selection of BMPs shall take into consideration:

(i) That preventing storm water from coming into contact with polluting materials is generally more effective, and less costly, than trying to remove pollutants from storm water;

(ii) BMPs generally shall be used in combination with each other for most effective water quality protection;

(iii) Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures;

(iv) That minimizing impervious areas at the facility can reduce runoff and improve groundwater recharge and stream base flows in local streams (however, care must be taken to avoid ground water contamination);

(v) Flow attenuation by use of open vegetated swales and natural depressions can reduce in-stream impacts of erosive flows;

(vi) Conservation or restoration of riparian buffers will help protect streams from storm water runoff and improve water quality; and

(vii) Treatment interceptors (e.g., swirl separators and sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

(b) Control Measures. The permittee shall implement the following types of BMPs to prevent and control pollutants in the storm water discharges from the facility, unless it can be demonstrated and documented that such controls are not relevant to the discharges (e.g., there are no storage piles containing salt).

(i) Good Housekeeping. The permittee shall keep clean all exposed areas of the facility that are potential sources of pollutants to storm water discharges. Typical problem areas include areas around trash containers, storage areas, loading docks, and vehicle fueling and maintenance areas. The plan shall include a schedule for regular pickup and disposal of waste materials, along with routine inspections for leaks and conditions of drums, tanks and containers. The introduction of raw, final or waste materials to exposed areas of the facility shall be minimized to the maximum extent practicable. The generation of dust, along with off-site vehicle tracking of raw, final or waste materials, or sediments, shall be minimized to the maximum extent practicable.

(ii) Eliminating and Minimizing Exposure. To the extent practicable, industrial materials and activities shall be located inside, or protected by a storm-resistant covering to prevent exposure to rain, snow, snowmelt, and runoff. Note: Eliminating exposure at all industrial areas may make the facility eligible for the "Conditional Exclusion for No Exposure" provision of 9 VAC 25-31-120 E, thereby eliminating the need to have a permit.

(iii) Preventive Maintenance. The permittee shall have a preventive maintenance program that includes regular inspection, testing, maintenance and repairing of all industrial equipment and systems to avoid breakdowns or failures that could result in leaks, spill and other releases. This program is in addition to the specific BMP maintenance required under Part I.D.2.c (Maintenance of BMPs).

(iv) Spill Prevention and Response Procedures. The plan shall describe the procedures that will be followed for preventing and responding to spills and leaks.

(a) Preventive measures include barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling.

(b) Response procedures shall include notification of appropriate facility personnel, emergency agencies, and regulatory agencies, and procedures for stopping, containing and cleaning up spills. Measures for cleaning up hazardous material spills or leaks shall be consistent with applicable RCRA regulations at 40 CFR Part 264 and 40 CFR Part 265. Employees who may cause, detect or respond to a spill or leak shall be trained in these procedures and have necessary spill response equipment available. If possible, one of these individuals shall be a member of the Pollution Prevention Team.

(c) Contact information for individuals and agencies that must be notified in the event of a spill shall be included in the SWPPP, and in other locations where it will be readily available.

(v) Routine Facility Inspections. Facility personnel who possess the knowledge and skills to assess conditions and activities that could impact storm water quality at the facility, and who can also evaluate the effectiveness of BMPs shall regularly inspect all areas of the facility where industrial materials or activities are exposed to storm water. These inspections are in addition to, or as part of, the comprehensive site evaluation required under Part I.D.2.d. At least one member of the Pollution Prevention Team shall participate in the routine facility inspections.

The inspection frequency shall be specified in the plan based upon a consideration of the level of industrial activity at the facility, but shall be a minimum of quarterly unless more frequent intervals are specified elsewhere in the permit or written approval is received from the Department for less frequent intervals. At least once each calendar year, the routine facility inspection must be conducted during a period when a storm water discharge is occurring.

Any deficiencies in the implementation of the SWPPP that are found shall be corrected as soon as practicable, but not later than within 30 days of the inspection, unless permission for a later date is granted in writing by the Director. The results of the inspections shall be documented in the SWPPP, along with the date(s) and description(s) of any corrective actions that were taken in response to any deficiencies or opportunities for improvement that were identified.

(vi) Employee Training. The permittee shall implement a storm water employee training program for the facility. The SWPPP shall include a schedule for all types of necessary training, and shall document all training sessions and the employees who received the training. Training shall be provided for all employees who work in areas where industrial materials or activities are exposed to storm water, and for employees who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance personnel, etc.). The training shall cover the components and goals of the SWPPP, and include such topics as spill response, good housekeeping, material management practices, BMP operation and maintenance, etc. The SWPPP shall include a summary of any training performed.

(vii) Sediment and Erosion Control. The plan shall identify areas at the facility that, due to topography, land disturbance (e.g., construction, landscaping, site grading), or other factors, have a potential for soil erosion. The permittee shall identify and implement structural, vegetative, and/or stabilization BMPs to prevent or control on-site and off-site erosion and sedimentation. Flow velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel if the flows would otherwise create erosive conditions.

(viii) Management of Runoff. The plan shall describe the storm water runoff management practices (i.e., permanent structural BMPs) for the facility. These types of BMPs are typically used to divert, infiltrate, reuse, or otherwise reduce pollutants in storm water discharges from the site. Structural BMPs may require a separate permit under § 404 of the CWA and the Virginia Water Protection Permit Program Regulation (9 VAC 25-210) before installation begins.

c. Maintenance

All BMPs identified in the SWPPP shall be maintained in effective operating condition. Storm water BMPs identified in the SWPPP shall be observed during active operation (i.e., during a storm water runoff event) to ensure that they are functioning correctly. Where discharge locations are inaccessible, nearby downstream locations shall be observed. The observations shall be documented in the SWPPP.

The SWPPP shall include a description of procedures and a regular schedule for preventive maintenance of all BMPs, and shall include a description of the back-up practices that are in place should a runoff event occur while a BMP is off-line. The effectiveness of nonstructural BMPs shall also be maintained by appropriate means (e.g., spill response supplies available and personnel trained, etc.).

If site inspections required by Part I.D.2.b.6.b(v) (Routine Facility Inspections) or Part I.D.2.d (Comprehensive Site Compliance Evaluation) identify BMPs that are not operating effectively, repairs or maintenance shall be performed before the next anticipated storm event. If maintenance prior to the next anticipated storm event is not possible, maintenance shall be scheduled and accomplished as soon as practicable. In the interim, back-up measures shall be employed and documented in the SWPPP until repairs or maintenance is complete. Documentation shall be kept with the SWPPP of maintenance and repairs of BMPs, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair or replacement, and for repairs, date(s) that the BMP(s) returned to full function, and the justification for any extended maintenance or repair schedules.

d. Comprehensive Site Compliance Evaluation

The permittee shall conduct comprehensive site compliance evaluations at least once a year. The evaluations shall be done by qualified personnel who possess the knowledge and skills to assess

conditions and activities that could impact storm water quality at the facility, and who can also evaluate the effectiveness of BMPs. The personnel conducting the evaluations may be either facility employees or outside constituents hired by the facility.

(1) Scope of the Compliance Evaluation. Evaluations shall include all areas where industrial materials or activities are exposed to storm water, as identified in Part I.D.2.b.3. The personnel shall evaluate:

(a) Industrial materials, residue or trash that may have or could come into contact with storm water;

(b) Leaks or spills from industrial equipment, drums, barrels, tanks or other containers that have occurred within the past three years;

(c) Off-site tracking of industrial or waste materials or sediment where vehicles enter or exit the site;

(d) Tracking or blowing of raw, final, or waste materials from areas of no exposure to exposed areas;

(e) Evidence of, or the potential for, pollutants entering the drainage system;

(f) Evidence of pollutants discharging to surface waters at all facility outfalls, and the condition of and around the outfall, including flow dissipation measures to prevent scouring;

(g) Review of training performed, inspections completed, maintenance performed, quarterly visual examinations, and effective operation of BMPs;

(h) Results of both visual and any analytical monitoring done during the past year shall be taken into consideration during the evaluation

(2) Based on the results of the evaluation, the SWPPP shall be modified as necessary (e.g., show additional controls on the map required by Part I.D.2.b.2.c; revise the description of controls required by Part I.D.2.b.6 to include additional or modified BMPs designed to correct problems identified). Revisions to the SWPPP shall be completed within 30 days following the evaluation, unless permission for a later date is granted in writing by the Director. If existing BMPs need to be modified or if additional BMPs are necessary, implementation shall be completed before the next anticipated storm event, if practicable, but not more than 60 days after completion of the comprehensive site evaluation, unless permission for a later date is granted in writing by the Department;

(3) Compliance Evaluation Report. A report shall be written summarizing the scope of the evaluation, name(s) of personnel making the evaluation, the date of the evaluation, and all observations relating to the implementation of the SWPPP, including elements stipulated in Part I.D.2.d.1.a through Part I.D.2.d.1.f above. Observations shall include such things as: the location(s) of discharges of pollutants from the site; location(s) of previously unidentified sources of pollutants; location(s) of BMPs that need to be maintained or repaired; location(s) of failed BMPs that need replacement; and location(s) where additional BMPs are needed. The report shall identify any incidents of noncompliance that were observed. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit. The report shall be signed in accordance with Part II. K (Signatory Requirements) of this permit and maintained with the SWPPP.

(4) Where compliance evaluation schedules overlap with routine inspections required under Part I.D.2.b.6.b(v), the annual compliance evaluation may be used as one of the routine inspections.

e. Signature and Plan Review

(1) Signature/Location. The SWPPP shall be signed in accordance with Part II.K (Signatory Requirements) of this permit, dated, and retained on-site at the facility covered by this permit in accordance with Part II.B.2 (Records) of this permit. All other changes to the SWPPP, and other

permit compliance documentation, must be signed and dated by the person preparing the change or documentation.

(2) Availability. The permittee shall make the SWPPP, annual site compliance evaluation report, and other information available to the Department upon request.

(3) Required Modifications. The Director may notify the permittee at any time that the SWPPP, BMPs, or other components of the facility's storm water program do not meet one or more of the requirements of this permit. The notification shall identify specific provisions of the permit that are not being met, and may include required modifications to the storm water program, additional monitoring requirements, and special reporting requirements. The permittee shall make any required changes to the SWPPP within 60 days of receipt of such notification, unless permission for a later date is granted in writing by the Director, and shall submit a written certification to the Director that the requested changes have been made.

f. Maintaining an Updated SWPPP

(1) The permittee shall review and amend the SWPPP as appropriate whenever:

(a) There is construction or a change in design, operation, or maintenance at the facility that has a significant effect on the discharge, or the potential for the discharge, of pollutants from the facility;

(b) Routine inspections or compliance evaluations determine that there are deficiencies in the BMPs;

(c) Inspections by local, state, or federal officials determine that modifications to the SWPPP are necessary;

(d) There is a spill, leak or other release at the facility; or

(e) There is an unauthorized discharge from the facility.

(2) SWPPP modifications shall be made within 30 calendar days after discovery, observation or event requiring a SWPPP modification. Implementation of new or modified BMPs (distinct from regular preventive maintenance of existing BMPs described in Part I.D.2.b.6.b(iii) shall be initiated before the next storm event if possible, but no later than 60 days after discovery, or as otherwise provided or approved by the Director. The amount of time taken to modify a BMP or implement additional BMPs shall be documented in the SWPPP.

(3) If the SWPPP modification is based on a release or unauthorized discharge, include a description and date of the release, the circumstances leading to the release, actions taken in response to the release, and measures to prevent the recurrence of such releases. Unauthorized releases and discharges are subject to the reporting requirements of Part II.G (Reports of Unauthorized Discharges) of this permit.

E. Other Requirements and Special Conditions

1. Notification Levels

The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter;

(2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant, which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
   (1) Five hundred micrograms per liter;
   (2) One milligram per liter for antimony;
   (3) Ten times the maximum concentration value reported for that pollutant in the permit application; or
   (4) The level established by the Board.

2. Materials Handling/Storage

Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation, and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of, and/or stored in such a manner so as not to permit a discharge of such product, materials, industrial wastes, and/or other wastes to State waters, except as expressly authorized.

3. Operation and Maintenance (O&M) Manual Requirement

The permittee shall review the existing Operations and Maintenance (O & M) Manual and notify the DEQ Northern Regional Office in writing by November 2, 2011, whether it is still accurate and complete. If the O & M Manual is no longer accurate and complete, a revised O & M Manual shall be submitted for approval to the DEQ Northern Regional Office by November 2, 2011. The permittee will maintain an accurate, approved operation and maintenance manual for the treatment works. This manual shall detail the practices and procedures which will be followed to ensure compliance with the requirements of the permit. The permittee shall operate the treatment works accordance with the approved O&M Manual. This manual shall include, but not necessarily be limited to, the following items, as appropriate:

a. Techniques to be employed in the collection, preservation, and analysis of effluent and sludge samples;
b. Procedures for measuring and recording the duration and volume of treated wastewater discharged;
c. Discussion of Best Management Practices, if applicable;
d. Procedures for handling, storing, and disposing of all wastes, fluids, and pollutants that will prevent these materials from reaching state waters.
e. Treatment works design, treatment works operation, routine preventative maintenance of units within the treatment system, critical spare parts inventory and record keeping; and,
f. A plan for the management and/or disposal of waste solids and residues.

Any changes in the practices and procedures followed by the permittee shall be documented and submitted for DEQ Northern Regional Office staff approval within 90 days of the effective date of the changes. Upon approval of the submitted manual changes, the revised manual becomes an enforceable part of the permit. Noncompliance with the O&M Manual shall be deemed a violation of the permit.

4. Water Quality Criteria Reopener

Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

5. Hydrostatic Testing

The permittee shall obtain approval from the DEQ Northern Regional Office forty-eight (48) hours in advance of any discharge resulting from hydrostatic testing. The conditional of approval will be contingent on the volume and duration of the proposed discharge, and the nature of the residual product.

6. No Discharge of Detergents, Surfactants, or Solvents to the Oil/Water Separators
The permittee shall ensure that substances such as detergents, surfactants, and solvents do not impact the oil water separators.

7. Total Maximum Daily Load (TMDL) Reopener
This permit shall be modified or alternatively revoked and reissued if any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the facility that are not consistent with the permit requirements.

CONDITIONS APPLICABLE TO ALL VPDES PERMITS

A. Monitoring

1. Samples and measurements taken as required by this permit shall be representative of the monitored activity.
2. Monitoring shall be conducted according to procedures approved under Title 40 Code of Federal Regulations Part 136 or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this permit.
3. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will insure accuracy of measurements.

B. Records

1. Records of monitoring information shall include:
   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling or measurements;
   c. The date(s) and time(s) analyses were performed;
   d. The individual(s) who performed the analyses;
   e. The analytical techniques or methods used; and
   f. The results of such analyses.

2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years, the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Board.

C. Reporting Monitoring Results

1. The permittee shall submit the results of the monitoring required by this permit not later than the 10th day of the month after monitoring takes place, unless another reporting schedule is specified elsewhere in this permit. Monitoring results shall be submitted to:

   Department of Environmental Quality - Northern Regional Office (DEQ-NRO)
   13901 Crown Court
   Woodbridge, VA 22193

   Monitoring results shall be reported on a Discharge Monitoring Report (DMR) or on forms provided, approved or specified by the Department.

2. If the permittee monitors any pollutant specifically addressed by this permit more frequently than required by this permit using test procedures approved under Title 40 of the Code of Federal Regulations Part 136 or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the Department.

3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

D. Duty to Provide Information.

The permittee shall furnish to the Department, within a reasonable time, any information which the Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Board may require the permittee to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from this discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

E. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized Discharges

Except in compliance with this permit, or another permit issued by the Board, it shall be unlawful for any person to:

1. Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances; or
2. Otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses.

G. Reports of Unauthorized Discharges.

Any permittee who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance into or upon state waters in violation of Part II.F.; or who discharges or causes or allows a discharge that may reasonably be expected to enter state waters in violation of Part II.F., shall notify the Department of the discharge immediately upon discovery of the discharge, but in no case later than 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the Department, within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this permit.

Discharges reportable to the Department under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of Unusual or Extraordinary Discharges.

If any unusual or extraordinary discharge including a bypass or upset should occur from a treatment works and the discharge enters or could be expected to enter state waters, the permittee shall promptly notify, in no case later than 24 hours, the Department by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse affects on aquatic life and the known number of fish killed. The permittee shall reduce the report to writing and shall submit it to the Department within five days of discovery of the discharge in accordance with Part II.I.2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service some or all of the treatment works; and
4. Flooding or other acts of nature.

I. Reports of Noncompliance

The permittee shall report any noncompliance which may adversely affect state waters or may endanger public health.

1. An oral report shall be provided within 24 hours from the time the permittee becomes aware of the circumstances. The following shall be included as information which shall be reported within 24 hours under this paragraph:
   a. Any unanticipated bypass; and
   b. Any upset which causes a discharge to surface waters.

2. A written report shall be submitted within 5 days and shall contain:
   a. A description of the noncompliance and its cause;
   b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
   c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

   The Board may waive the written report on a case-by-case basis for reports of noncompliance under Part II.I. if the oral report has been received within 24 hours and no adverse impact on state waters has been reported.

3. The permittee shall report all instances of noncompliance not reported under Parts II, I.1.or I.2., in writing, at the time the next monitoring reports are submitted. The reports shall contain the information listed in Part II.I.2.

NOTE: The immediate (within 24 hours) reports required in Parts II, G., H. and I. may be made to the Department's Northern Virginia Regional Office at (703) 583-3800 (voice) or (703) 583-3841 (fax). For reports outside normal working hours, leave a message and this shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Services maintains a 24-hour telephone service at 1-800-468-8892.

J. Notice of Planned Changes.

1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

   a. The permittee plans alteration or addition to any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

      1) After promulgation of standards of performance under Section 306 of Clean Water Act which are applicable to such source; or
      2) After proposal of standards of performance in accordance with Section 306 of Clean Water Act which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal;

   b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations nor to notification requirements specified elsewhere in this permit; or

   c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

K. Signatory Requirements.

1. All permit applications shall be signed as follows:

   a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
      1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or

      2) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

   c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a public agency includes:

      1) The chief executive officer of the agency, or
      2) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

2. All reports required by permits, and other information requested by the Board shall be signed by a person described in Part II.K.1., or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Part II.K.1.;

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

   c. The written authorization is submitted to the Department.

3. Changes to authorization. If an authorization under Part II.K.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.2. shall be submitted to the Department prior to or together with any reports, or information to be signed by an authorized representative.

4. Certification. Any person signing a document under Parts II, K.1. or K.2. shall make the following certification:

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

L. Duty to Comply.

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the State Water Control Law and the Clean Water Act, except that noncompliance with certain provisions of this permit may constitute a violation of the State Water Control Law but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this permit has not yet been modified to incorporate the requirement.

M. Duty to Reapply.

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. All permittees with a currently effective permit shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Board. The Board shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

N. Effect of a Permit.

This permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State Law.

Nothing in this permit shall be construed to preclude the institution of any legal action under, or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by Section 510 of the Clean Water Act. Except as provided in permit conditions on "bypassing" (Part II.U.), and "upset" (Part II.V.) nothing in this permit shall be construed to relieve the permittee from civil and criminal penalties for noncompliance.

P. Oil and Hazardous Substance Liability.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Sections 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law.

Q. Proper Operation and Maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

R. Disposal of solids or sludges.

Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering state waters.

S. Duty to Mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to Halt or Reduce Activity not a Defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

U. Bypass.

1. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts II, U.2. and U.3.

2. Notice
   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, prior notice shall be submitted, if possible at least ten days before the date of the bypass.
   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.I.

3. Prohibition of bypass.
   a. Bypass is prohibited, and the Board may take enforcement action against a permittee for bypass, unless:
      1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      3) The permittee submitted notices as required under Part II.U.2.

   b. The Board may approve an anticipated bypass, after considering its adverse effects, if the Board determines that it will meet the three conditions listed above in Part II.U.3.a.

V. Upset.

1. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of Part II.V.2. are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.

2. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;
   b. The permitted facility was at the time being properly operated;
   c. The permittee submitted notice of the upset as required in Part II.I.; and
   d. The permittee complied with any remedial measures required under Part II.S.

3. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

W. **Inspection and Entry**

The permittee shall allow the Director, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and the State Water Control Law, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. Permit Actions.

Permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Y. Transfer of permits

1. Permits are not transferable to any person except after notice to the Department. Except as provided in Part II.Y.2., a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued, or a minor modification made, to identify the new permittee and incorporate such other requirements as may be necessary under the State Water Control Law and the Clean Water Act.

2. As an alternative to transfers under Part II.Y.1., this permit may be automatically transferred to a new permittee if:
   a. The current permittee notifies the Department at least 30 days in advance of the proposed transfer of the title to the facility or property;
   b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
   c. The Board does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part II.Y.2.b.

Z. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

APPENDIX B
TABLES

Table B-1
Summary of Plan Amendments

Date of Change	Sections and Pages Revised	Summary of Revision
10/05-4/06	Entire document	General reorganization of plan
		Updated inventory of potential pollution sources
		Reviewed and updated BMPs
		Development of area-specific SOPs
7/24/2006	General, several different pages	Various changes from review comments
	3.3.5.3, p.17	Added section for TBS Armory description on p. 3-17
3/15/2007	Addendum	Took off AHS and MCRTC
	Updated all Tables	Updated SWP2 Team list, Spill Log, Inspection Table (included ranking, new sites)
3/27/2007	Section 2.5.3.2	Added ranking table and verbiage to the section to describe how each site is ranked and what is required for the site.
	Section 3.3	Added descriptions for new buildings at TBS, and Camp Upshur STP
	Auto Hobby Shop SOP	Added inspections of storm water management pond to the SOP
2/5/2008	Camp Upshur WTP	Removed this site from the SWP3. Although this is an industrial site, an inspection last year showed no significant use of materials and no problems as far as SWPP is concerned.
	Aero Club	Removed from the plan. The Aero Club will not be returning to Quantico. The AST has been drained.
	Updated the SWP2 Team roster	Updated to reflect new environmental coordinators/supervisors, if needed
2/7/2008	SOP's	Updated all SOPs with new contacts, information, etc.
2/26/2008	TBS Armory SOP	Created SOP for TBS Armory
2/27/2008	Table B-7 (OWS)	Added another OWS to table (TBS Armory apparently has three, not two as was originally written.)
8/4/2008	Corrected contacts on the SW P2 Team form	Stacey Rosenquist – new EC for G-5
		Cpl. McKinnon – new PC for HMX-1
Oct-11	Version 1 of new SWMAP	Combines SWPPP and SWM Plan with MS4 data
Oct-11	pgs 1-5, 4-11, 4.6.1, and 4.6.2	Updated New Permit (2151) and Outfalls
Oct-11	Appendix B-1	Inserted O&M narrative IAW SWPPP and new permit.

Table B-1
Summary of Plan Amendments

Table B-2
Storm Water Pollution Prevention Team

Name	Title	Phone Number	Area of Responsibility
Steve Clark	NREAB Water Program Manager	703-432-0528	Basewide SWP3 oversight, implementation and monitoring
Dwayne Palermo	Environmental Coordinator	703-784-2652	Security Battalion/Base Fire Stations
Jose Periera	Environmental Coordinator	703-784-6726	G-3
John Bennett	Environmental Coordinator	703-784-6727	G-3
VACANT	Environmental Coordinator	703-784-2480	G-5
Eileen Crayton	Environmental Coordinator	703-784-2530	Safety Division
Anna Smith	Environmental Coordinator	703-784-4541	The Basic School/Camp Barrett
Cpt. Jeffrey Croniser	Environmental Coordinator	703-784-6759	Weapons Training Battalion
Paul Dodd	Environmental Coordinator	703-784-1453	Air Facility
SSgt. Jerry Wicker	Environmental Coordinator	703-784-2798/9	4th Light Armored Reconnaissance Battalion
GySgt. William Skidmore	Environmental Coordinator	571-494-4727	Marine Helicopter Squadron One
Dee Garner	Environmental Coordinator	703-784-5641	Marine Corps Community Services
Kip Johnson	Environmental Coordinator	703-432-4931	Marine Corps System Command

Industrial Site Contacts

Name	Phone Number	Site
Jeff Weaver	703-784-2729	MCCS Auto Repair Hobby Shop
Tony Cruz	703-784-2359	MCCS Quantico Marina
David Crosley	703-784-0158	Mainside Wastewater Treatment Plant
Danny Gilley	703-784-3274	Mainside Water Treatment Plant
Cpl. Joseph Ovalle	703-784-4233	HMX-1 Hangars/GSE/Supply/Test Cell
Eric Woznick	703-784-4440	G-5 Motor Transport Maintenance
VACANT	703-784-2576	G-6 Motor Transport Maintenance
GySgt. Amous	703-432-6088	Communications School
Kevin O'Brien	703-432-6016	MCSC Raids & Recon
Ralph Williams	703-784-3635	Facilities Maintenance
Mike Morgan	703-784-2597	MCCS Medal of Honor Golf Course
LP Weedon	703-784-2343	Camp Barrett Power Plant
Will Weadon	703-784-5312	Guadalcanal Maintenance
Jim Woodson	703-784-5372	Fuel Farm
Dwayne O'Barr	703-784-4030	Hazardous Waste Storage Building (< 90 day)
Jack Heric	703-784-5241	MCSC Transportation Demonstration Support Area
Paul Dodd	703-432-1689	Airfield Refueling
Otis Kay	703-784-5271	Construction Equipment Repair

Table B-3
Oil Water Separator Inventory

Building	Facility	Capacity Of Separator (gal)	Activities	Materials	OWS Discharge	Initial/Ultimate Receptor	GPS Coordinates (UTM)
3230A-2 (Bldg. ID tag of 3240)	MCSC	2,895*	Vehicle Washing	POL	Mainside STP	Potomac River	E 298370.470 N 4262810.032
3185	Communication Officers School	4,000	Vehicle Washing	POL	Mainside STP	Potomac River	E 298462.518 N 4262939.986
2112	HMX-1 GSE	800	Equipment Cleaning	POL	Mainside STP	Potomac River	E 298498.457 N 4263507.184
2013	Motor Transport Maintenance	500	Vehicle/Equipment Cleaning/Maintenance	POL	Mainside STP	Potomac River	E 299110.671 N 4265545.458
3016	Motor Pool/Transport Wash Rack	500	Vehicle Maintenance	POL	Mainside STP	Potomac River	E 298828.172 N 4265386.672
2012	Central Heating Plant	10,000	Storage Tank Secondary Containment	POL	Outfall 016	Potomac River	E 299323.598 N 4265584.766
3056	MWR Car Wash	800	Vehicle Washing	POL	Mainside STP	Potomac River	E 299697.136 N 4265788.630
28000	Engineer Support Area (TDSA)	550	Out of Service	NA	Aquia Wastewater Treatment Facility/Stafford County	Chopawamsic Creek/Potomac River	E 294642.945 N 4265168.147
27054	Construction Equipment Repair (CER)	500	Equipment Cleaning	POL	Aquia Wastewater Treatment Facility/Stafford County	Beaverdam Run/Smith Lake/Aquia Creek/Potomac River	E 288496.665 N 4267376.996

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Table B-3
Oil Water Separator Inventory

Building	Facility	Capacity Of Separator (gal)	Activities	Materials	OWS Discharge	Initial/Ultimate Receptor	GPS Coordinates (UTM)
27002	Guad Maintenance	500	Vehicle Washing	POL	Aquia Wastewater Treatment Facility/Stafford County	Beaverdam Run/Smith Lake/Aquia Creek/Potomac River	E 288664.146 N 4267319.894
27263	Fuel Farm	10,000	Fuel Transfer Operations	POL, JP-8	Outfall 072	Beaverdam Run/Smith Lake/Aquia Creek/Potomac River	E 289684.914 N 4266648.135
24009	TBS Maintenance	4,000	Vehicle Washing	POL	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	E 286864.131 N 4264058.048
24009	TBS Maintenance	4,000	Vehicle Maintenance	POL	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	OWS indicated on inventory, but could not be located during field effort
24007	TBS Motor Transport Wash Rack	4,000	Out of Service - Vehicle Washing	POL	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	E 287011.231 N 4263878.185

Table B-3
Oil Water Separator Inventory

Building	Facility	Capacity Of Separator (gal)	Activities	Materials	OWS Discharge	Initial/Ultimate Receptor	GPS Coordinates (UTM)
26145	LAI Motor Pool (Camp Upshur)	4,000	Vehicle Washing	POL	Camp Upshur Wastewater Treatment Facility/Fauquier County	Johns Branch/Cedar Run/Occoquan River	E 279950.318 N 4278256.376
2101	HMX-1 Green Side	448*	Aircraft/Vehicle Washing	POL	Mainside STP	Potomac River	E 298808.512 N 4264785.737
3045	Ordnance Branch	550	Out of Service	NA	Mainside STP	Potomac River	E 299066.430 N 4265312.351
2080	Auto Repair Hobby Shop		Vehicle Maintenance	POL	Mainside STP	UT to Potomac River	
24018	TBS Armory		Weapons Cleaning	Solvent	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	
24018	TBS Armory		Weapons Cleaning	Solvent	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	

Table B-3
Oil Water Separator Inventory

Building	Facility	Capacity Of Separator (gal)	Activities	Materials	OWS Discharge	Initial/Ultimate Receptor	GPS Coordinates (UTM)
24018	TBS Armory		Weapons Cleaning	Solvent	Aquia Wastewater Treatment Facility/Stafford County	Long Branch/Aquia Creek/Smith Lake/Aquia Creek/Potomac River	
5172	Aircraft Fire and Rescue Station		Vehicle Maintenance	POL	Mainside STP	Potomac River	

Note: * Calculated Volume

Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material
27263	Fuel Farm					Fuels (JP-8, #2 and #6 Fuel Oil, Diesel, Gasoline)
TR5161	Airfield Refueling					Fuels (JP-8)
2080	Auto Hobby Shop/Shed (New Location)	X	X	X	X	Used Antifreeze, Used Oil, Used Oil Filters, Used Speed Dry, Batteries, Blast Media
25	Marina	X				Sewage (Boat Unloading), Gasoline
3230/3230A	MCSC - Recon & Amphibous Test Center	X		X		Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Used Fuels, Diesel Fuel
3185/3185A	Communication Officers School/Shed	X			X	Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Lithium Batteries, Diesel Fuel
27001/27002	Guad Maintenance Areas/Sheds	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Diesel Fuel
27002	Guad Maintenance Shed	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze
27054	Construction Equipment Repair (CER)	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Oil, Used Oil Filters
24018	TBS Armory	X				Paint, stripping paint, Petroleum distillate gold solvent
24101	TBS Maintenance	X				Fuels (Oil, Diesel, Gasoline), paints, carpentry adhesives and sealants
24009	TBS Track Vehicle and Motor T Maintenance	X			X	Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Used Batteries, Diesel Fuel
1303/1314	Water Treatment Plant					Alum, Lime, Soda Ash, Sodium Bicarbonate, Sodium Fluorosilicate, Sodium Hexametaphosphate, Sodium Sulfite, Diesel Fuel
2101/2102/2102A/2103/2104/2105	HMX-1		X	X		Used Fuel, Used Paint and Paint Filters, Diesel Fuel, Paints, Adhesives, Degreasers, Solvents
3306/3063/3066	Golf Course	X		X		Pesticides, Herbicides, Fertilizer, Used Oil Filters, Diesel Fuel, Gasoline

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Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material
28000	Engineer Support Area (TDSA)	X				Oils, Greases, Gasoline, Diesel
2112	HMX-1 GSE Shed	X				Oil, Greases, Used Fuel, Used Antifreeze, Diesel Fuel
2013/2013A	Motor Transport Maintenance/Shed	X		X	X	Oils, Greases, Batteries, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Fuels, Used Paint Solvent, Used Oil Filters, Used Antifreeze
2013A	Motor Transport Maintenance Shed	X			X	Used Oil, Used Antifreeze, Batteries
27241A	Weapons Training Battalion	X				Oils, Greases, Paint, Degreasers, Solvents
27212	Weapons Training Battalion	X				Fuels (Oil, Diesel, Gasoline)
New Building	Weapons Training Battalion			X		CLP, Muriatic Acid, Used Solvent Filters, Used NaOH, Used Paint, Used Blasting Media
3252	Facilities Maintenance	X		X		Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Refrigerants, Paint Gun Waste, Used Oil, Mixed Gasoline/Oil
26145A	LAI Motor Pool (Upshur) Shed	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Oil, Used Antifreeze
24141/24142	TBS Motor Maintenance	X				Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Diesel Fuel, Gasoline
3016/2056	Motor Pool Transport Wash Rack/Fueling					Diesel Fuel, Gasoline, Pressure Washer Fluid (Containing Sodium Hydroxide and Versalene 100)
2121	HMX-1 Supply Warehouse					Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze
27401	Hazardous Waste Storage Building		X			Varies with the operational requirements of the activities conducted on Base

Notes:

1. A Risk Assessment was complete for potential storm water pollutant industrial sources. Facilities are arranged in high to low risk levels.

Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material

2. MCB Quantico is an EPRCA reporting facility. Eleven EPCRA 313 chemicals exceeded the thresholds for reporting year 2004. These include Copper, Benzene, Cumene, Cyclohexane, Ethylbenzene, Hexane, Lead Compounds, Methyl Tertiary Butyl Ether, Nitrate Compounds, Toluene, 1,2,4-Trimethylbenzene, and Xylene.

Table 3-4
Site Rankings

Building Number	Facility	Outside Hazardous Material and POL Storage	Outdoor Vehicle/ Aircraft/ Equipment Maintenance/ Repair	Outdoor Vehicle/ Aircraft/ Equipment Storage/ Parking	Loading/ Unloading Areas
TR5161	Airfield Refueling	X		X	
2080	Auto Hobby Shop	X		X	
3185/3185A	Communication Officers School/Shed	X		X	
27054	Construction Equipment Repair (CER)	X		X	
28000/28004/28005	Engineer Support Area (TDSA)	X	X	X	
3252	Facilities Maintenance	X		X	
27263	Fuel Farm	X			X
3306/3063/3066	Golf Course	X	X	X	
27000/27001/27002	Guad Maintenance	X	X	X	
27401	Hazardous Waste Storage Building				X
2101/2102/2102A/2103/2104/2105	HMX-1	X	X	X	X
2112	HMX-1 GSE, HMX-1 GSE Shed, Museum Restoration, MCCS Maintenance & Motor Transport	X	X		
2121	HMX-1 Supply Warehouse				X
26145/26145A	LAI Motor Pool (Upshur)/Shed	X		X	
25/3215	Marina/Marina Storage	X		X	
3016	Motor Pool Transport Wash Rack/Fueling			X	
3230	MCSC - Recon & Amphibous Test Center	X		X	
2013/2013A	Motor Transport Maintenance/Shed	X			
24101	TBS Maintenance	X			

Table 3-4
Site Rankings

Building Number	Facility	Outside Hazardous Material and POL Storage	Outdoor Vehicle/ Aircraft/ Equipment Maintenance/ Repair	Outdoor Vehicle/ Aircraft/ Equipment Storage/ Parking	Loading/ Unloading Areas
24141/24142	TBS Maintenance	X			
24162	TBS Power Plant				
24009	TBS Track Vehicle and Motor T Maintenance	X	X	X	
1303/1314	Water Treatment Plant				X
27241A/27212/ 27223	Weapons Training Battalion	X		X	
5000	Bobo Hall	X			X
24018	TBS Armory		x		
2666	Camp Upshur WWTP	X	x		
	Lunga				

Table 3-4
Site Rankings

Vehicle/ Aircraft Wash Down	OWS	Fueling Stations	Salt Storage Facility	90 Day	SAA	Tank Storage Areas	Inspection Frequency
							High
	X				X	X	Medium
X	X						Medium
X	X					X	Medium
	X	X				X	Low
					X	X	High
	X	X				X	Medium
		X			X	X	Medium
X	X	X	X			X	Medium
				X			Low
X	X			X	X	X	High
X	X					X	Low
							Low
X	X	X				X	Medium
X		X				X	High
X	X	X				X	Medium
X	X	X			X		High
	X				X	X	Medium
						X	Low

Table 3-4
Site Rankings

Vehicle/ Aircraft Wash Down	OWS	Fueling Stations	Salt Storage Facility	90 Day	SAA	Tank Storage Areas	Inspection Frequency
						X	Low
						X	Low
X	X	X				X	Medium
						X	Low
		X				X	Low
							Low
	X						Low
	X						Low
		X				X	Low

Table B-5
Industrial Activity List

Building Number	Facility	Outside Hazardous Material and POL Storage	Outdoor Vehicle/ Aircraft/ Equipment Maintenance/ Repair	Outdoor Vehicle/ Aircraft/ Equipment Storage/ Parking	Loading/ Unloading Areas	Vehicle/ Aircraft Wash Down	OWS	Fueling Stations	Salt Storage Facility	90 Day	Satellite Site	Battery/ Universal Waste Site	Tank Storage Areas
5170	Airfield Refueling	X		X									
2080	Auto Hobby Shop	X		X			X			X			X
3185/3185A	Communication Officers School/Shed	X		X		X	X					X	
27054	Construction Equipment Repair (CER)	X		X		X	X						X
28000/28004/ 28005	Engineer Support Area (TDSA)	X	X	X			X	X					X
3252	Facilities Maintenance	X		X							X		X
27263	Fuel Farm	X			X		X	X					X
3306/3063/ 3066	Golf Course	X	X	X				X			X		X
27000/27001/ 27002	Guad Maintenance	X	X	X		X	X	X	X				X
27401	Hazardous Waste Storage Building				X					X			
2101/2102/21 02A/2103/ 2104/2105	HMX-1	X	X	X	X	X	X			X	X		X

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Table B-5
Industrial Activity List

Building Number	Facility	Outside Hazardous Material and POL Storage	Outdoor Vehicle/ Aircraft/ Equipment Maintenance/ Repair	Outdoor Vehicle/ Aircraft/ Equipment Storage/ Parking	Loading/ Unloading Areas	Vehicle/ Aircraft Wash Down	OWS	Fueling Stations	Salt Storage Facility	90 Day	Satellite Site	Battery/ Universal Waste Site	Tank Storage Areas
2112	HMX-1 GSE, HMX-1 GSE Shed, Museum Restoration, MCCS Maintenance & Motor Transport	X	X			X	X						X
2121	HMX-1 Supply Warehouse				X								
26145/ 26145A	LAI Motor Pool (Upshur)/ Shed	X		X		X	X	X					X
25/3215	Marina/ Marina Storage	X		X		X		X					X
3230	MCSC - Recon & Amphibous Test Center	X		X		X	X	X			X		
3016/2056	Motor Pool Transport Wash Rack/Fueling			X		X	X	X					X

Table B-5
Industrial Activity List

Building Number	Facility	Outside Hazardous Material and POL Storage	Outdoor Vehicle/ Aircraft/ Equipment Maintenance/ Repair	Outdoor Vehicle/ Aircraft/ Equipment Storage/ Parking	Loading/ Unloading Areas	Vehicle/ Aircraft Wash Down	OWS	Fueling Stations	Salt Storage Facility	90 Day	Satellite Site	Battery/ Universal Waste Site	Tank Storage Areas
2013/2013A	Motor Transport Maintenance/ Shed	X					X				X		X
24018	TBS Armory	X	Weapon's Maintenance				X						
24101	TBS Maintenance	X											X
24141/24142	TBS Maintenance	X											X
24162	TBS Power Plant												X
24009	TBS Track Vehicle and Motor T Maintenance	X	X	X		X	X	X				X	X
1303/1314	Water Treatment Plant				X								X
27241A/ 27212/ 27223/27250	Weapons Training Battalion	X		X				X			X		X

Table B-6
Spills and Leaks

Date	Location Of Spill	Material Spilled	Spill Quantity	Did Spill Enter Drainage System?	Cause Of Spill
16-Mar-11	13th fairway golf course	Sewage	500 gallons	No	clogged sewer line
16-Jan-11	Purvis Road	Sewage	500 gallons	No	Pump for pump around failed
9-Jan-11	McDonalds	Sewage	100 gallons	No	Pump ran out of fuel
7-Jan-11	13418 Lyman Park North	Grease	100 gallons	Yes	Entered storm drain leading to Potomac River
4-Jan-11	HMX-1	JP-8	1.5 gallons	No	Fuel spill
3-Jan-11	Thomason Park Manhole	Sewage	360 gallons	Yes	Pump failed, entered storm drain leading to Little Creek
20-Nov-10	OCS Area	Sewage	300 gallons	No	Pump around failed
26-Oct-10	Purvis/Russell Roads	Sewage	300 gallons	No	Pump Failed
21-Oct-10	Marcorsyscom	Sewage	5000 Gallons	No	Lift station overflowed
1-Oct-10	McDonalds	Sewage	6000 gallons	Yes	Lift station overflowed into Chop Creek
23-Sep-10	Commisary	Diesel Fuel	2 gallons	No	spilled in parking lot
21-Sep-10	HMX-1	JP-8	5gallons	No	Fuel leak from helicopter
17-Sep-10	Behind CER Bldg	Sewage	14364 gallons	Yes	Entered unknown creek due to pump failure, ~ 14000 gal. in water
31-Aug-10	Commisary	Used oil	1 gallon	No	Used Oil leaked from vehicle
19-Aug-10	Bauer Rd, past Larson Gym	Sewage	> 0.1 gpm	No	contractor found ruptured sewer line
20-Jun-10	Pump Failure	Sewage	10000 + gallons	Yes	Pump failed and sewage overflowed into Chopawamsic Creek
20-May-10	HMX-1 Security	Diesel Fuel	.25 gallons	No	
16-Apr-10	Camp Upshur	Water	<5 gallons	No	Potable water, Hole in Chem Clarifier #1
22-Mar-10	Airfield	Sewage	30 gallons	No	System overwhelmed

Table B-6
Spills and Leaks

24-Feb-10	Camp Upshur, Pump Station 2	Sewage	30 gallons	No	Pumping RAS to lift station 2
12-Feb-10	Camp Upshur WTP	Water	90-100K gallons	No	potable water spill from WTP
26-Jan-10	OCS Area	Sewage	<100 gallons	No	Minor leak in force main
17-Nov-09	Hawkins Ave, Bldg 2103	Mineral Oil	1 gallon	No	
21-Oct-09	Old Chamberlain Village Housing	Sewage	50-75 gallons	No	Manhole overflowed
7-Oct-09	MILDEP Project	Hydraulic Fluid	20 gallons	No	Equipment failure on concrete pump truck
22-Aug-09	OCS	Sewage	10000 gallons	No	Heavy rains, only one pump online, line was blocked.
6-May-09	Marina	Hydraulic Fluid	1 pint	Yes	Hydrualic fluid was in boat bilge, bilge pumped into water. Booms contained spill.
28-Apr-09	Sewer line, ~150 yds. from Quantico bridge 15	Sewage	100 gallons	No	Sewer line was leaking
20-Apr-09	Mainside WWTP	Sodium Hypochlorite 12.5% solution	1400 gallons	No	1400 gal. tank failed, releasing entire tank into containment area. The release did not leave the building or enter any storm water conveyance.
2-Apr-09	Morell Ave, Bldg 3080	Sewage	150 Gallons	Yes	Partially blocked line, released 150 gallons into storm drain which drains to Potomac River
2-Apr-09	Airfield	JP-8	30 gallons	No	Release during refueling operation of CH-53. 30 gallons spilled, mostly on secondary containment, estimated 4-8 gallons on pavement.
9-Mar-09	Airfield	Diesel Fuel	100 gallons	No	Leak in fuel tank on back of truck

Table B-6
Spills and Leaks

16-Jan-08	Range Road & Zhombs St.	Diesel	< 50 gal (approx. 30)	Yes	Drained to Outfall 009 (permitted Outfall). Dump truck bottomed out on the storm drain and ruptured the side diesel fuel tank. All the fuel went down the storm drain and out the outfall; however all product was captured with booms and pads before it reached Chopawamsic Creek.
27-Mar-07	Quantico Marina	Gasoline	Sheen	Yes	Sheen on the Potomac River, was called into NRC. Gas powered golf cart was fished out of the river, still had a gallon of gas in the tank.
26-Apr-06	Behind McDonalds	Transformer Oil	102 Maximum	No	Transformer fell off of wood pole.
13-May-05	Fuel Farm	Diesel Fuel	163-175 gallons	No	Overfill of tanker truck. Spill directed to oil water separator and retained.
1-Apr-04	HMX-1 on Taxiway 2	JP-8	15 – 50 gallons	No	Helicopter release.
27-Feb-04	Camp Upshur (MCB8)	Diesel Fuel and Engine Oil	30 gallons Diesel Fuel / 5 gallons Engine Oil	No	Concrete truck went off the road. The Fire Department built a containment dam and trapped the free liquid, which was then pumped out.
12-Jun-03	Mainside WWTP	Caustic Soda	900 – 1,300 gallons	Yes	Leak from holding tanks in the basement of Building 660. The caustic soda entered the tertiary clarifiers and exited the plant into the Potomac River.

Table B-7 Spill Response Equipment Inventory	
Building/(number)	**Equipment**
Auto Hobby Shop (2080)	• Eyewash stations • Emergency showers • Oil booms 3"x 8'; oil-specific (box of 3) • Roll of absorbent mat • Roll of super absorbent mat • 50-pound bags of absorbent material; all-purpose
Marina (25)	• 50' floating boom – Breachway to Breachway • Absorbent towels; general purpose • Floating boom – shorter sections for dock fingers • Oil absorbent booms 3"x 8'; oil-specific (box of 6 booms) • Pig blankets
Mainside Water Treatment Facility (1303/1314)	• 50-pound bags of absorbent material; all-purpose • Absorbent towels; general purpose • Chlorine spill response kit (SCBA, repair kit,clothing) • Eyewash stations • Emergency shower • Magnetic pad covers for storm drains
Motor Transport Maintenance (2013)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Spill kits
HMX-1 GSE, Museum Restoration, MCCS Maintenance & Motor Transport (2112)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Chemical resistant mat to cover drains • Eyewash stations • Emergency shower • Oil booms 3"x 8'; oil-specific (box of 6)
HMX-1 Supply Warehouse (2121)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Booms • Spill kit
MWR Car Wash (3056)	• All drains connected to oil/water separator No spill response equipment in area
Communication Officers School (3185)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose
MCSC –Recon Amphibous Test Center (3230)	• Chemical resistant mat to cover drains • Eyewash stations • Emergency shower • Oil booms 3"x 8'; oil-specific (box of 3) • Roll of absorbent mat • Roll of super absorbent mat • Sorb mat for SAA • Spill Kit for Tank

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Table B-7 Spill Response Equipment Inventory	
Building/(number)	**Equipment**
Facilities Maintenance (3252)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose *Go to Self Serve Building 7 for purchasing more spill response when necessary*
TBS Track Vehicle Maintenance and TBS Motor Transport Maintenance (24009)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Chemical resistant mats to cover drains • Eyewash station • Emergency shower • Emergency spill kits • Oil booms 3"x 8'; oil-specific (box of 6) • Spill kits
TBS Power Plant (24162)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Spill kit (small) • Spill kit (large)
LAI Motor Pool Camp Upshur (26145)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Chemical resistant mat to cover drain • Emergency shower • Eyewash stations
Construction Equipment Repair (27054)	• 50-pound bags of granular absorbent, all-purpose • Absorbent towels; general purpose • Chemical resistant mats to cover drains • Eyewash stations • Emergency shower • Oil booms 3"x 8'; oil-specific (box of 6)
Weapons Training Battalion (27212/27223/27241)	• Spill kits
Fuel Farm (27263)	• 500-gallon AFFF automated system • Absorbent pads; oil-specific (case of 6 booms) • Chemical resistant mats to cover drains
Hazardous Waste Storage Building (27401)	• Eyewash stations • Emergency showers • Oil booms 3"x 8'; oil-specific (box of 3) • Roll of absorbent mat • Box of chemical absorbent pads • 50-pound bags of absorbent material; all-purpose

Table B-7 Spill Response Equipment Inventory	
Building/(number)	**Equipment**
Engineer Support Area (28000/28004)	• 50-pound bags of absorbent material; all-purpose • Absorbent towels; general purpose • Eyewash station • Emergency shower • Spill kit in Building 28004 • Spill blanket on truck
Motor Pool Transport Wash Rack/Fueling (3016/2056)	• Absorbent towels; general purpose • Oil absorbent booms 3"x 8'; oil-specific (case of 6 booms)
HMX-1 (2101/2102/2103/2104/2105)	• Absorbent towels; general purpose • Spill kit
Guad Maintenance (27000/27001/27002)	• 50-pound bags of granular absorbent, all-purpose • Absorbent towels; general purpose • Eyewash stations • Emergency shower • Oil booms 3"x 8'; oil-specific (box of 6)
Golf Course (3306/3063/3066)	• 50-pound bags of granular absorbent; all-purpose • Absorbent towels; general purpose • Absorbent mats at fuel dispensing area
Airfield Refueling (TR5161)	• Absorbent towels; general purpose • Mobile fire extinguisher • Oil absorbent booms 3"x 8'; oil-specific (case of 6 booms) • Spill kit
TBS Armory (24018)	• Absorbent towels, general purpose • Mobile fire extinguisher • Oil absorbent booms 3" x 8'

Table B-8
Outfall Summary

VPDES Outfall	MCCDC Outfall	Outfall Location	Area of Impervious Surface (Acres)	Total Area Drained (Acres)	Size	Type of Discharge	Significant Materials Exposed to Storm Water	Sampling Requirements	Sampling Frequency	Treatment	Outfall Maintenance	Receiving Water	Outfall GPS Coordinates
003	CC-15	Mainside WTP			10" Steel	Filter Backwash, GW, SW	Filter Backwash	Flow, pH, TSS, TRC	Once per month	Sedimentation (1 Lagoon)		Chopawamsic Creek	E293630.640 N4266093.220
009	CC-1	NCO Swimming Pool			24" Concrete	Swimming Pool Filter Backwash, SW	Chlorine	Flow, pH, TRC	Once per month during the months of May - September	Dechlorination	Keep path clear to outfall	UT to Chopawamsic Creek	E298630.638 N4264483.352
010	PR-40	Mainside Drainage North	70.5	220	60" RCP	Steam condensate, NCCW, SW	Herbicides, pesticides	Flow, pH, Temp, Annual Bioassay	Once per month, bioassay is once per year but requires 3 days to sample	None	Weedwhack path to outfall	UT to Potomac River	E299670.052 N4265438.850
013	PR-17	Old location of the MWR Hobby Shop	3.6	18	24" to 29" RCP box culvert	Steam condensate, SW	Oil, antifreeze	Flow, pH, Temp	Once per month	None	May require removal of debris (driftwood, etc) from mouth of outfall	UT to Potomac River	E298491.155 N4263177.723
014	AF-14	HMX-1 Hangars & Maintenance	24.5	27.5	36" RCP	Steam condensate, NCCW, SW	AFFF, deicing materials, oil	Flow, pH, Temp	Once per month	None	None	UT to Potomac River	E299165.755 N4264937.972
016	PR-37	Mainside Drainage South	132	440	60" CMP	Steam condensate, SW	Fuels, oils	Flow, pH, TSS, TPH, Quarterly Bioassay	Once per month	OWS (2)	Weedwhack path to outfall	UT to Potomac River	E299216.803 N4265224.217
018	PR-22	HMX-1 Supply Depot	0.6	0.6	18" RCP	SW	Paints, paint thinners, oil, antifreeze, phenolic stripper			None		UT to Potomac River	E298487.743 N4263238.706
019	AF-11	Aero Club	5	13.8	21" RCP	SW	Fuels, oil	Flow, pH, BOD, TSS, COD, TPH	Once per year	None	Weedwhack path to outfall	UT to Potomac River	E299351.646 N4264039.187
022	Old Location was PR-16, now draining through to OF-16	MWR Auto Hobby Lot	1.3	1.3	24" RCP	SW	Auto Hobby is no longer located at this site. No industrial activity noted.	Flow, pH, Temp, TSS, COD, TPH	Once per year	None	Keep bushes trimmed around top of outfall	UT to Potomac River	E298490.679 N4263150.641

Table B-8
Outfall Summary

VPDES Outfall	MCCDC Outfall	Outfall Location	Area of Impervious Surface (Acres)	Total Area Drained (Acres)	Size	Type of Discharge	Significant Materials Exposed to Storm Water	Sampling Requirements	Sampling Frequency	Treatment	Outfall Maintenance	Receiving Water	Outfall GPS Coordinates
030	PR-29	Bobo Hall			21" Steel	Refrigeration Unit Condensate, Floor Wash, SW		Flow, pH, TSS, O&G	Quarterly	None	Debris cleanup around outfall, keep mouth of outfall from getting overgrown	Potomac River	E298623.342 N4263426.313
035	AF-17	BOQ			54" Concrete	NCCW, SW		Flow, pH, Temp, TSS, Annual Bioassay	Once per month, bioassay is once per year but requires 3 days to sample	None	Weedwhack path to outfall	UT to Potomac River	E299149.044 N4265122.702
072	RR-24	Fuel Farm	0.5	2.5	18" RCP	Hydrostatic tank test waters, SW	Fuels	Flow, pH, TPH, TOC	Quarterly	OWS	None	UT to Beaverdam Run	E289684.225 N4266629.164
073	RR-26	Landfill Pond	0	16.5	Overland Flow	SW	Solid Waste from MCCDC	Flow, pH, TSS	Once per year	Sedimentation	Weedwhack path to outfall	UT to Beaverdam Run	E288660.116 N4266500.734
074	RR-27	Landfill Marsh	0	16.5	Open Channel	SW	Solid Waste from MCCDC	Flow, pH, TSS	Once per year	Sedimentation	Weedwhack path to outfall	UT to Beaverdam Run	E288706.509 N4266719.576
075	RR-14	Construction Equipment Repair	0.04	4.8	24" CMP	SW	Oil, antifreeze, fuels			None		UT to Beaverdam Run	E288540.192 N4267321.378
086		Russell Road Landfill	0	40		SW - Basin #1	Sediment	Flow, pH, TSS	Quarterly	Sedimentation	Weedwhack path to outfall	UT to Chopawamsic Creek	E293135.365 N4266756.078
090		Russell Road Landfill	0	80		SW - Basin #6	Sediment	Flow, pH, TSS	Quarterly	Sedimentation	Weedwhack path to outfall	UT to Chopawamsic Creek	E293536.220 N4266729.037
091		Jet Engine Test Pad	0.27	0.27		SW	Fuels, oils	Flow, pH, Temp, TPH	Once per year	None	None	UT to Potomac River	Exact location unknown, restricted access

OUTFALL SAMPLING STANDARD OPERATING PROCEDURES for VA0002151

Environmental Compliance Section
NREA, MCB, Quantico
October 2011

CHAPTER 1: STUFF TO KNOW BEFORE YOU GET STARTED

The following are definitions often referred to or used within this SOP.

ACRONYMS

BOD5: Biological Oxygen Demand (5-day). A test used to determine the amount of biological growth over a 5-day period.
BOQ: Bachelor Officer's Quarters
COD: Chemical Oxygen Demand
DEQ: Department of Environmental Quality (Virginia)
EPA: Environmental Protection Agency
HW: Hazardous Waste
MCB: Marine Corps Base Quantico
NCCW: Non-Contact Cooling Water
NPDES: National Pollutant Discharge Elimination System
O&G: Oil and Grease test
pH: Reading identifying phenol base, neutral, or acidic
TPH: Total Petroleum Hydrocarbons
TRC: Total Residual Chlorine
TSS: Total Suspended Solids
SW: Storm Water.
SWP2: Storm Water Pollution Prevention
SWP3: Storm Water pollution Prevention Plan
VOC: Volatile Organic Compound
VPDES: Virginia Pollutant Discharge Elimination System
WTP: Water Treatment Plant
WWTP: Wastewater Treatment Plant

DEFINITIONS

Holding Time: The amount of time, after collecting a sample, before it is considered invalid. For example, TSS has a holding time of 7 days, which, if not analyzed seven days after you collect it, it cannot be used.

Outfall: The point where discharged water enters a stream, lake, river, etc. Usually there is a pipe associated with an outfall, sometimes a weir or a ditch.

ICONS

To help you out, we'll use a few icons to flag the important stuff. Here's a few to remember:

WARNING!! Pay close attention to this symbol!!

Important sampling procedures. Take note!!

Items or issues to be weary of, or to avoid altogether.

Maintenance Work: This gives you maintenance conditions to expect (like if an outfall gets overgrown a lot, whether you'd better bring clippers with you, etc.)

CHAPTER TWO: WHAT IS AN OUTFALL, WHERE ARE THEY, AND WHY ARE THEY IMPORTANT?

There are several outfalls on MCB. In fact, there are over 250 of them. We only have to sample the ones that may have some industrial use associated with them. Examples of potential industrial use are: vehicle maintenance and storage, non-contact-cooling water, pool discharge, and fueling operations. Each of these operations could possibly contaminate storm water if not properly handled.

An outfall is considered a point source, meaning that there is a certain spot where the water discharges. Usually, you will see a pipe at these spots. Sometimes the point source might be a ditch or other forms of conveyance. The Virginia DEQ permits all the outfalls we have to sample. The DEQ sets the limits for industrial contaminants (such as TSS, TRC, etc.) that we are allowed to discharge to State waters. The permit is called a Virginia Pollutant Discharge Elimination System (VPDES) permit, and is issued every five years.

There are two types of permitted outfalls on Base: industrial outfalls and storm water outfalls associated with industrial activity. Industrial outfalls, like the WTP Lagoon outfall, are outfalls with a specific industrial discharge associated with them (like chlorine). Storm water outfalls associated with industrial activity, are permitted because there is a chance that activities might pollute the water.

SOOO: We are going to focus on these two types of permitted outfall sites. Table 1 shows a quick list of all of them, with detailed info following. Some outfalls are sampled monthly, while others are quarterly or yearly. The storm water samples should be taken during a storm event.

Annual samples can be collected any time during the year, although it's best to get them out of the way as soon as possible. Our permit year starts in July and ends in June. The quarterly samples are usually collected in the first month of the quarter, if possible. The quarters are kind of funny this permit: Quarters run from June-Aug, Sep-Nov, Dec-Feb, and Mar-May. However, annual samples run from July-June, and the bioassay for Outfall 016 runs from May-Jul, Aug-Oct, Nov-Jan, and Feb-Apr. Kind of confusing, huh??

Outfall 003 (Mainside WTP Lagoon)

Outfall 003 RARELY EVER DISCHARGES!! That is because they rigged the backwash line so it drains to the WWTP instead of going out the outfall. HOWEVER, if there is a problem and they can't send the water to the WWTP, they will discharge it out the pipe to Chopawamsic Creek. So, even though this outfall is supposed to be sampled monthly, usually on our DMR we just put down NO FLOW for the month. BUT…if the lagoon ever does discharge to the creek, you **must** take one monthly sample.

The point of contact is Danny Gilley (WTP Supervisor), and he can be reached at 784-3274 or 784-2698. The WTP guys check the lagoon daily, so if there is a flow, they will call our office. They keep a log book of their checks at the plant.

Location:

Outfall 003 is located behind the WTP. You have to drive in to the plant, get the key from somebody, then drive around behind the clarifiers and backwash tanks, and go through the gate. Drive to the right around the lagoon, and you will see the steps going down to the outfall.

Tests:

This outfall is tricky, because it is the only one that requires a composite sample for TSS instead of a grab (thank God we don't have to do this very often!!) You have to visit it every hour for five hours and take a sample (1000 ml), put it in the WTP fridge, then at the end of the five grabs, take a 200 ml aliquot from each sample and combine it for the composite. Other than that, the tests are flow, pH and TRC.

Outfall 010 (Mainside Drainage—North)

Outfall 010 is permitted mainly because it has a couple of cooling towers tied into it. Plus, it has a lot of storm water going to it. Quite a bit of Mainside drains to this outfall.

Location:

You can't actually sample at the outfall, because it is always submerged. So we sample at the first manhole up, because nothing else is tied into it further downstream. The manhole is behind the WWTP. If you turn down John Quick Road, drive over the railroad tracks and behind the WWTP, and park right behind the fence line, then walk along the fenceline/treeline, you'll eventually see the manhole right in the treeline. It is a raised manhole, and has a wooden cover on it.

 To get a sample from this manhole, you either must have really long arms or a sampling device. We have a peristaltic pump, but the easiest thing to use is a bucket on a string.

 Because this outfall is so far back along the tree line, every once in a while a path needs to be cleared to it. This is part of the FLSS contract, and they should be doing this work in May, July and September.

 Watch out for poison ivy around the manhole!!!

Tests:

Outfall 010 is sampled monthly. You don't need to wait for a rain event to sample it, because it is always flowing. It gets the following tests monthly: Flow, pH, and TRC during May-Sept. Yearly, it gets a chronic bioassay, which must be collected over a 7-day period (see the SAMPLING chapter if you ever have the bad luck of having to collect this sample.)

Outfall 013 (Auto Hobby Shop)

This is an easy outfall, except you have to wait until low tide, otherwise it's submerged. You have to wait for a storm event to collect this one. This was permitted due to steam condensate discharge and the old Auto Hobby Shop, but can probably be omitted from the next permit application, as there are no more industrial discharges to it.

Location:

Turn into the old Auto Hobby Shop (Bldg. 4) and drive right down to the river. Walk down to the beach, and you'll see the outfall directly to your left.

Sampling:

An easy outfall to sample!! All you need to do is get a flow and a pH. That's it!! This outfall is sampled quarterly.

Outfall 014 (HMX-1 Hangars & Maintenance)

This outfall is a pain just because you have to go onto the airfield, so you need a government vehicle. Have your ID too! The samples are taken from a manhole, because this is another case where the outfall is always submerged. The outfall is permitted for a couple of reasons: there's an aircraft wash rack that drains to sanitary sewer when it's being used, but when it's not, it can potentially drain to the outfall. Also, there were some steam condensate leaks associated with this outfall.

Location:

Drive into the airfield, then park in front of Bldg. 2103. You need to go through the gate at 2103, but you don't have to go into the building. Just turn right down the sidewalk, and you'll see the manhole tucked in the corner. The fence actually squiggles around the manhole.

Sampling:

You need to bring a manhole hook for this one, as well as a bucket on a string (or some other sampling device). All you need to get here is flow, pH and °C.

Outfall 016 (Mainside Drainage—South)

Like Outfall 010, this outfall drains a good portion of Mainside. It goes all the way up into the housing area, and also has a little unnamed tributary that flows through it, so there's always a flow at this one. The main concerns here are NCCW and storm water. This outfall is located on the old DRMO closed landfill, between the WWTP and HMX.

This is another manhole that is easily affected by tide, so try to sample at low tide. In 2005 we removed a beaver dam, which had clogged the outfall to the point where we had to sample from a manhole further upstream. It's a good idea to check the wetlands below the outfall and make sure those durn beavers haven't started piling up sticks again.

Location:

Outfall 016 is located on the old DRMO and landfill site right across from the wastewater treatment plant. Get on John Quick Road, drive over the train tracks, and turn right on the gravel road right behind the tracks. You'll see the gate on your left.

Notify the Installation/Restoration Program that you'll be out there. And you must remember to bring a green key to unlock the gate! Make sure you lock the gate behind you when you are on the landfill, and when you leave.

There are steps going down to this outfall, but be VERY careful!! Riprap and gopher holes are hidden in the grass. You have to climb over the riprap to get to the mouth of the outfall, so BE CAREFUL!!! It's actually easier to go down the other side of the railing, where the steps aren't.

Sampling:

This outfall is sampled monthly for flow, pH, and TSS, and TRC is done monthly from May-Sept. Quarterly, it is sampled for TPH and an acute bioassay. Remember all this!!

Outfall 019 (Aero Club)

Outfall 019 is located behind the old Aero Club which no longer exists. This outfall drains the area around the old Aero Club, and is permitted mainly because of the potential for fuel or oil spills. This is a storm water outfall only. You have to catch it not only during a rain event, but at low tide. This outfall is sampled only once a year.

Location:

Drive to the Aero Club parking lot. You have to be escorted into this area by someone at the airfield (they have to escort you out too!) The outfall is located right on the Potomac River, behind the airplane pads.

Sometimes the grasses in the field get pretty overgrown. Since this outfall gets tested only once a year, it isn't much of a problem, but if the path isn't clipped, you could run into briars and poison ivy, and all that good stuff. FLSS should take care of this area too.

Sampling:

Outfall 019 gets flow, pH, BOD5, TSS, COD and TPH.

Outfall 022 (Auto Hobby Shop Parking Lot)

Outfall 022 is another yearly sampling outfall. It is a storm water outfall, and submerged at high tide, so you have to not only catch this one during a storm event, but it has to be low tide to boot. Leaking fuels and oils from dead vehicles are the main concern here.

Location:

Directly to the right of Outfall 013. You can't miss it.

Sampling:

Flow, pH, TSS, COD and TPH.

Because this outfall was permitted specifically because the old Auto Hobby Shop parking lot drained to it, it can probably be omitted from the next permit application. Coordinate this with the DEQ point-of-contact.

Outfall 030 (Bobo Hall)

Outfall 030 drains the area around Bobo Mess Hall (Bldg. 5000). This is an industrial outfall only. It was originally permitted because of refrigerator condensate that drained to the outfalls. Recently we've discovered that the condensate is actually tied into the sanitary sewer. But we still have to sample this one quarterly, because sometimes the drains around the loading dock (which go to sanitary sewer) get clogged and all that messy gunk they hose off the loading dock goes into the outfall. However, the mess hall is scheduled for demolition, and once it's gone, this outfall should be removed from the next permit.

Location:

Right behind Bobo Mess Hall.

 During Hurricane Isabel, two of the supports for the metal steps got dislodged, so the stairs have been declared UNSAFE! January 2008, DEQ has allowed us to move the sample location to the last manhole instead. Don't use the steps unless you have to.

Sample the manhole with sampling equipment.

Sampling:

Outfall 030 is sampled quarterly for flow, pH, TSS and O&G.

Outfall 035 (Airfield BOQ)

The BOQ doesn't exist anymore, but originally, this outfall was located behind it. The outfall drains the area around LeJeune Hall, the chapel, and Newlin Hall, as well as Facilities Maintenance and Shuck Hall.

Location:

The only really good way to get to this outfall is the same as Outfall 016, go through the DRMO/Landfill gate (remember to call Airfield Security and tell the IR guys!!), then take a hard right and drive all the way to the end. There is a big white flume where the water discharges.

Sampling:

Try to take your sample from the flume weir (this might require climbing in the flume to get a good sample, so be careful!!). This outfall gets sampled quarterly and gets flow, pH, and TSS.

Again, this is another outfall that we may be able to leave off the next permit application. The sump pump and steam condensate attached to it are no longer there.

Outfall 072 (Fuel Farm)

This is an easy outfall to get. It's a storm outfall, and quarterly. Jim Woodson, or somebody over at the fuel farm, usually calls us the first time they discharge water from the berms around the fuel tanks. Even though this is a storm event outfall, sometimes they can hold the water in the berms for a few hours or a day or two, but you still need to coordinate with Jim (784-5372).

Location:

Go down MCB-1. Right before MCB-2, you'll see the fuel farm entrance to your left. If you reach MCB-2 you've gone too far.

Sampling:

The water goes through an oil water separator, so somebody there has to turn the valve to let the water out. Then, you have to get a flow, pH, and TPH sample.

Outfalls 073 and 074 (MCB-2 Landfill)

These two outfalls both drain the storm water around the MCB-2 closed landfill. Storm water drains to two lagoons, and the sampling location is where the lagoons drain when they're full. So you need to wait for a storm event for these. Luckily, you only have to do this once a year.

Location:

Go down MCB-2 to the landfill entrance on right. You have to unlock a gate to drive in, so don't forget to bring a green key. Drive up the road until you pass the covered sludge holding area, then turn right. You'll see the first lagoon (Outfall 073) to your right. Drive past this, and go around the landfill until you see the second lagoon (Outfall 074).

 Both of these outfalls are tricky to get to. For Outfall 073, you have to climb over a lot of riprap, and for Outfall 074, you have to climb down to the outfall, and wade through some wet areas. Watch out for ticks and snakes also!!

Sampling:

Both of these outfalls get flow, pH and TSS. That's it!!

Outfalls 086 and 090 (Russell Road Landfill)

Outfalls 086 and 090 both drain areas of the Russell Road Landfill. 090 is located outside the fence, 086 is inside the fence, so bring a green key!! These samples are taken quarterly, and must be taken during a storm event.

Location:

To get to these outfalls, get on MCB-1 and go past the I-95 South exit. Take your immediate right and go up the hill.

Outfall 086 is located in the landfill. Drive into the landfill and turn left. You will pass the leachate tank on your left, then you will see a cut path that goes down to the woods. Follow the path, then head straight down in the woods until you reach the intermittent creek. There are a set of steps that go down to the creek, so sampling is fairly easy.

Outfall 090 is outside the landfill. Drive past the landfill, then look to your right, you'll pass over a culvert. As soon as you pass over it, park on the right side of the road and follow the handrail down to the creek. Get your sample in the creek.

 In the summer, you will SOOOO need repellant, because the ticks are incredibly vicious on the landfill.

Sampling:

Both these outfalls get flow, pH and TSS.

Outfall 091 (Engine Test Pad)

This is another yearly storm water event outfall where you need to coordinate with someone from the airfield to get the sample. (Try to do it at the same time you sample Outfall 019, so you only have to go in once.) Behind the old aero club, there is a pad where HMX tests their engines. The pad is permitted to ensure that excess oils, hydraulic fuels, etc. aren't contaminating the river. The pad drains to an outfall located on the other side of the LCAC landing, but sometimes the only way to really take the sample is to open the grate on the pad and take the sample there, before they drain it to the outfall.

Location:

Take the road that goes behind the Aero Club. Follow it to the right. It will dead-end at the test pad. (If you keep going, you'll be in the river.)

Sampling:

This outfall is sampled for flow, pH, °C and TPH. Bring a bucket to get the sample, unless you want to reach way down into the grate. Also make sure you have a manhole hook!

CHAPTER 3: SAMPLING PROCEDURES

Which Outfall are You Sampling?

Before you head out to sample, you need to make sure you bring the right equipment. Some outfalls just require a couple of field tests, like pH and temperature, while others require collection of samples to be sent to the laboratory. You need to know which outfall you're going to, and what that outfall requires. Table 2 shows a list of outfalls and what equipment is needed for each one (meters, bottles, etc.)

Table 2: Outfall Sampling Equipment

All outfalls require pH, so the pH meter isn't listed below. It applies to all!!

Outfall	What to Bring
003	pH Meter, HACH Pocket Colorimeter, sample bottles for TSS
009	pH Meter, HACH Pocket Colorimeter
010	Sampling device to collect water from manhole. Either a peristaltic pump, or a bottle on a string. And the pH meter and HACH Pocket Colorimeter (May-Sept)
013	pH meter
014	pH Meter, sampling device to collect water, manhole hook
016	pH meter, HACH Pocket Colorimeter (May-Sept.) sampling device to collect water, bottle for TSS. Quarterly, you'll also need bottles for TPH and bioassay
019	pH meter, Bottles for BOD, TSS, COD, TPH
022	pH meter, Bottles for TSS, COD and TPH
030	pH meter, sampling device, Bottles for TSS and O&G
035	pH meter, sampling device, Bottles for TSS. Yearly, bottles for bioassay
072	Bottle for TPH
073, 074	pH meter. You might need a sampling device to collect water. Bottle for TSS
089, 090	pH meter, Bottles for TSS
091	pH meter, Bottles for TPH

Table 3 shows what types of bottles and how many bottles you need to collect each test. Table 3 also tells you how long you can keep the samples before they are no good (holding time) and what you need to preserve them with (the bottles are usually already preserved, but you want to check them to make sure).

Table 3: Current Test Bottles

Test	Type of Bottle	Preservatives	Holding Times
Flow	1-liter	None	Use the 1-liter to determine how many seconds it takes to fill
pH	None	None	Analyze immediately
Temperature	None	None	Analyze immediately
TRC	None	None	Analyze immediately
TSS	1 liter plastic	6°C	7 days
BOD5	1 liter plastic	6°C	48 hours
TPH	1 liter amber, 4-VOC vials	VOC vials preserved w/1:1 HCl, 4°C	28 days (but only 7 days before it needs to get set up)
O&G	1 liter amber	H_2SO_4, 6°C	28 days
COD	250 ml plastic or glass	H_2SO_4, 6°C	28 days
Bioassay	1-gallon collapsible container	6°C	28 hours

Getting Started

To begin sampling, make sure you have everything together before you set out. The sampling kit is located in the cabinet right across from the Air Program. The kit should have:

pH meter
Bottle of deionized water (for rinsing meter probe)
pH buffers (7.0, 4.0 and 10.0). These buffers are located in the cabinet also.
Sharpie markers
Timer
Latex gloves
Wipes for pH meter
Extra 9-volt battery for pH meter
Green key for access to some outfalls

The next step is to make sure you have the right sample containers (See Tables 2 and 3) for the samples you need to get. Use an appropriate sized cooler for your samples (coolers are kept in the hallway to the REA side). You should have a plastic bag in the cooler also, to use for ice.

And next, you need to get the sampling log book. Directions for filling out the log book are available in the front pages of the book.

Once you have all the right equipment and have set up your page in the log book, you need to calibrate the pH meter. It's easier to calibrate the meter before you head off, so do it in the office.

Calibrating the pH Meter

The Orion pH meter is fairly easy to calibrate. When you calibrate, make sure you document it in the log book. In order for the sample to be valid, the pH meter must be properly calibrated and logged. DEQ looks at these records when they inspect.

To Calibrate the Meter:

First, make sure you have pH 4.0, 7.0 and 10.0 perPhect buffers.
Then, turn the meter on with the POWER button.
Rinse the probe with deionized water and BLOT DRY (don't wipe.)
Insert the probe in the 7.0 buffer first. Stir slowly. Push the "cal" key. This will put the meter in calibration mode. CALIBRATION is displayed above the main readout, and "P1" is displayed in the lower field. "P1" indicates that the meter is ready for the first buffer. When "READY" is displayed, press the "YES" key. This will hold the pH 7.00 buffer value in the meter.
"P2" will now be displayed in the lower field, meaning that the meter is now ready to take the second buffer. Use the 4.0 buffer as your second buffer. Rinse the electrode with deionized water, blot dry, and then place the probe in the 4.0 buffer. Stir slowly. When "READY" is displayed again, push the "YES" button. The meter is now calibrated.
After you push the "YES" button, the meter will give you the slope. This should be between 95-100%. If it is out of this range, it might not read the 10.0 buffer correctly, and you might have to recalibrate.
In "MEASURE" mode, read the 7.0 and 10.0 buffers. Make sure that these buffers read within 0.1 of their true value. If they don't, you have to recalibrate. For example, if the 10.0 buffer reads 9.86, you are below the 0.1 difference. But, if it reads 9.92, you are ok.


Record ALL this information in the logbook!! You must record the date and time of calibration, the values for all the buffers, your initials, the slope and temperature of the meter, and the expiration dates of the buffers. You also must note that you used fresh buffer solutions. Note any problems or corrections (ex: if you changed the battery.)

Once you have calibrated the meter, you are ready to go. Make sure you have all of your equipment before you head out the door (including manhole hooks and sampling devices, if necessary.)

Field Testing

This following section will describe how to collect samples for each test. Refer back to Table 2 to determine which test will be needed at each location.

 For each test, you must record the date and time collected, the date and time analyzed, and the result.

Flow:

Estimated flow is measured for each outfall. The easiest way to do this is to take a 1-liter bottle and determine how many seconds it takes to fill up the bottle. The logbook contains a handy-dandy calculation sheet at the front so you don't have to calculate the million gallons per day, but if you need to, here's the calculation:

Flow (MGD) = liters/second x 0.0228

This is an ESTIMATED test, meaning you don't have to be totally precise. So at outfalls where it is impossible to use the jar (for example, Outfall 010 which is at the bottom of a manhole, or Outfall 016 which has such a wide flow it would be impossible), an estimate of how many liters per second may be used.

pH:

This is another test required at all outfalls. Once the pH meter has been calibrated, it is good for the rest of the day.

The best way to test for pH is to immerse the probe directly into the flow. There will be outfalls (such as manholes) where this is not possible. At these outfalls, collect the sample in a clean container and then analyze IMMEDIATELY.

Temperature:

The pH meter is equipped with a temperature probe, so you can take the temperature the same time you take the pH. However, look at the start of the logbook before taking the temperature. The temperature probe has been calibrated against a standardized probe, and if it differs from this probe, you have to subtract the difference (or add the difference) from your result. The yearly calibration log is on Page 5 of the logbook.

So, for example, if on the calibration page, the difference between the equipment probe and the calibration probe is –0.5, you would subtract 0.5 from your reading (ex: if you read 22.5, the reading you would write down in the log book would be 22.0°C). If the difference is +0.5, you would add 0.5 from your reading (ex: 22.5 would now be 23.0°C).

Total Residual Chlorine:

TRC is taken at the all-hands pool outfall, the WTP lagoon outfall, and any outfall where a bioassay is being performed. Use the HACH colorimeter located in the cabinet. This is a fairly easy test.

Wash out the two large vials at least three times with sample water, then fill each vial to the line (about halfway up the vial.)
One of these vials will contain the blank, the other will contain the tested sample. Open a DPD Total Chlorine Powder Pillow (located in the colorimeter box) and pour into the sample vial. Cap and shake. If chlorine is present, the sample will begin to turn pink.
Cap the blank vial as well, and wipe off the outside of both vials so they're dry.
Set the timer for 3 minutes. This is how long it takes for the powder pillows to completely activate.
Put the blank in the colorimeter and cap the lid of the colorimeter over the sample, press the "ON" button (the lower middle button), then when numbers appear on the screen, press the "BLANK" button (the button on the left.) You should get a reading of "0.00".
Remove the blank and place the sample in the colorimeter and cap. Press the "READ" button on the right. The sample reading will appear on the screen.

Collecting Samples to Send to the Laboratory

Flow, pH, temperature and TRC are the only tests done in the field. If other tests are required, they must be shipped to the lab.

For all samples, the container label must be filled out fully and correctly, and should contain the following:

Customer (MCB, Quantico)
Sample Identification (Outfall 010, for example)
Collection Date and Time
Analysis needed (ex: TSS)
Any preservative (ex: for O&G, H2SO4 is added.)

Make sure you use permanent markers to fill out the label. After you have filled the label on the bottle with all pertinent information, use clear shipping tape to cover the label. This will help protect the label in case it gets wet during shipping.

Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD)

TSS and BOD samples are collected in one-liter plastic containers. No preservatives are needed. You can collect these samples by filling the container directly from the flow, or using a dipper to get the sample from the outfall, then filling up the container from the dipper. Put the container in the cooler with ice. You can get ice from the machines at Facilities Maintenance, the Log Cabin, or the WWTP.

Total Petroleum Hydrocarbons (TPH)

This test requires a set of one (1) one-liter amber bottle, and four (4) VOC vials) preserved with 1:1 HCl).

The amber bottle is labeled DRO (for diesel range organics) on the "Analysis" line on the container. You must fill this bottle straight from the source.

The VOC vials are a bit trickier. You have to fill them up so they form a meniscus at the top (the water rises slightly above the top of the vial.) Make sure there are no extra air bubbles, and screw the cap on tightly. Then, turn the vial over and lightly tap it against your hand. If there are any air bubbles in the vial, you have to start over. Since the vial is preserved with 1:1 HCl, take a few extra vials with you, because after you use them once, you can't really refill them again.

Oil and Grease (O&G)

Only one outfall gets an O&G sample, and that's Outfall 030. This sample is only collected quarterly. The O&G bottle is already preserved with H_2SO_4. Fill the bottle as full as you can get from the weir at the outfall. DO NOT transfer sample from one jar to another. Put the bottle in the cooler when you're done.

Chemical Oxygen Demand (COD)

COD samples are collected in 250 ml glass bottles preserved with H_2SO_4. Collect these samples directly from the source, and place in the cooler.

Bioassay

There are two types of bioassays collected for our permit. Outfall 016 gets a quarterly acute bioassay, and this sample is a GRAB. You only have to collect one sample and ship it. The sample is taken using a 4-liter (1 gallon) cubitainer (a collapsible plastic sample container.) Outfall 010gets a yearly chronic bioassay, which consists of grab samples taken over a week period. These samples must be coordinated with the laboratory (Coastal Bioanalytics—(804-694-8285), because each sample must be collected and shipped to the laboratory within 24 hours.

The bioassays have a separate chain-of-custody which require pH, °C and TRC tests to be run and recorded during the sampling event. This chain-of-custody form is shipped from the lab with the coolers and containers.

Filling Out the Chain-of-Custody

For all samples that need to be sent to the laboratory, a chain-of-custody (COC) must be filled out. Table 4 shows a correctly filled out COC. The name of the sampler, dates and times collected, type of sample, tests needed, and relinquisher's signature all need to be filled out correctly. Use the COC provided by the lab.

Once the COC is filled out correctly, the containers should be packed in the cooler (in ice). Put the COC in a ziplock bag and tape to the inside of the cooler lid. Tape the cooler shut,

and call the appropriate delivery service (usually UPS, FEDEX, or DHL) to pick up the samples. The samples should be shipped next day delivery.

If, for some reason, the samples will not be shipped until a future date, put the samples in the refrigerator at the Water Treatment Plant laboratory until ready to be shipped. You must write down the temperature of the refrigerator in the log book (should be < 4°C) for every day the sample is in the refrigerator (excluding weekends.)

Sample Packaging, Handling and Transportation

Here's a checklist to make sure everything is correct when you send the samples off to the lab:

Check to make sure the bottles aren't cracked or leaking
Make sure the bottle label is clearly filled out and taped over with packing tape
Make sure the pH of O&G test is < 2 (use pH strips for this)
Check the COC. Make sure that the information on the COC matches up with the information on the bottle labels. Write and sign your name, with the date and time at the bottom
Check the temperature in the refrigerator (if needed). Remember to write this down in the logbook!
The bioassay cooler comes with ice packs. Make sure you put the packs in the freezer at least by the day before so you can get the cooler at the right temp!

CHAPTER FOUR: SAFETY

Sampling outfalls contains some risk. Most of these outfalls are secluded and a few are far from help if something goes wrong. This is why it is STRONGLY ENCOURAGED that you don't sample these sites alone. Some of the risks associated with outfall sampling are:

Toxilogical

Burns from spilling acid
Poison ivy
Insect bites

Physical

Tripping and falling
Hypothermia (if you fall into a stream in cold weather!!)
Slipping
Scrapes from brambles, branches, etc.
Unstable riprap in some areas could cause falls.

 To help prevent some of these hazards, gloves and other protective clothing (such as long pants and boots) should always be worn while sampling. Try not to wear nice clothes out there—you'll just ruin 'em!

If you're allergic to poison ivy, protect yourself with poison ivy soap or protective cream. In the summer, douse yourself good with insect repellant. The landfills especially are crawling with ticks and chiggers.

 Good maintenance at the outfalls will help considerably to alleviate potential injuries. Plus, it makes the place look better. Table 5 shows a rundown of any major (or minor!) maintenance to keep these outfalls safe.

Table B-9
Recordkeeping Summary

Record Type	Agency Submittal/Frequency	Retention Period
Permitted Outfalls – annual visual monitoring inspection reports	No agency submittal unless requested to do so by VDEQ	Three years from date of inspection
Permitted Outfalls – quantitative sampling results	Include with DMR submittal to VDEQ	Three years from date of sampling
High to Medium Ranked Industrial Sites – Annual Comprehensive Site Evaluation	No agency submittal unless requested to do so by VDEQ	Three years from date of inspection
Area periodic site inspections	No agency submittal unless requested to do so by VDEQ	Three years from date of inspection
High to Medium Ranked Industrial Sites – Annual Training Records	No agency submittal unless requested to do so by VDEQ	Three years from date of training

Table B-10
MS4 Best Management Practices

Minimum Control Measures	BMPs
1. Public Education and Outreach	**BMP 1:** Publish storm water articles in the base newspaper and on the NREA website.
	BMP 2: Education in storm water, via classroom education and web-based training.
	BMP 3: Provide brochures to charity car wash functions.
2. Public Involvement	**BMP 1:** Roadside Clean-up
	BMP 2: Monitor and track storm water problems and concerns.
3. Illicit Discharge	**BMP 1:** Conduct illicit discharge survey of the Mainside Outfalls (2009)
	BMP2: Investigate and eliminate all illicit discharge potentials.
4. Construction Site Storm Water Runoff Control	**BMP 1:** Continue to monitor and inspect all construction site activity that is over one acre, or that requires an erosion and sediment control plan.
5. Post-construction Storm Water Management in New	**BMP 1:** Continue to inspect (annually) BMPs from new development and redevelopment
	BMP 2: Provide education on BMP purpose and maintenance.
	BMP 3: Continue to install storm water management for new development and redevelopment.
6. Pollution Prevention and Good	**BMP 1:** Update the Base Comprehensive Storm Water management Plan at least annually or as changes are made to the program.
	BMP 2: Update the Base SWMP on an annual basis.

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Table B-11
Storm Water Issues

Issue	Current Status	Problem	Solution
MCB Quantico Storm Water Associated With Industrial Activity			
SWPPP update	Last Updated with SWMAP in October 2010	None.	1) Update the SWPPP annually.
Industrial Training	NREA conducts industrial storm water training. Training documentation maintained by Training Coordinator.	Not easy to schedule and not all personnel available for scheduled training.	2) Implement T2 SOP SW-5, Industrial storm water training and included web-based training module for ease of use.
MCB Quantico MS4 Storm Water			
Public Education and Outreach	- Classroom education on storm water.	Need coordination with schools	3) Coordinate with schools for 2008-2009 school year.
Public Involvement and Participation	Publish storm water articles in the base newspaper and on the Natural Resources and Environmental Affairs (NREA) website.	Getting articles published	4) Telephone number in storm water brochure/on website (NREA phone #). Base housing also has a maintenance line to call for storm water problems.
	-Community storm water awareness activity.	No activity has been chosen.	5) Coordinate with Conservation Volunteer program for the community storm water activity.
Illicit Discharge Detection and Elimination	- Conduct dry weather flow survey to identify possible illicit discharges.	Funding restrictions may hinder both being performed wihin a more timely manner	6) Dry weather flow inspection complete for West side in 2007; Mainside was completed in 2009. Scheduled next in 2011/2012.
	- Investigate and eliminate illicit discharge.		
Post-construction Storm Water Management in New Development and Redevelopment	Provide maintenance for BMPs	A Mini-BOS contract was set up in the past to ensure that BMPs are maintained regularly.	7) Ensure that the contract is being performed and that reports are submitted to NREA.
Pollution Prevention and Good Housekeeping	See "MCB Quantico Industrial Stormwater" section at the beginning of this table.		

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Table B-12
Storm Water Issues Implementation Schedule

Solution	Schedule	Cost
1) SWPPP to be updated in 2011.	Oct-11	200 FTE hours per year
2) Implement Industrial storm water training on site as needed	Continuous	200 FTE hours per year
3) Coordinate with schools to provide classroom education	Continuous	200 FTE hours per year
4) Public outreach through utilization of website and Base newspaper articles.	Continuous	$1,000/year
5) Roadside Cleaning: Brig work crews and street sweeping	Continuous	$12,000-$25,000 per year for street sweeping costs
6) Complete dry weather flow survey for MCB Quantico Westside, and investigate possible illicit discharges.	Dec-12	$30,000
7) Establish a mechanism to ensure that all permanent stormwater BMPs that require maintenance are maintained properly.	Continuous	$14,000-$60,000/year, depending on the amount of maintenance necessary
8) Establish a prioritization schedule for BMP retrofits relating to pre-1995 construction on Quantico MCB	Sep-11	$160,000/year to conduct pre-1995 engineerig assessments for drainage areas for retrofit designs.

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Table B-13
MS4 Annual Report Requirements Matrix

Permit Section	Information to be included in the MS4 Annual Report	Information included in the MS4 software program	Annual Report information not in the MS4 program and where to find it	Comments
II.E.3.a.1	Name and permit number of program	Yes		Must be entered into program
II.E.3.a.2	Permit year	Yes		Must be entered into program
II.E.3.a.3	Modifications of roles or responsibilities	Yes		Must be entered into program
II.E.3.a.4	Number of new MS4 outfalls with associated acreage and HUC added in permit year	Yes/No	The HUC is not in the MS4 software. See Section 1.5 of the SWMAP	Outfall information must be entered into the program. Then can print outfall information to Excel and sort on date acquired
II.E.3.a.5	Signed certification	No	Words for certificate found in permit Section III.K.4	
II.E.3.b	Status of compliance, Assessment of appropriateness of the BMPs, Progress towards achieving the goals identified for each MCM	Yes		Must be entered into program
II.E.3.c	Results of info collected and analyzed including monitoring data during year	Yes		Must be entered into program
II.E.3.d	What being done next year	Yes		Must be entered into program
II.E.3.e	Any changes to BMPs or goals to address deficiencies	Yes		Must be entered into program
II.E.3.f	Notice that MCB Quantico is relying on another gov. entity for part of the MS4, if applicable	No	MCB Quantico is not relying on another gov. entitiy for part of the MS4	
II.E.3.g	Approval status of MS4 program	No	Acceptance letter dated July 15, 2008. Found in Appendix A of the SWMAP	

Table B-13
MS4 Annual Report Requirements Matrix

Permit Section	Information to be included in the MS4 Annual Report		Information included in the MS4 software program	Annual Report information not in the MS4 program and where to find it	Comments
II.E.3.h	Info under Section I.B.9				
	9.a	Any new info about the TMDL	No	TMDL listing found on VDEQ website http://www.deq.virginia.gov/tmdl	
	9.a	Any changes to the MS4 Program completed during year due to the TMDL	Yes		Must be entered into program
	9.b	Estimate of the volume of stormwater discharged, in cubic feet, and the quantity of the pollutant in the WLA discharged for each WLA	No	The monitoring analysis results may be entered into the MS4 but you will have to do the calculations to determine the quantity of the WLA pollutant discharged	
II.E.3.i	Number of illicit discharges identified and how they were controlled or eliminated during year		Yes		Must be entered into program
II.E.3.j	Regulated land-distrubing activities tracked under Sction II.B.4.5.c				
	c.1	Number of regulated land-distrubing activities	Yes		Must be entered into program
	c.2	Total disturbed acreage	Yes		Must be entered into program
II.E.3.k	All known permanent storm water management facility data tracked under Section II.B.5.b.6				
	6.a	Type of structural stormwater management facility	Yes		Must be entered into program
	6.b	Geographic location (HUC)	No	HUC found in the SWMAP Section 1.5	
	6.c	Impaired surface water the facility discharges to, if appliable	Yes		Must be entered into program

Table B-13
MS4 Annual Report Requirements Matrix

Permit Section	Information to be included in the MS4 Annual Report	Information included in the MS4 software program	Annual Report information not in the MS4 program and where to find it	Comments
	6.d Number of acres treated	Yes		Must be entered into program
II.E.3.l	List of new or canceled third party agreements	No	If applicable, it will be in the SWMAP	
II.E.3.m	Copies of any written comments received during a public comment periond regarding the MS4 Program Plan or any modifications	No/Yes	The citizen report module can be used for this but it was designed for people to report on illicit discharges, eroded areas, or other stormwater problems	Must be entered into program

Table B-14
Permanent Storm Water Management Structures

Location	Type	Inspection Frequency
TBS P-567 and Parking Lot	Retention basin	Annually
TBS Student Quarters Phase 1	Retention basin	Annually
SNCO	Bioretention	Annually
Heritage Center Parkway	Detention basin	Annually
TECOM	Retention basin	Annually
Camp Upshur P110 Warehouse	Extended retention enhanced	Annually
MDIA	Extended retention	Annually
Warfare Support Center	Detention basin	Annually
PPV Lyman Park North	Detention basin	Annually
PPV Lyman Park West	Detention basin	Annually
PPV White House	Bioretention	Annually
PPV 2000 Block	Bioretention	Annually
TBS BEQ	Bioretention	Annually
PPV Lyman Park South	Detention basin	Annually
PPV Geiger Ridge	Other - concrete support of slope	Annually
PPV 300 Block	Retention basin	Annually
Swain Annex Hochmouth Hall	Retention basin	Annually
Semper Fi Phase IB	Detention basin	Annually
SCIOC	Retention basin	Annually
MCCDC-3300	Wet pond	Annually
Marsh Center	Wet pond	Annually
Marine Federal Credit Union 3500	Wet pond	Annually
Naval Medical Clinic	#1 Dry pond	Annually
Naval Medical Clinic	#2 Dry pond	Annually
Crash Fire Rescue	Dry pond	Annually
OCS AIB	Dry pond	Annually
MCRTC	Dry pond	Annually
Auto Hobby Shop	Dry pond	Annually
Barber Gym	Dry pond	Annually
Library 2040	Extended dry pond	Annually
National Museum of the Marine Corps	Dry pond	Annually
Network Operations Center	Dry pond #1 and ditches leading to pond	Annually
Network Operations Center	Dry pond #2	Annually
TBS BEQ	Dry pond #1	Annually
TBS BEQ	Dry pond #2	Annually
Lucas Hall Site 1	#1 Bioretention	Annually
Lucas Hall Site 2	#2 Bioretention	Annually
2200 Parking Lot	Bioretention	Annually
Ballfield Parking Lot 2222	Bioretention pond and swale	Annually
2200 Parking Lot Annex	Filterra system	Annually
OCS AIB	Bioretention #1	Annually
OCS AIB	Biorenetion #2	Annually
OCS AIB	Bioretention 33	Annually
OCS AIB	Bioretention #4	Annually
WTBn Armory	Biofiltration	Annually
SNCO BEQ	Filterra Bioretention #1	Annually
SNCO BEQ	Filterra Bioretention #2	Annually
SNCO BEQ	Filterra Bioretention #3	Annually

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Table B-14
Permanent Storm Water Management Structures

Location	Type	Inspection Frequency
SNCO BEQ	Filterra Bioretention #4	Annually
SNCO BEQ	Filterra Bioretention #5	Annually
TBS Armory	Bioretention pond	Annually
National Museum of the Marine Corps	Bioretention pond #1	Annually
National Museum of the Marine Corps	Bioretention pond #2	Annually

Table B-15
MCB Quantico Land Cover Types

SERVICE	INSTALLATION NAME	STATE	VALUE	COUNT	LAND COVER TYPE	SQ_Meters	ACRES	GIS ACRES
Marine Corps	Quantico MCB	VA	11	3827	Open Water	3444300.00	850.7421	
Marine Corps	Quantico MCB	VA	21	4897	Developed, Open Space	4407300.00	1088.6031	
Marine Corps	Quantico MCB	VA	22	2864	Developed, Low Intensity	2577600.00	636.6672	
Marine Corps	Quantico MCB	VA	23	1667	Developed, Medium Intensity	1500300.00	370.5741	
Marine Corps	Quantico MCB	VA	24	673	Developed, High Intensity	605700.00	149.6079	
Marine Corps	Quantico MCB	VA	31	4922	Bare Rock/Sand/Clay	4429800.00	1094.1606	
Marine Corps	Quantico MCB	VA	41	175867	Deciduous Forest	158280300.00	39095.2341	
Marine Corps	Quantico MCB	VA	42	47138	Evergreen Forest	42424200.00	10478.7774	
Marine Corps	Quantico MCB	VA	43	379	Mixed Forest	341100.00	84.2517	
Marine Corps	Quantico MCB	VA	81	3678	Pasture/Hay	3310200.00	817.6194	
Marine Corps	Quantico MCB	VA	82	14207	Row Crops	12786300.00	3158.2161	
Marine Corps	Quantico MCB	VA	90	3295	Woody Wetlands	2965500.00	732.4785	
Marine Corps	Quantico MCB	VA	95	1882	Emergent Coastal Wetlands	1693800.00	418.3686	
Marine Corps	**Quantico MCB**	**VA**			**Total Land**		**58975.3008**	**59001.54**

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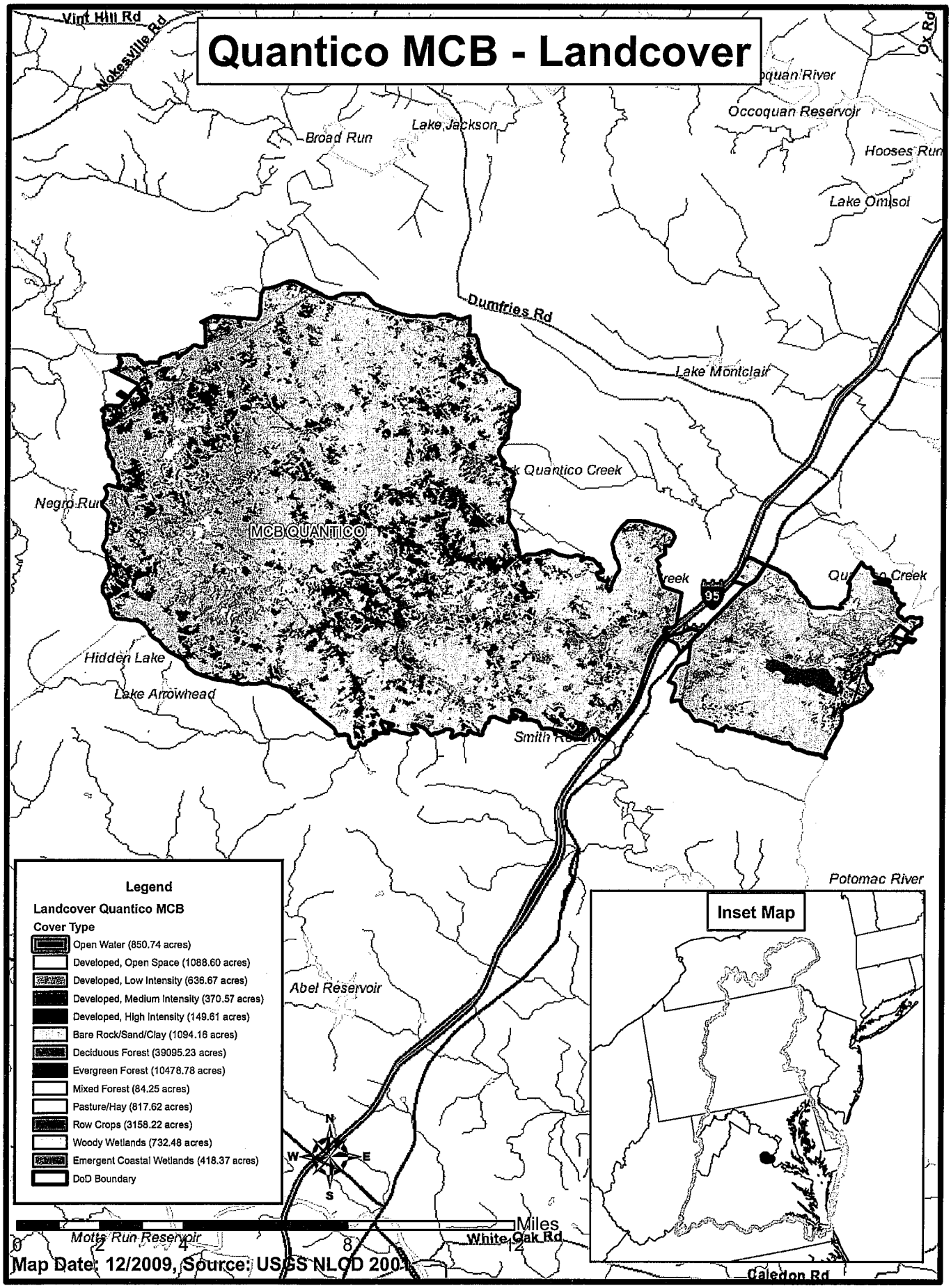
APPENDIX C
DRAWINGS AND MAPS

ALL MAPS ARE SECURED AT THE NREA OFFICES LOCATED ON THE INSTALLATION. DUE TO THE SENSITIVE NATURE OF INFORMATION, MAPS ARE ONLY AVAILABLE UPON REQUEST.


Quantico MCB - Landcover
Vint Hill Rd
Nokesville Rd
Broad Run
Lake Jackson
Occoquan Reservoir
Hooses Run
Lake Omisol
Dumfries Rd
Lake Montclair
Quantico Creek
Negro Run
MCB QUANTICO
95
Hidden Lake
Lake Arrowhead
Potomac River
Abel Reservoir
Inset Map
Legend
Landcover Quantico MCB
Cover Type
Open Water (850.74 acres)
Developed, Open Space (1088.60 acres)
Developed, Low Intensity (636.67 acres)
Developed, Medium Intensity (370.57 acres)
Developed, High Intensity (149.61 acres)
Bare Rock/Sand/Clay (1094.16 acres)
Deciduous Forest (39095.23 acres)
Evergreen Forest (10478.78 acres)
Mixed Forest (84.25 acres)
Pasture/Hay (817.62 acres)
Row Crops (3158.22 acres)
Woody Wetlands (732.48 acres)
Emergent Coastal Wetlands (418.37 acres)
DoD Boundary
N
W
E
S
Miles
0
2
4
8
12
Motts Run Reservoir
White Oak Rd
Caledon Rd
Map Date: 12/2009, Source: USGS NLCD 2001

Map 16

APPENDIX D
STORM WATER PROGRAM ANALYTICAL DATA SUMMARIES & LID

Appendix D
Analytical Sample Results

Outfall Number 3

Monthly

	Date	Time	Flow	pH	TSS	Chlorine Residual
2009 April						
May						
June						
July						
August						
Septmber						
October						
November						
December						
2010 January						
February						
March						
April						
May						
June						

No Discharges

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 9

Monthly

	Date	Time	Flow	pH	Chlorine Residual	
2009 April						
May						
June	6/1/09	1340	0.0228	7.17	0.02	
July	7/8/09	1005	0.0011	7.92	0.014	
August	8/13/09	1030	0.0011	7.79	0.1	hydrant flushing
Septmber	9/2/09	1205	0.0023	7.47	<QL	
October						
November						
December						
2010 January						
February						
March						
April						
May	5/17/10	1250	0.0228	7.69	0	
June	6/28/10	1245	0.0011	7.68	0	

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 10

Monthly

	Date	Time	Flow	pH	TEMP	Chlorine Residual
2009 April	4/13/09	930	0.0011	6.37	25	
May	5/11/09	1430	0.0114	6.44	17.4	0
June	6/1/09	1317	0.0011	6.71	16.9	0
July	7/8/09	855	0.0011	7.54	22.4	0.013
August	8/13/09	900	0.0011	7.79	22.7	<QL
Septmber	9/2/09	1045	0.0011	6.89	20.6	<QL
October	10/1/09	1405	0.0011	6.81	19.6	
November	11/5/09	933	0.0011	7.38	17.1	
December	12/9/09	1010	0.0456	7.93	9.1	
2010 January	1/6/10	1050	0.0011	7.47	7.7	
February	2/4/10	1000	0.0011	7.67	9.6	
March	3/15/10	1330	0.0114	7.67	12.2	
April	4/21/10	1230	0.0076	6.64	15.6	
May	5/17/10	1030	0.0011	6.87	16.6	0
June	6/28/10	1430	0.0011	7.01	17.1	0

Annual

Toxicity
CPH <1.0 / PPH <1.0

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Appendix D
Analytical Sample Results

Outfall Number 13

Quarterly

		Date	Time	Flow	pH
2009	April				
	May				
	June	6/3/09	1248	0.0057	6.9
	July				
	August				
	Septmber				
	October				
	November	11/23/09		0.0046	7.76
	December				
2010	January				
	February	2/26/10	1020	0.0023	8.67
	March				
	April	4/22/10	851	0.0023	8.67
	May				
	June				
	June				

Appendix D
Analytical Sample Results

Outfall Number 14

Monthly

	Date	Time	Flow	pH	TEMP
2009 April	4/13/09	850	0.0046	6.57	19.9
May	5/11/09	1455	0.0228	6.65	17.6
June	6/1/09	1422	0.0011	6.93	20.2
July	7/8/09	950	0.0011	7.12	19.2
August	8/13/09	945	0.0038	7.61	26
Septmber	9/2/09	1130	0.0015	7.27	24.2
October	10/6/09	1200	0.0011	7.1	18.7
November	11/5/09	1030	0.0046	7.31	24
December	12/9/09	1021	0.0456	7.5	8.1
2010 January	1/6/10	1000	0.0015	7.39	21.7
February	2/4/10	1100	0.0046	7.82	9.3
March	3/15/10	1410	0.0114	7.21	12.1
April	4/21/10	1240	0.0114	7.02	15.4
May	5/17/10	1130	0.0114	6.98	17.3
June	6/28/10	1350	0.0011	7.07	16.8

Appendix D
Analytical Sample Results

Outfall Number 16

		Monthly							Quarterly	
		Date	Time	Flow	pH	TSS	CL2	TEMP	TPH	TOXICITY
2009	April	4/13/09	850	0.0011	6.61	X		19.99		X
	May	5/11/09	1415	0.0114	6.33	X		16.6		
	June	6/1/09	1235	0.0228	6.31	7	0.04	17.6	<0.5	
	July	7/8/09	923	0.0011	6.94	7.2	0.011	19.2		<1.00
	August	8/13/09	935	0.0046	6.25	9.4	<QL	23.3		<1.00
	Septmber	9/2/09	1110	0.0011	6.64	12	0.01	20.2	<0.5	
	October	10/27/09		0.0228	6.52	20		18.9		
	November	11/5/09	1010	0.0023	7.31	12		14.6		<QL
	December	12/9/09	1040	0.0228	7.19	249		9.9	<QL	
2010	January	1/6/10	1018	0.0011	7.53	2		5.7		
	February	2/4/10	1030	0.0015	7.49	4.3		6.7		CDPH 5.357 PPHS 1.00
	March	3/15/10	1345	0.0114	6.96	6.6		11.3		
	April	4/21/10	1220	0.0228	7.1	22		16.8	<QL	
	May	5/17/10	940	0.0114	6.87	22	0	16.8		
	June	6/29/10	650	0.0011	7.82	4.3	0	16.2	<QL	

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 19

Annually

		Date	Time	Flow	pH	TSS	BOD	COD	TPH
2009	April	5/11/09	1340	0.0228	6.77	X	X	X	X
	May								
	June								
	July								
	August								
	Septmber								
	October								
	November								
	December								
2010	January								
	February								
	March								
	April								
	May								
	June								

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 22

Annually

		Date	Time	Flow	pH	TSS	COD	TPH
2009	January	1/13/2009	1345	0.0015	7.1	X	X	X
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	Septmber			0.0023	6.2	300	150	<QL
	October							
	November							
	December							
2010	January							
	February							
	March							
	April							
	May							
	June							

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 30

Quarterly

		Date	Time	Flow	pH	TSS	O&G
	March	3/4/09	1210	0.0023	6.00	X	X
2009	April						
	May						
	June	6/1/09	1400	0.0046	7.09	19	5.8
	July						
	August						
	Septmber	9/2/09	1150	0.0050	7.22	3.2	<0.5
	October						
	November						
	December						
2010	January						
	February	2/4/10	1115	0.0046	7.09	2.4	<0.5
	March						
	April	4/22/10	910	0.0015	6.69	2.3	<QL
	May						
	June						

Revision_____ Date_____

Appendix D
Analytical Sample Results

BOQ

Outfall Number 35

Quarterly

		Date	Time	Flow	pH	TSS
2009	April					
	May					
	June	6/1/09	1245	0.0228	6.86	<1
	July					
	August					
	Septmber	9/2/09	1100	0.0046	7.45	6.5
	October					
	November					
	December					
2010	January					
	February	2/4/10	1020	0.0046	7.95	14
	March					
	April					
	May	5/17/10	1000	0.0046	7.95	14
	June					

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 72

Quarterly

		Date	Time	Flow	pH	TPH
	March	3/30/2009	1225	0.0046	6.7	X
2009	April					
	May					
	June	6/3/09	1222	0.0228	7.21	0.11
	July					
	August					
	Septmber	9/28/09	1340	0.0015	7.55	<0.5
	October					
	November					
	December					
2010	January					
	February					
	March					
	April	4/21/10	1300	0.0228	6.8	<QL
	May					
	June					

Revision_____Date_____

Appendix D
Analytical Sample Results

Outfall Number 73

Annually

Last collected 10/28/(

	Date	Time	Flow	pH	TSS
2009 April					
May					
June					
July					
August					
Septmber					
October					
November	11/5/09	1126	0.0015	7.75	12
December					
2010 January					
February					
March					
April					
May					
June					

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Appendix D
Analytical Sample Results

08

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Appendix D
Analytical Sample Results

Outfall Number 74

Annually

Last collected 11/13/08

	Date	Time	Flow	pH	TSS
2009 April					
May					
June					
July					
August					
Septmber					
October					
November					
December	12/29/09	1130	0.0025	7.97	<QL
2010 January					
February					
March					
April					
May					
June					

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Appendix D
Analytical Sample Results

Outfall Number 86

Quarterly

		Date	Time	Flow	pH	TSS
2009	April					
	May	5/11/09	940	0.0114	7.07	X
	June	6/3/09	1120	0.0228	7.1	3
	July					
	August					
	Septmber	9/8/09	1045	0.0011	7.9	26
	October					
	November					
	December					
2010	January					
	February	2/25/10	1050	0.0114	9.23	14
	March					
	April	4/22/10	1000	0.0023	7.19	2.5
	May					
	June					

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Appendix D
Analytical Sample Results

Outfall Number 90

Quarterly

		Date	Time	Flow	pH	TSS
2009	April					
	May	5/11/09	955	0.0228	6.57	3
	June	6/3/09	1140	0.0228	6.71	8
	July					
	August					
	Septmber					
	October					
	November	11/5/09	1150	0.0023	7.16	4
	December					
2010	January					
	February	2/25/10	1115	0.0114	7.88	3.9
	March					
	April	4/22/10	1015	0.0046	6.75	3.2
	May					
	June					

Revision_____ Date_____

Appendix D
Analytical Sample Results

Outfall Number 91

Annually

		Date	Time	Flow	pH	TPH	TEMP
2009	April						
	May	5/11/09	1325	0.0000	6.47	X	17.4
	June						
	July						
	August						
	Septmber						
	October						
	November						
	December						
2010	January						
	February						
	March						
	April						
	May						
	June						

Revision_____ Date_____

Appendix D
Analytical Sample Results

Fuel Farm

Outfall Number 721

Monthly

	Date	Time	Flow	pH	Chlorine Residual	TSS	TPH	TOC	VOC
2009 June Initial	6/22/09	920	0.0684	6.97	0.15	35	0.19	3.5	x
June 20% Remaining	6/22/09	1316	0.0684	8.49	2.2	35	0.19	3.5	x
	3/10/10	1400	0.0228	7.21	0				
	3/11/10	1355	0.0228	7.23	0				

DEPARTMENT OF THE NAVY
THE ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

MEMORANDUM FOR DEPUTY CHIEF OF NAVAL OPERATIONS
(FLEET READINESS AND LOGISTICS)
DEPUTY COMMANDANT OF THE MARINE CORPS
(INSTALLATIONS AND LOGISTICS)

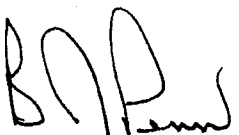
SUBJECT: Department of the Navy Low Impact Development (LID) Policy for Storm Water Management

References: (a) 33 United States Code 1251 (Clean Water Act)
(b) Title 40 Code of Federal Regulations 122, 130
(c) Department of Defense Unified Facilities Criteria 3-210-10 Design for Low Impact Development, October 2004
(d) Executive Order 13423 "Strengthening Federal Environmental, Energy, and Transportation Management", January 2007
(e) OPNAVINST 5090.1C, Clean Water Ashore Requirement, October 2007
(f) MCO P5090.2A, Water Quality Management, July 1998

BRAC 05 implementation, Department of Defense (DoD) Grow the Force Initiatives, and ongoing installation sustainment and modernization, have resulted in significant construction activity on Department of the Navy (DON) installations. New construction results in loss of natural vegetation cover and drainage capacity and increased storm water runoff. Conventional storm water collection and conveyance systems and storm water treatment options do not and can not replicate natural systems, thus increasing the volume and flow of storm water as well as sediment and nutrient loadings to streams, wetlands, and other receiving water bodies. Because of continuing water quality problems, States and the US Environmental Protection Agency are considering mandatory treatment and control of storm water. Conversely, low impact development (LID) techniques offer a suite of Best Management Practices that maintain or restore predevelopment hydrology. It mitigates the adverse effects of construction projects on water quality by cost effectively reducing the volume and pollutant loading of storm water before it reaches the receiving water bodies. LID utilizes strategies that infiltrate, filter, store, evaporate, and/or retain runoff close to its source. LID further reduces installation reliance on aging storm water management infrastructure. References (a) thru (f) provide requirements and guidance for LID.

This DON policy sets a goal of no net increase in storm water volume and sediment or nutrient loading from major renovation and construction projects[1]. 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. LID will be implemented where possible to assist DON installations in complying with references (a) and (b), as well as all applicable State and Federal requirements for sustainable development. In those infrequent situations where LID is not appropriate given the characteristics of the site, the Navy and Marine Corps are authorized to establish a waiver process that, if used, would include regional engineer level review and approval.

The Navy and Marine Corps are directed to immediately plan, program, and budget to meet the requirements of this policy starting in FY 2011. All efforts shall be made to incorporate LID practices in the fiscal years 08, 09, and 2010. The services are further directed to submit to my office an annual report that summarizes all projects that have a storm water component and identify how LID was implemented or waived. If waived, the report must identify the approving official. Naval Facilities Engineering Command, as the Department's expert in acquisition, construction, and environmental management, shall assist Navy and Marine Corps installations in meeting these policies. My point of contact for this matter is CAPT Robin Brake, robin.brake@navy.mil, (703) 693-2931.



BJ Penn

[1] Major renovation projects are defined as having a storm water component and exceeding $5 million when initially approved by DASN (I&F). Major construction projects are defined as those exceeding $750K.

Erosion & Sediment Control, Storm Water Pollution Prevention and Low Impact Development (LID) on MCB Quantico

Application & Design Guidance

EXECUTIVE SUMMARY

This guidance package was compiled by the Marine Corps Base Quantico (MCB) Natural Resources and Environmental Affairs (NREA), Water Programs Manager. It was designed to help direct and assist applicants through the entire design and permitting process for land disturbance projects on MCB Quantico. This guidance document was for use by Contractors, Contract Officers, and ROICC for use in contract preparation, quote preparation and review, site preparation, and project duration and completion.

DO I NEED TO USE THIS GUIDE?

If you are conducting, planning to conduct, preparing a Request for Proposal (RFP) to conduct land disturbing activities, as defined by the State of Virginia, Erosion and Sediment Control (E&SC) Regulations, then this guidance should be used. You may have to apply for a permit.

DO I NEED A PERMIT?

There are specific criteria for the level of land disturbance being conducted. If you have to apply for a permit, you are to submit plans and a narrative for both E&SC and Storm Water Pollution Prevention Plans (SWPPP). The cost for the permit is determined by the size and the location of the site.

WHAT IS IN THIS GUIDANCE?

This document will help you determine what permit fees and plans (E&SC, SWPPP) are required. In addition to what is required, there are many diagrams and visual aids to help in the design of your plans. In the very back is a Supplementary Forms section that contains all application forms talked about in this guide, as well as the applicable checklists that are used by NREA to review application submissions. These checklists can be used as a guide to ensure all components of your application are included prior to submittal to NREA. This will help to ensure a faster and smoother application process for your project.

The first step in the land disturbance process is to determine how much land area will be disturbed during your project. To determine which application fees apply, and if a E&SC and/or SWP3 plan will be required, please use these guidelines.

IF YOU NEED ASSISTANCE OR HAVE QUESTIONS YOU MAY CONTACT THE MCB QUANTICO WATER PROGRAMS MANAGER AT 703-432-0528.

Table of Contents

Guide To Requirements For Land Disturbances On MCB Quantico:

This guidance package is designed to help direct and assist applicants through the entire process for Land Disturbances on MCB Quantico. The following information will help the applicant determine what permit fees are required as well as what plans (i.e. Erosion & Sediment Control [E&SC] and/or Storm Water Pollution Prevention Plan [SWP3]) are required. In addition to what is required, there are many diagrams and visual aids to help in the design of your plans. In the very back is a Supplementary Forms section that contains all application forms talked about in this guide, as well as the applicable checklists that are used by NREA to review application submissions. The checklists can be used as a guide to ensure all components of your application are included prior to submittal to NREA. This will help to ensure a faster and smoother application process for you.
The first step in the land disturbance process is to determine how much land area will be disturbed during your project. To determine which application fees apply, and if a E&SC and/or SWP3 plan will be required, please use the following guidelines:

IF <2500 SQ FT (232 SQ.M., 0.057 ACRES):

No required permit, however applicable state and federal erosion and sediment control regulations still apply.

PROJECTS ≥ 2500 SQ FT:

THE FOLLOWING ARE REQUIRED FOR ALL PROJECTS ≥ 2500 SQ FT UNLESS OTHERWISE SPECIFIED:

Storm Water Construction Permit for DCR (Original Check and Signatures to be submitted through NREA)
Storm Water Pollution Prevention Plan (narrative and plans)
Erosion and Sediment Control (narrative and plans)
NREA Online Storm Water Construction Training
Onsite Responsible Land Disturber (Virginia State Certified)

a) Sites ≥2500 sq ft (232 sq.m., 0.057 acres) and within 100 feet from open water or drainage lines:

If the site is ≥2500 square feet and lies within a **resource protection area** (RPA), or an area determined by NREA to be in a sensitive area, the following is required:
This applies to all applicable size site locations 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:

1. Tidal wetlands;
2. Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
3. Tidal shores;
4. 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; (ex: county delineated RPAs) and
5. 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." (9VAC 10-20-10 et seq.).

b) For sites ≥10,000 square feet but <1 acre:

Located anywhere on Base, and more than 100ft from open water, sensitive areas, or drainage lines, the following is required:
Note: Erosion and Sediment Control (narrative and plans)- Short Form applies

c) If ≥ 43,560 sq.ft. (4,047 sq.m., 1.00 acre):

All other sites on installation

DCR Application Fees: **$200 (sites <1 acre but greater than 2500sq ft)**
$300 (1 acre but less than 5 acres)
$500 (5 acres and over)

Steps For Obtaining A Construction VPDES General Permit For Storm Water Discharges:

After you have determined your application fees and your requirements for E&SC/SWP3 you should refer to the following sequence:

It is recommended that all required submittals be provided to NREA AT LEAST 45 DAYS from anticipated date of the proposed land disturbing activity.

STEP ONE:

The following materials need to be obtained (you can find and print this information at http://www.dcr.virginia.gov/soil_and_water/vsmp.shtml or via the NREA Water Programs website at **http://www.quantico.usmc.mil/activities/display.aspx?PID=1786&Section=NREA**, there are also hard copies of this information located in the back of this pamphlet)

- VSMP general permit application form for construction activities:
- General permit notice of termination (NOT) for storm water discharges from construction activities
- Permit application fee form

STEP TWO:

Develop an Erosion and Sediment Control (E&SC) Plan *and* a Storm Water Pollution Prevention Plan (SWP3) for the project site. There is a generic SWP3 Plan that you can use (just fill in the highlighted areas with all pertinent information and attach the maps) located on the NREA Water Programs website and in the back of this pamphlet. The SWP3 and E&SC plans must be reviewed and approved by NREA prior to any land disturbance activities.

STEP THREE:

Provide NREA with a name of the Responsible Land Disturber (RLD) for the construction site. The RLD must fall under one of the following criteria to be acceptable:

- He/she must have a state RLD certificate (see http://www.dcr.state.va.us/sw/es_rld.htm for more information.), **OR**:
- Must be a certified P.E. in the state of Virginia, **OR**
- Must be enrolled in the state Erosion and Sediment Control Certification Program (see http://www.dcr.state.va.us/sw/estr&crt.htm for more info) or have obtained a state certificate through this program.

NEW TRAINING REQUIREMENT: At a minimum, all contractor RLD's are required to complete the online module of Storm Water Training at the following site:
http://nreabweb.emainc.com/MCBQ_SW_Training/SWPP%20Training/index.asp

STEP FOUR:

Provide a Storm Water Management Plan (SWMP) for review and approval.

STEP FIVE:

Fully fill out the permit registration statement and permit application fee forms.

STEP SIX:

Provide the original permit application fee form, the original check (made out to "Treasurer of Virginia") and the original registration statement to the Environmental Compliance Section, NREA Branch, who will review the forms, prepare the transmittal letter and submit the package to the Department of Conservation and Recreation (DCR).

NO LAND DISTURBING ACTIVITY CAN BEGIN UNTIL THE PERMIT HAS BEEN ISSUED BY DCR OR AFTER 15 BUSINESS DAYS FROM THE POSTMARK DATE WHEN NREA SUBMITS YOUR PERMIT TO DCR, WHICHEVER OCCURS FIRST.

STEP SEVEN:

When total 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 the Notice Of Termination (NOT) for the project and send it to the Virginia DCR. A copy of the NOT must be sent to NREA. If you have any questions about filling out these forms, please call NREA at (703) 432-0528.

Energy Independence And Security Act:

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

"Storm water 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."

INTENT OF 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 U.S. 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) evapotranspire, and/or 3) harvest and reuse precipitation near to where it falls to earth.

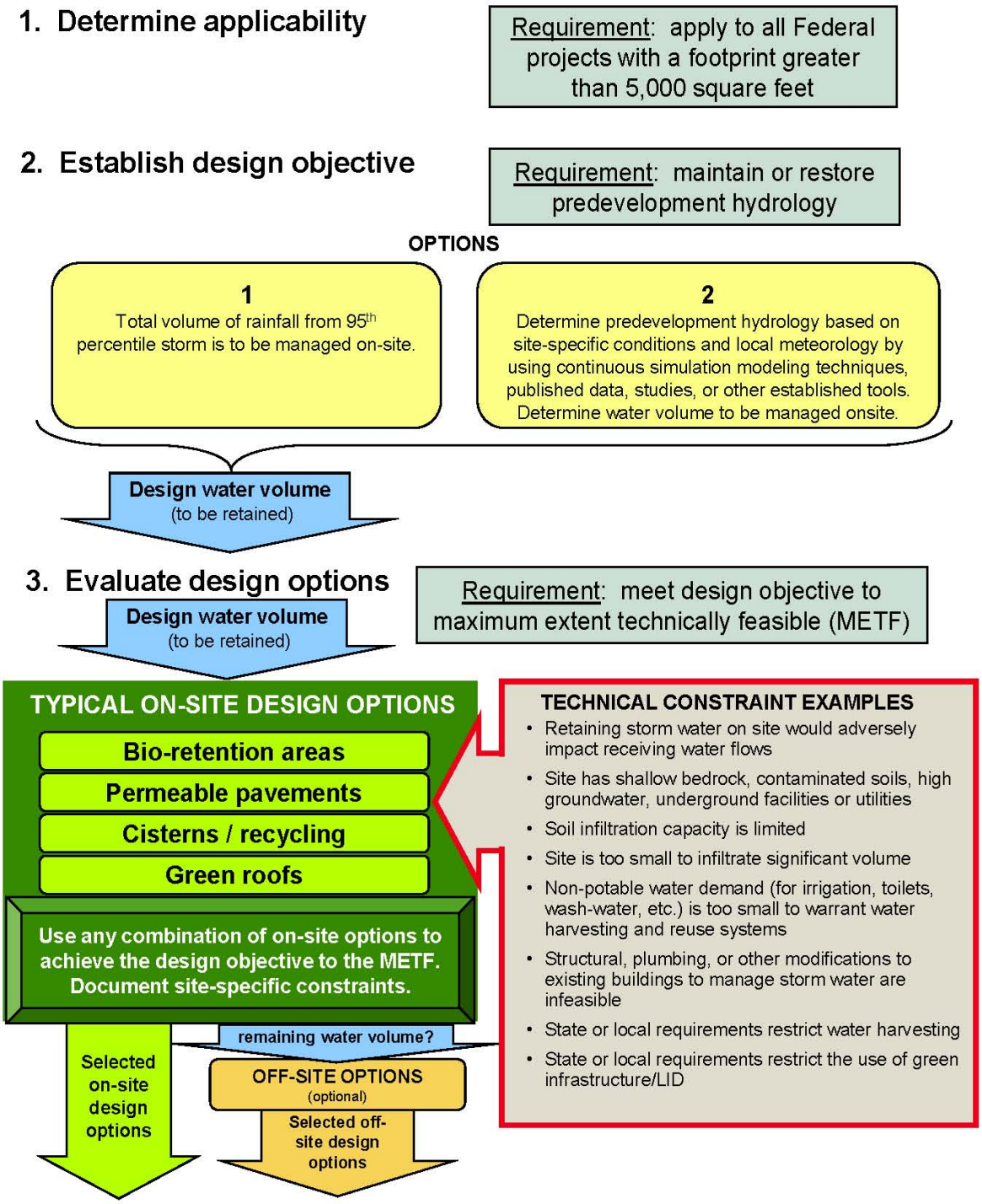
COMPLIANCE WITH SECTION 438:

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. To meet the intent of the statute, the Federal facility must use all known, available and reasonable methods of storm water retention, and/or reuse to prevent the offsite discharge of storm water runoff.

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 Low Impact Development (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.

IMPLEMENTATION OF SECTION 438:

Flowchart for EISA §438 Implementation



Low Impact Development (LID), What Is It And Do I Need It In My Project:

LOW IMPACT DEVELOPMENT (LID):

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.

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.

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.

WILL NREA REQUIRE LID FOR MY PROJECT:

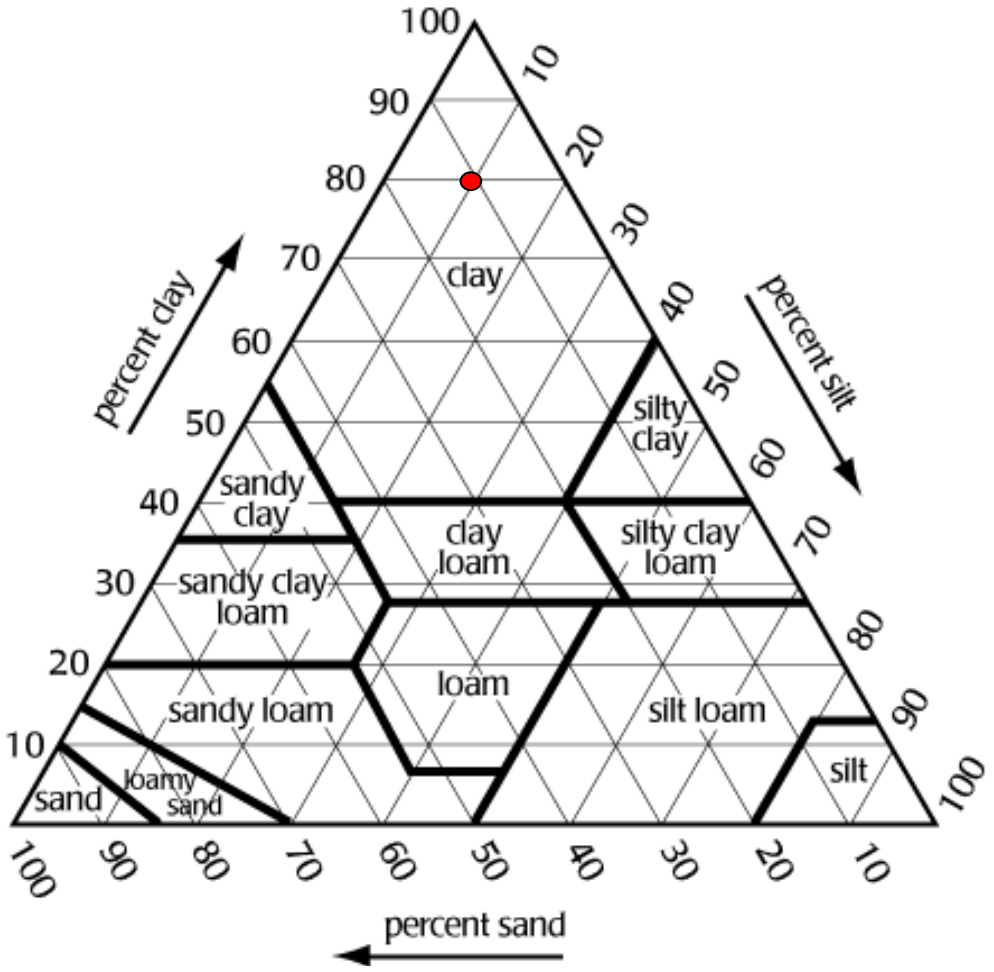
MCB Quantico began reviewing construction plans for adherence to the UFC in 2009 and will require LID integration into each land disturbing project with a Storm Water Management element in FY2011 and beyond. When designing your SWP3 plans, remember, Department of Navy (DON) policy states that all new and/or major construction projects beginning in FY2011 shall incorporate Low Impact Development (LID) features in the design. With this in mind, included is a simple guide with step-by-step instructions to help you in the process of determining where to start when designing LID devices for your project, including which devices may be most effective in different situations. The diagram below shows the most important aspects of LID that you should keep in mind when designing your LID features.

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.

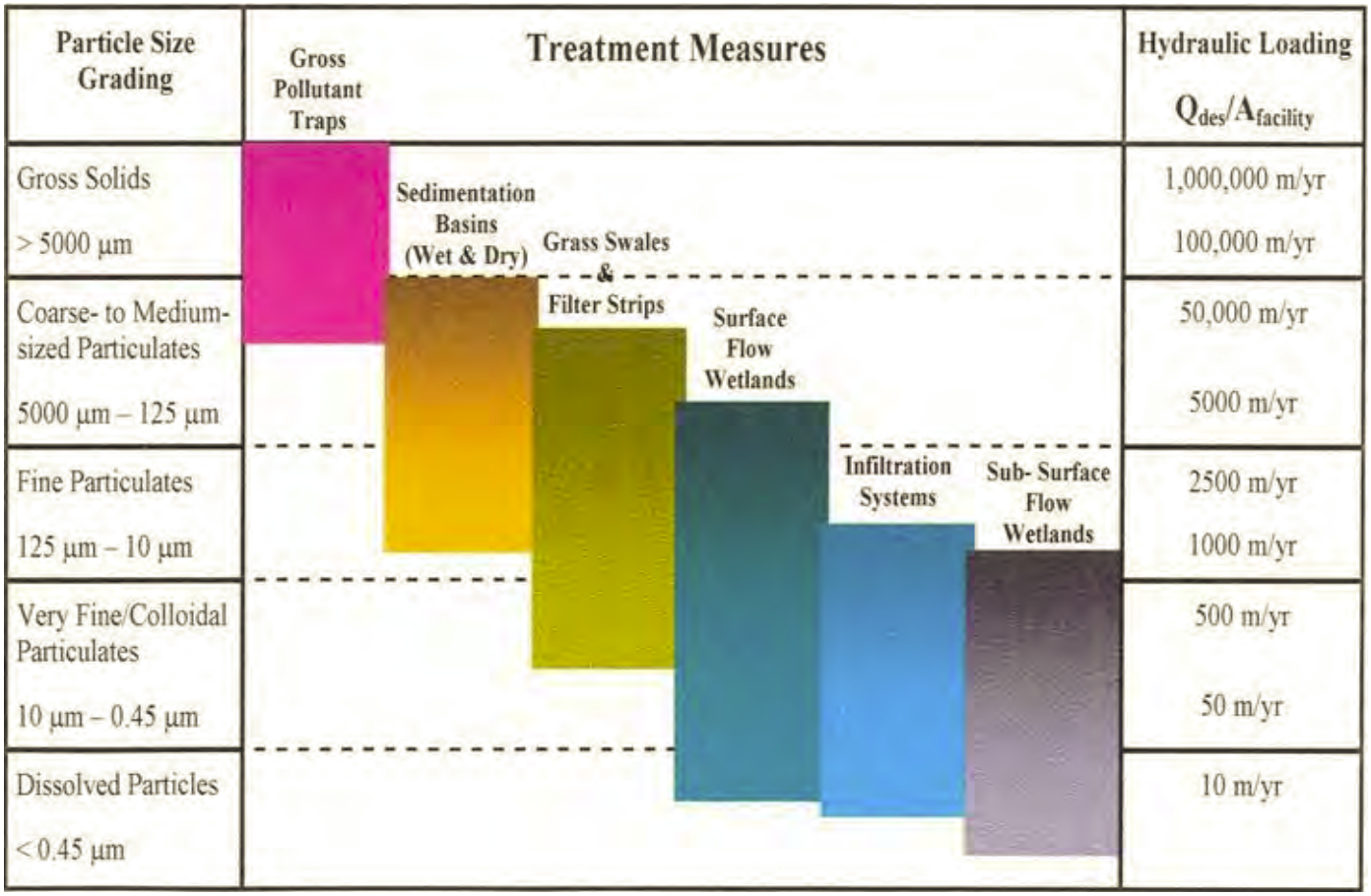
Soils and Particle Size Conversion Cheat Sheet		
Particle	**Diameter**	**Conversion**
clay	less than 0.002 mm	less than 2 µm
silt	0.002 mm - 0.05 mm	2µm - 50 µm
sand	0.05 mm - 2.00 mm	50 µm - 2000 µm
fine pebbles	2.00 mm - 5.00 mm	2000 µm - 5000 µm
medium pebbles	5.00mm - 20.00 mm	5000 µm - 20000 µm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

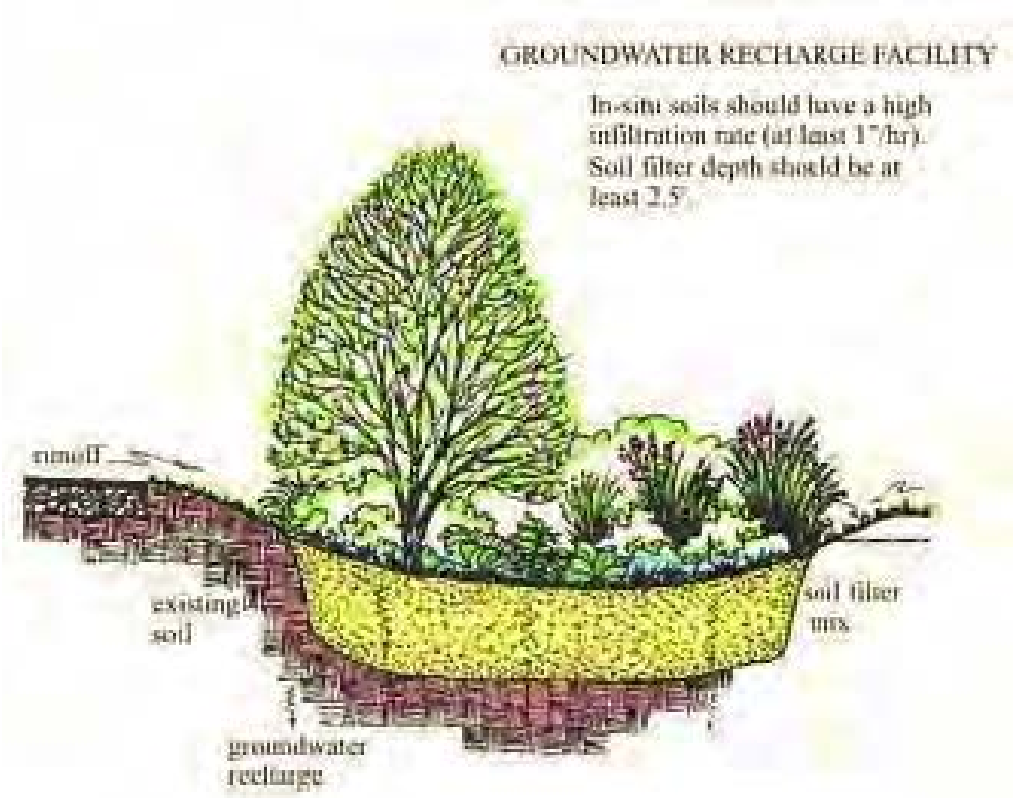
For additional reference and visual aide, see below for definitions of the basic LID features and diagrams to illustrate the basic concept/design of each feature. Remember, the following diagrams are not the only way possible to design the features. The guide is designed to be a tool to illustrate the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

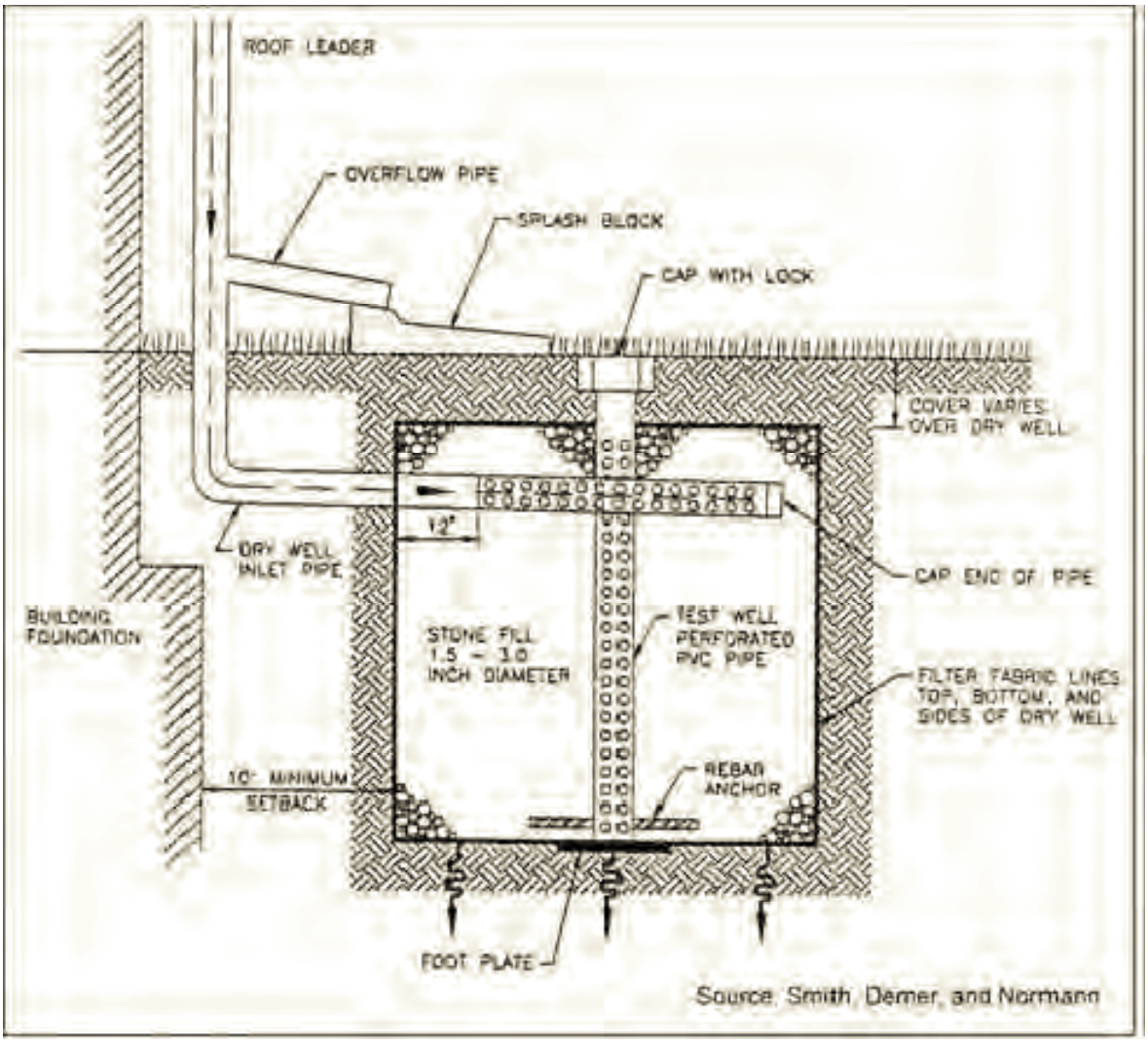
BIORENTION:

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.



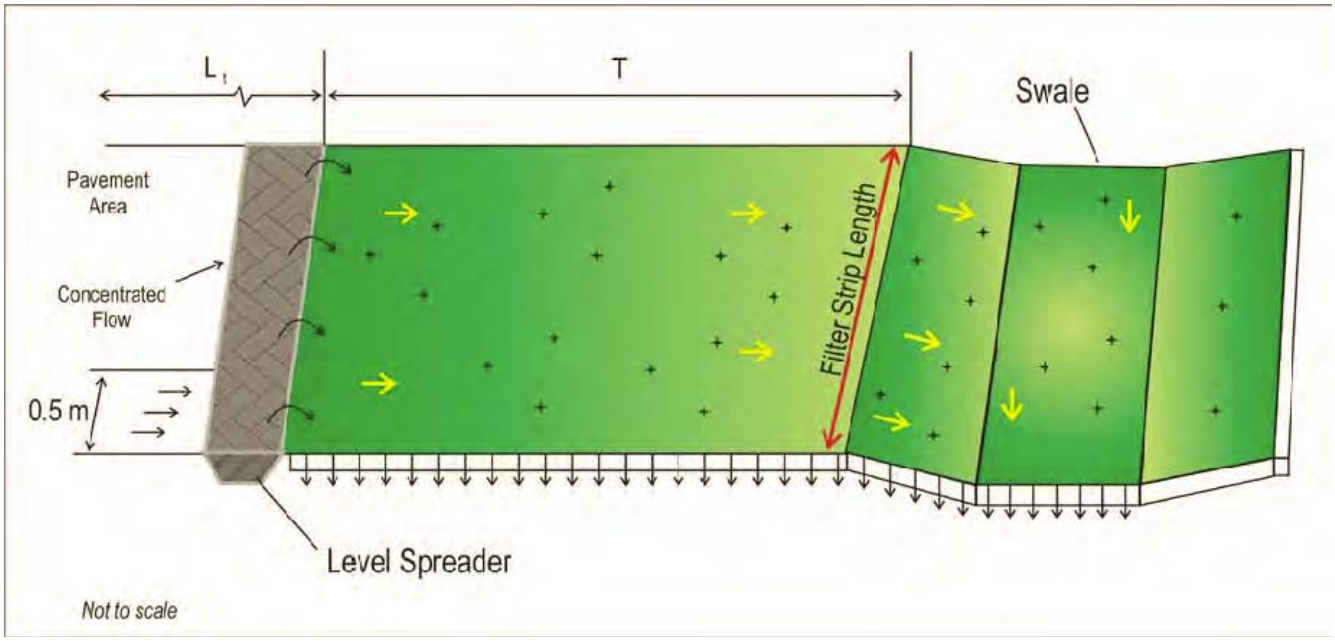
DRY WELLS:

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.



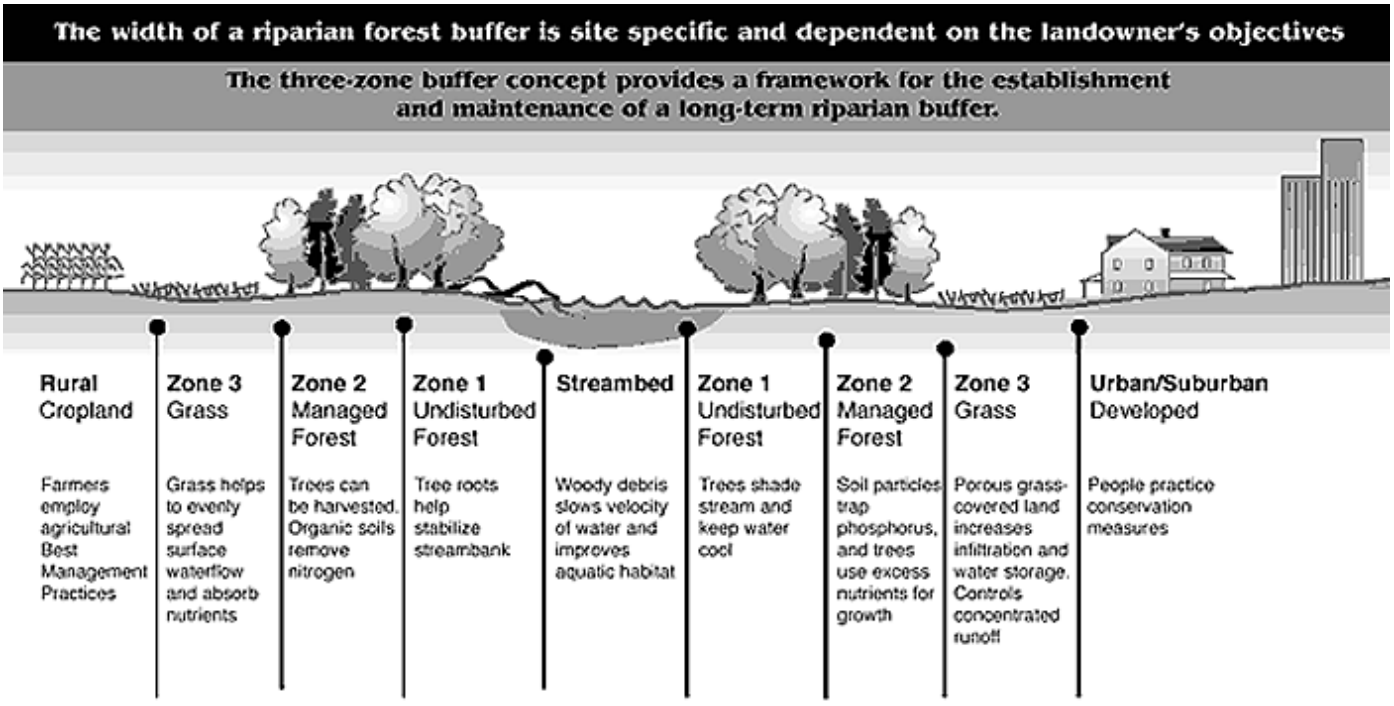
FILTER STRIPS:

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



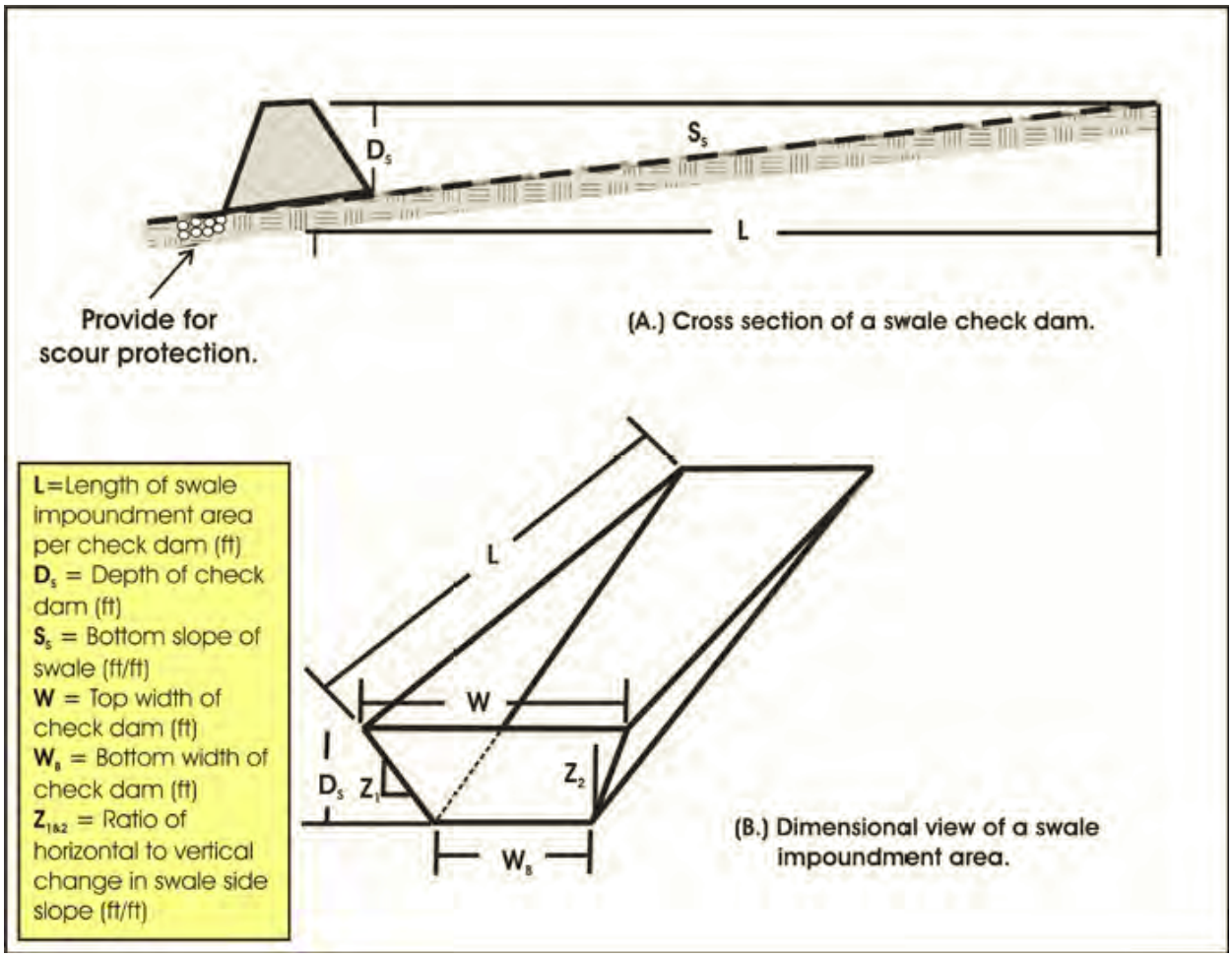
VEGETATED BUFFERS:

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



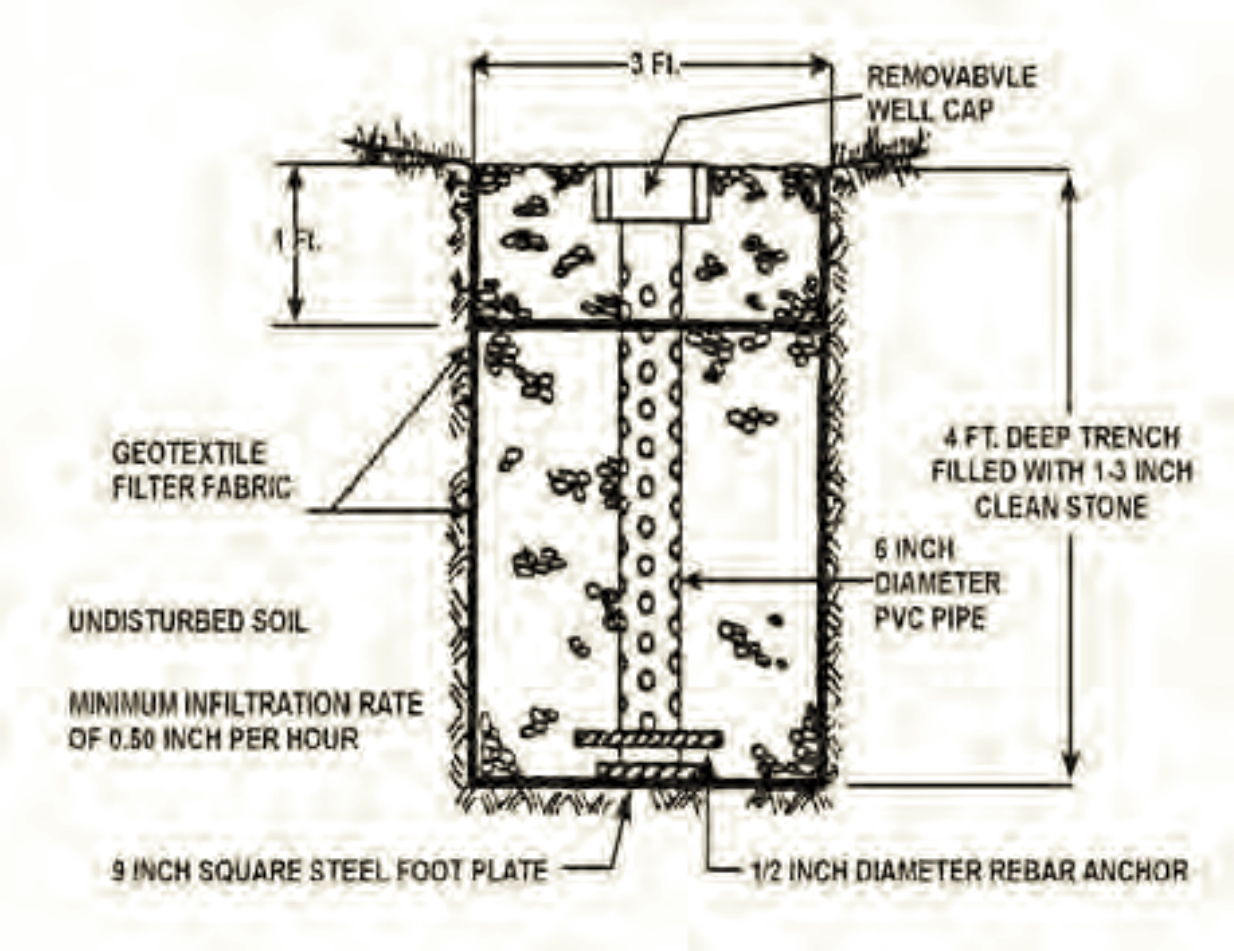
GRASSED SWALES:

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



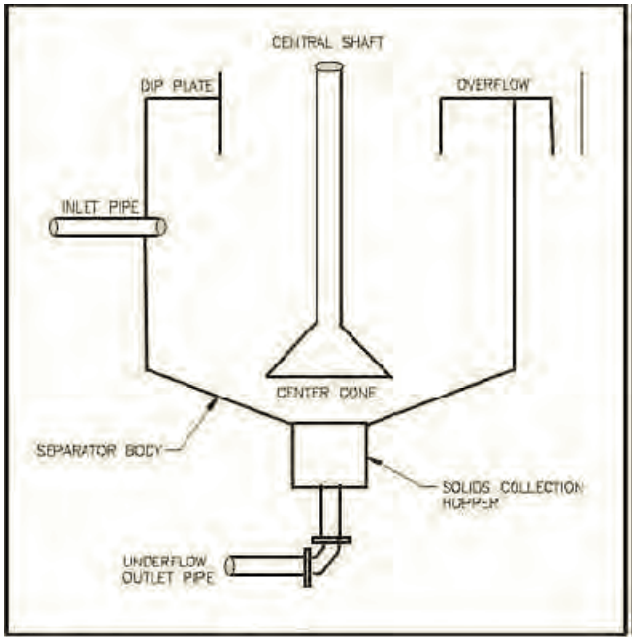
INFILTRATION TRENCHES:

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.



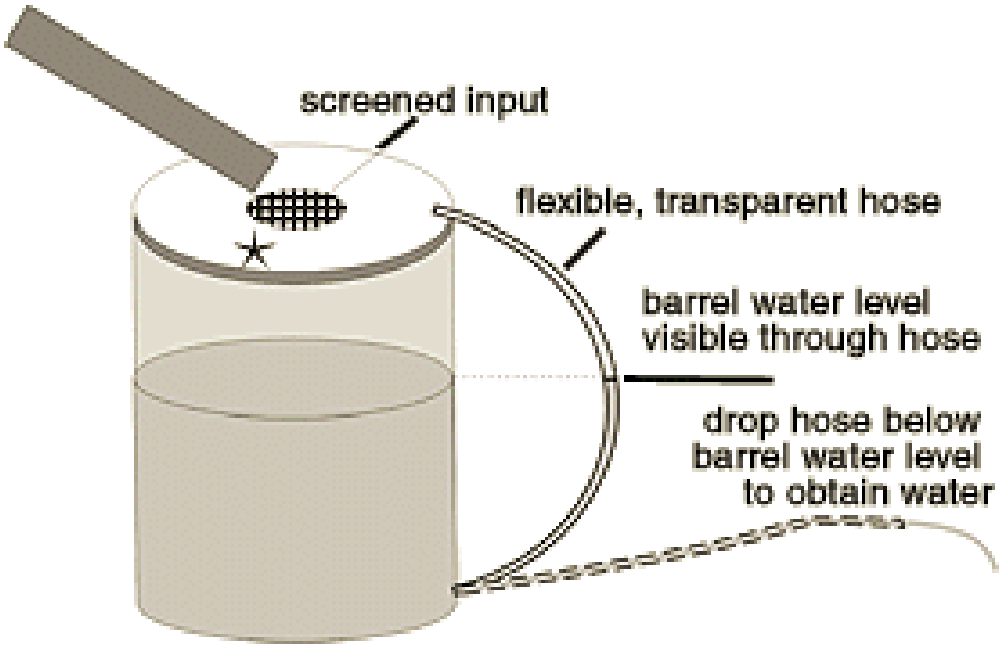
INLET DEVICES (A.K.A. HYDRODYNAMIC SEPARATORS):

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



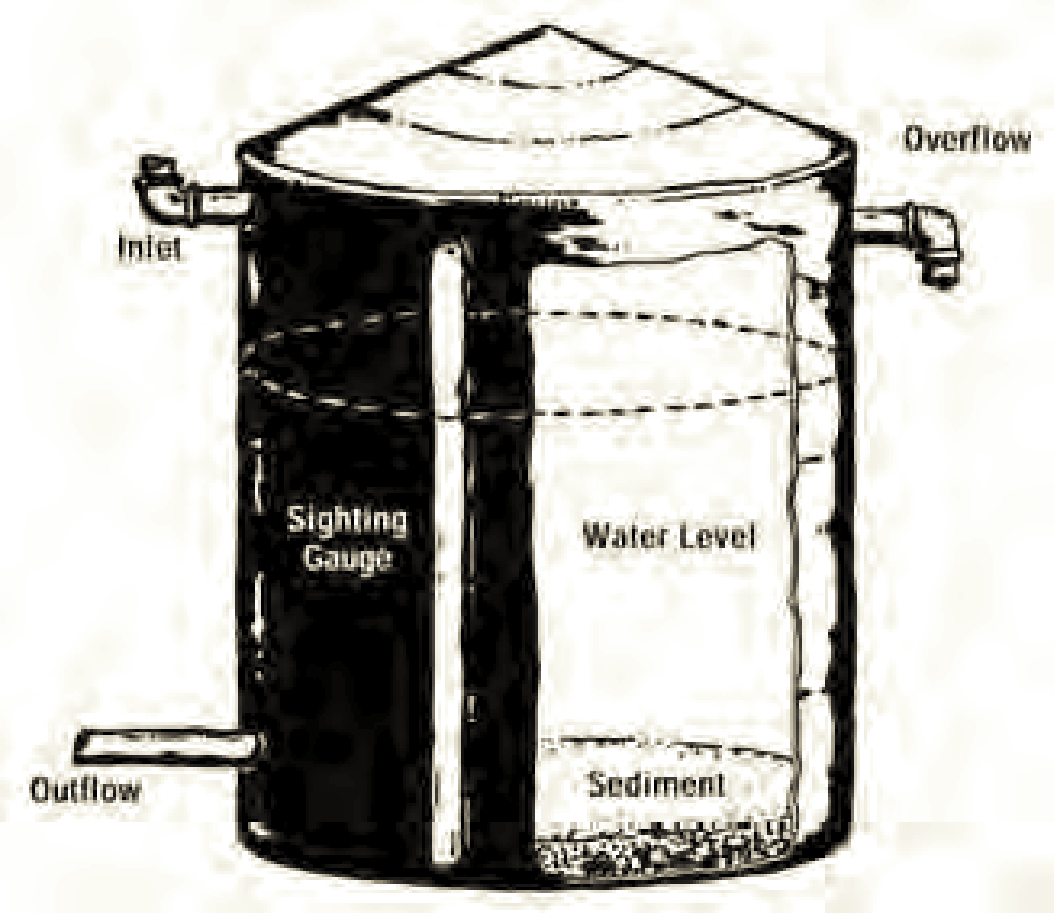
RAIN BARRELS:

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



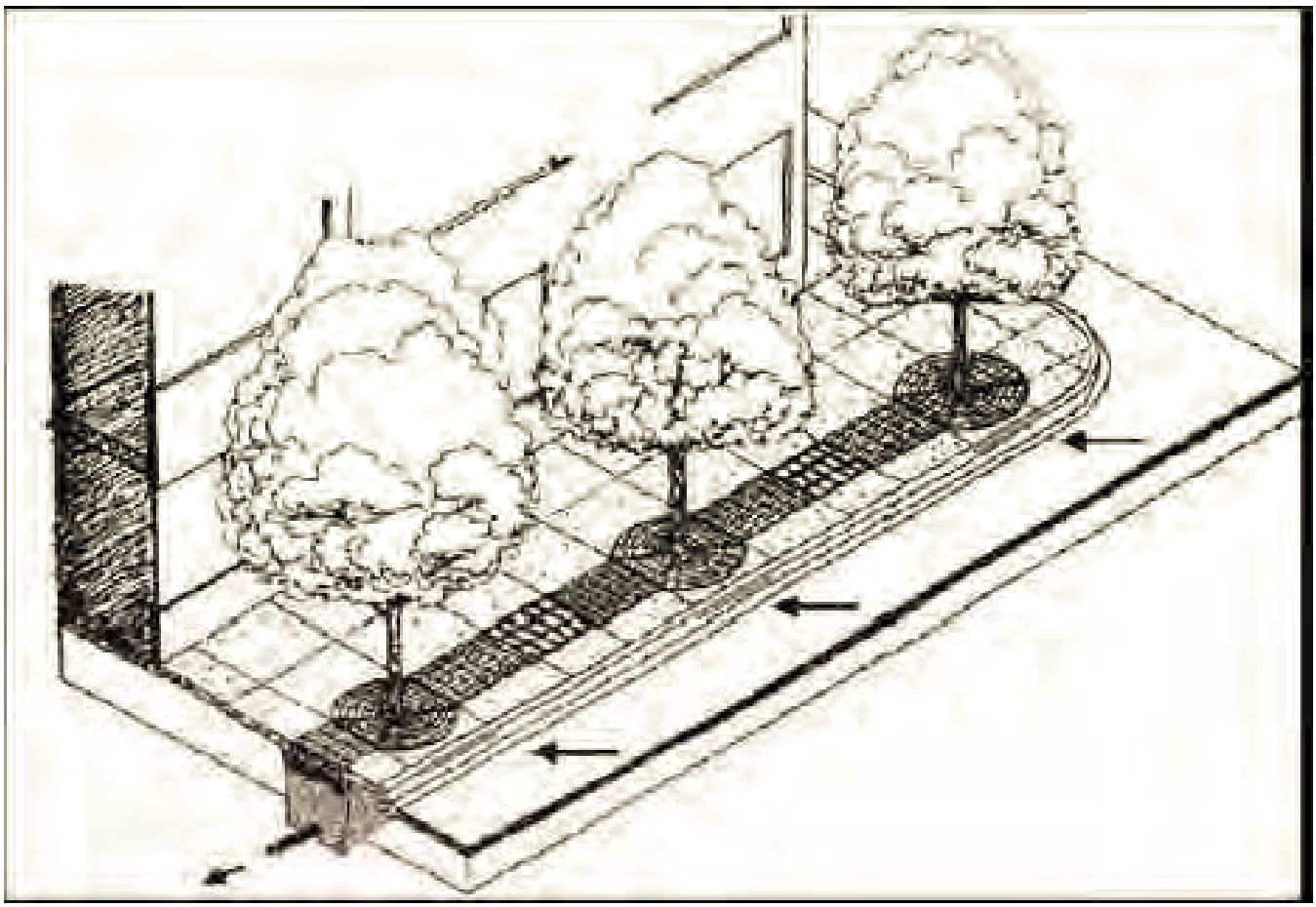
CISTERNS:

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.



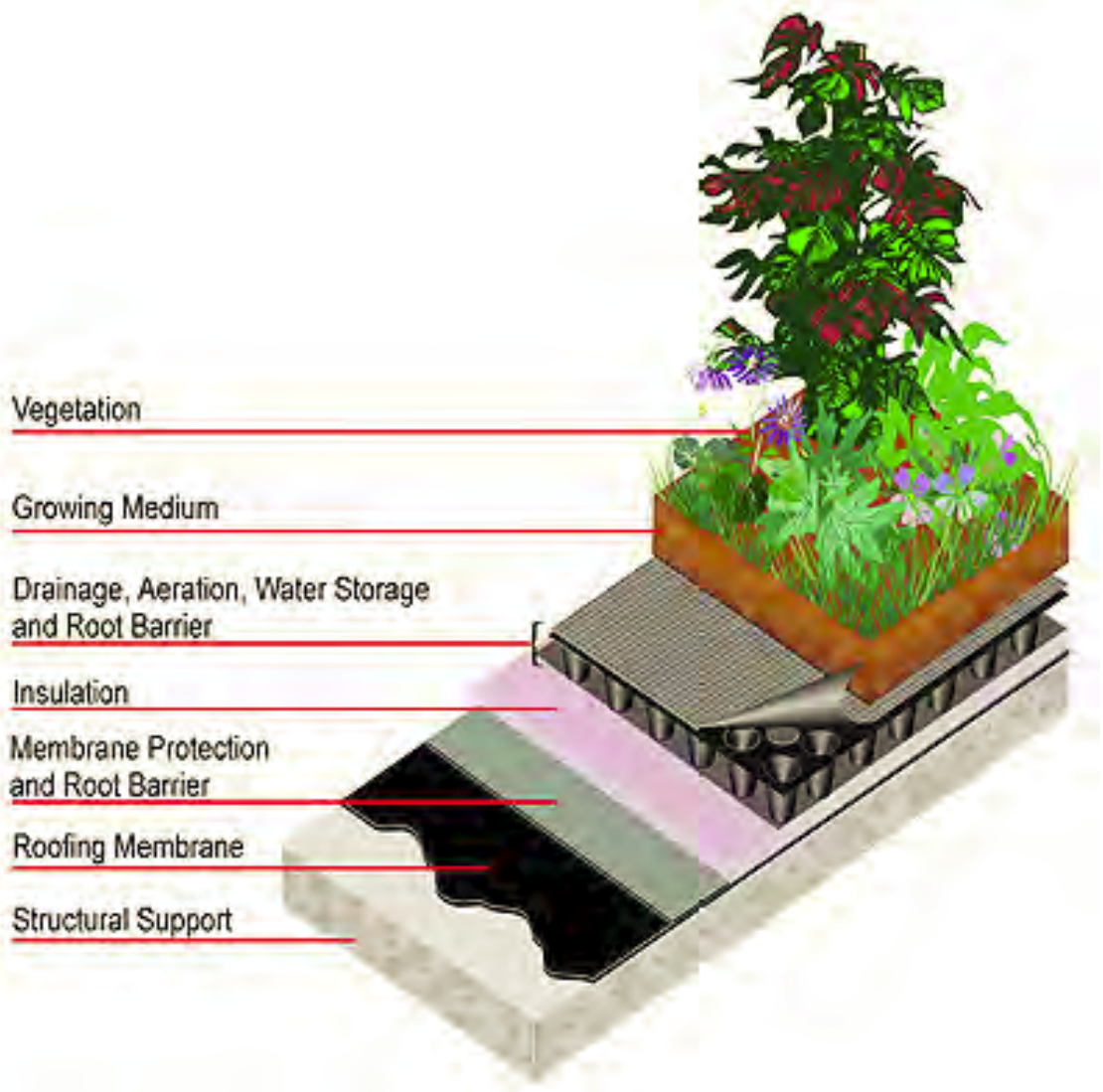
TREE BOX FILTERS:

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.



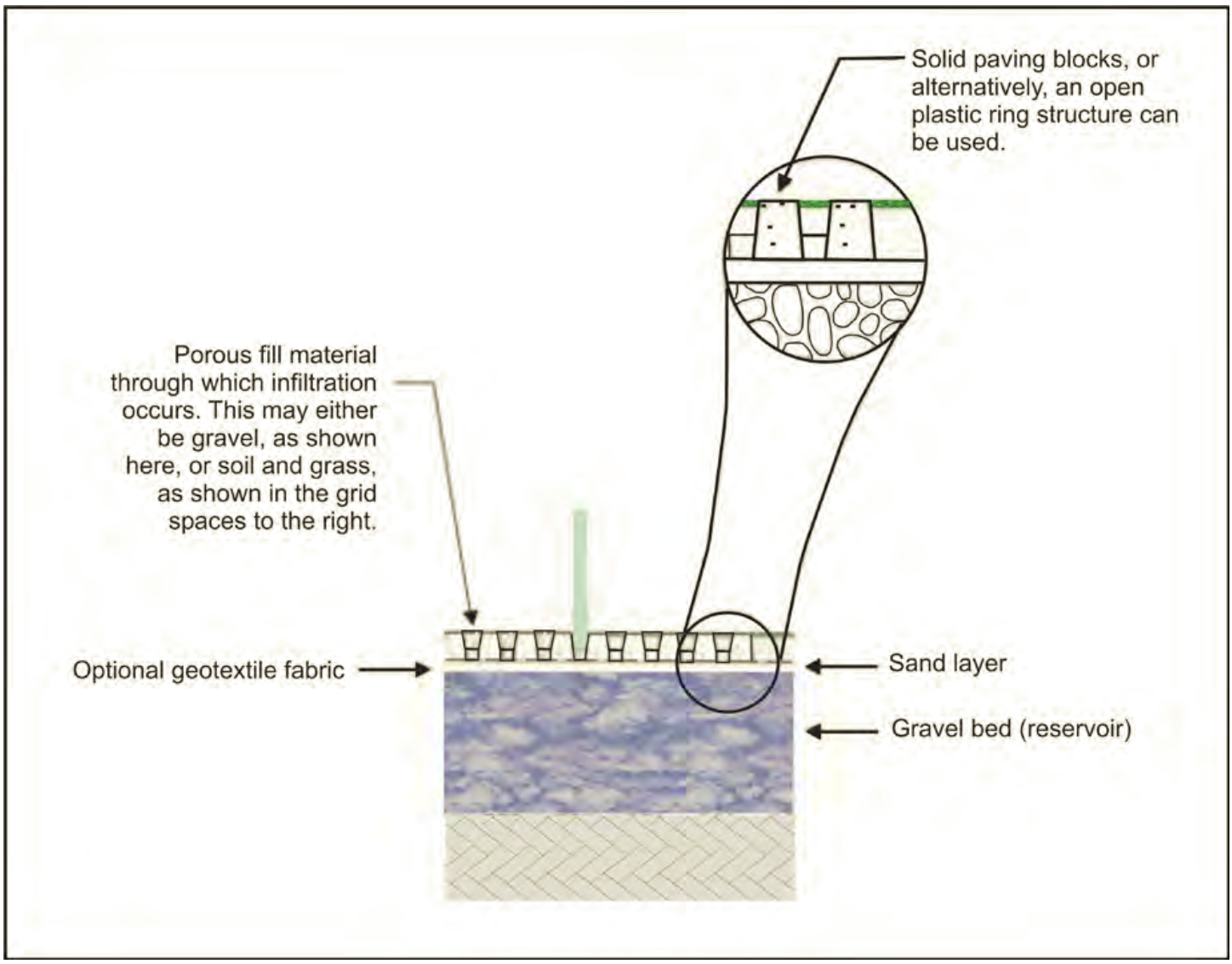
VEGETATED ROOFS:

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



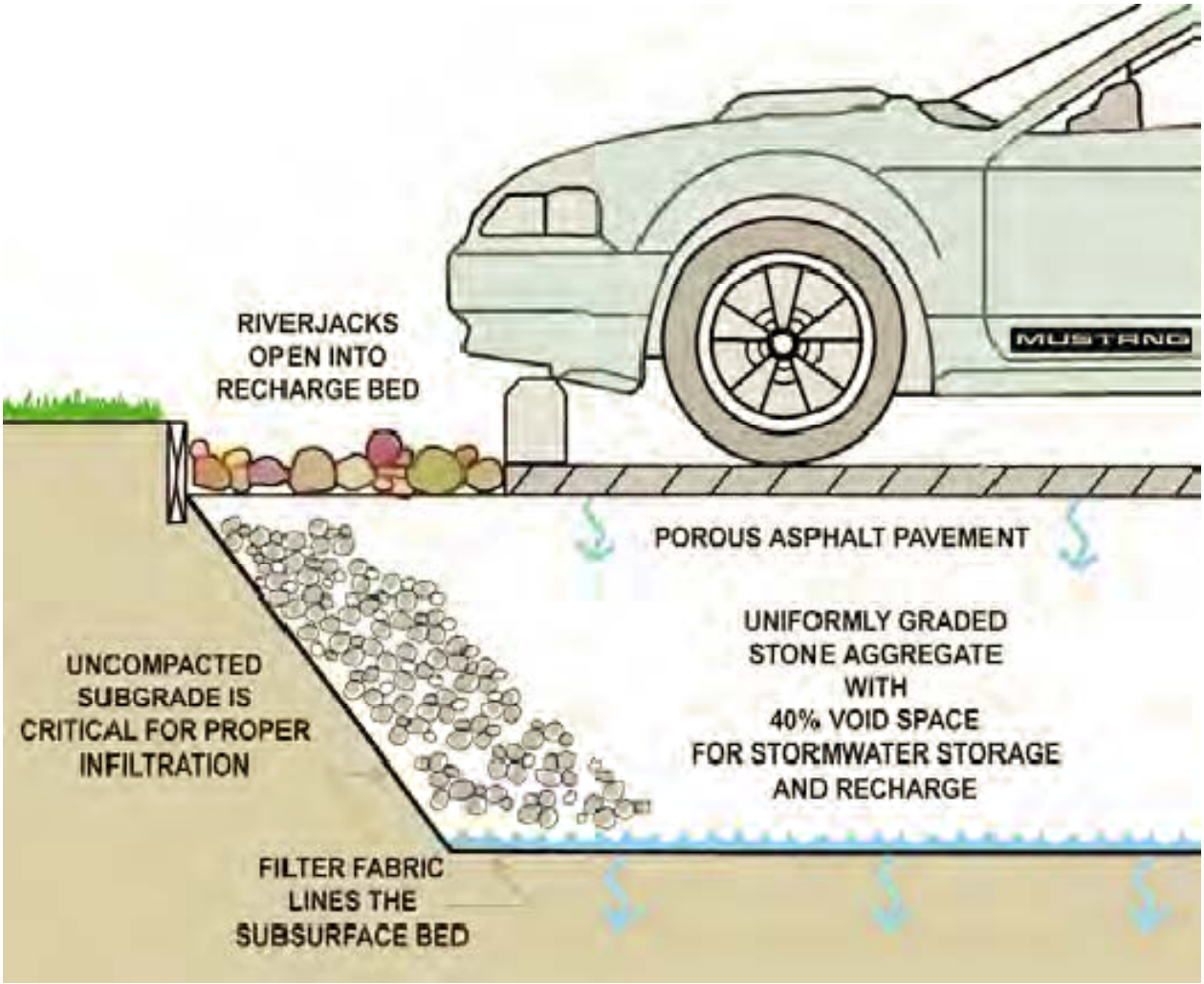
PERMEABLE PAVERS:

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.



Additional References:

For further understanding and a few additional resources, you can visit the websites listed below:

EPA – NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM:

The following website, http://cfpub.epa.gov/npdes/home.cfm?program_id=6 will take to you the EPA website for their National Pollutant Discharge Elimination System (NPDES), storm water program. You can find basic information about storm water here as well as informational guides on LID and even ones that help you design a SWPPP. You can find templates, examples, etc. on this site.

LID DESIGN GUIDANCE:

http://www.epa.gov/owow/NPS/lid/

- Here you will find design strategies, help with hydrologic analysis, and the LID Development manual (UFC 3-270-10) which was created by the Department of Defense, and it provides guidance on integrating LID into your designs.

SWPPP DESIGN GUIDANCE:

http://cfpub.epa.gov/npdes/stormwater/swppp.cfm

- Here you will find resources such as guidance on developing a SWPPP. You can view examples and templates as well as webcasts to walk you through creating an effective SWPPP

DCR – RUNOFF REDUCTION METHOD:

The Runoff Reduction Method is an innovative system for storm water design. The Runoff Reduction Method focuses on determining a BMPs' capacity for pollutant removal as well as to reduce the overall volume of runoff . The following website, http://www.dcr.virginia.gov/lr2f.shtml will take to you to the DCR Runoff Reduction Method. Here you will find several spreadsheets and guides to help you in your design process.

There are two spreadsheets, one for new development and one for redevelopment projects. There are also instructional documents, including spreadsheet instructions, a process flow chart, a document regarding assigning land cover values, and BMP design tables for use in applying the spreadsheet(s).

Supplementary Documents:

The following pages contain Supplementary Documents mentioned throughout this guidance packet. You will find the Permit Application Fee Form which outlines the application fee amounts for specified permits. Second, you will find the General Permit Application Form that is needed to apply for your storm water permit. This form needs to be filled out completely as well, along with the Permit Application Fee Form, and both signed originals need to be forwarded to NREA along with your original check, with proper fees, made out to Treasurer of Virginia. NREA will forward your forms and check along with our cover letter to DCR.
After the General Permit Application Form you will find the Notice of Termination Form. You will need this form when your construction project is complete and you have achieved Final Stabilization. Remember, NREA defines Final Stabilization as 90% coverage with 2 – 3" cuttings, or when sodded or mulched completely.

If needed, and applicable, the E&SC Plan Short Form has been included as well. An example of a concise form for calculations has been provided. This is a simplified form that allows the designer to compile all calculations and present them in one easy to read document that can be inserted into the design proposal.

In addition the needed forms, you will also find three checklists; E&SC Plan Review Checklist, SWPPP Plan Review Checklist, and the LID Plan Review Checklist. These are the same checklists NREA uses to review all plan submissions. Prior to submitting your plans, use the checklist to see if you have covered all points that NREA will be looking for in your plans. Utilizing the checklists should help to speed your application and review process by helping to eliminate unwanted and unnecessary plan changes.

Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

DEPARTMENT OF CONSERVATION AND RECREATION PERMIT FEE FORM

Instructions:
Applicants for an individual Virginia Stormwater Management Program (VSMP) Permit are required to pay permit application fees. Fees are also required for registration coverage under General Permits. Fees must be paid when applications for permit issuance or modification are submitted. Applications will be considered incomplete if the proper fee is not paid and will not be processed until the fee is received.

The permit fee schedule is included with this form. Fees for permit issuance, reissuance, modification and maintenance are included. Once you have determined the fee for the type of application you are submitting, complete this form. The original copy of the form and your check or money order payable to "Treasurer of Virginia" should be mailed to:

Department of Conservation and Recreation
Division of Finance, Accounts Payable
203 Governor Street, 4th Floor
Richmond, Virginia 23219

A copy of the form and a copy of your check or money order should accompany the permit registration statement (application). You should retain a copy for your records. Please direct any questions regarding this form or fee payment to SWMESquestions@dcr.virginia.gov.

Construction Activity Operator:

Name:_____ FIN: _____

Mailing Address:_____

City:_____ State:_____ Zip:_____ Phone:_____

Daytime Phone Number: (_____) _____ - _____

Name and Location of Construction Activity:

Name:_____

Town, City, or County:_____

Type of VSMP Permit (from Fee Schedule):

_____ MS4 Individual Permit _____ MS4 General Permit

_____ Construction Individual Permit _____ Construction General Permit

Type of Action: _____ New Issuance _____ Reissuance

_____ Modification _____ Maintenance

Amount of Fee Submitted (from Fee Schedule): _____

Existing Permit Number (if applicable): _____

FOR DCR USE ONLY

Date: _____ DC #: _____

(DCR 199-145) (03/09)

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Virginia Stormwater Management Program (VSMP) Permit Fee Schedule

A. VSMP Individual Permits. Applications for issuance of new individual VSMP permits, and for permittee initiated major modifications that occur (and become effective) before the stated permit expiration date. [NOTE: Individual VSMP permittees pay an Annual Permit Maintenance Fee instead of a reapplication fee. The permittee is billed separately by DCR for the Annual Permit Maintenance Fee.]

TYPE OF VSMP PERMIT	ISSUANCE	MODIFICATION
Municipal Stormwater / MS4 Individual (Large and Medium)	$21,300	$10,650
Municipal Stormwater / MS4 Individual (Small)	$2,000	$1,000
Construction Stormwater Individual	$0	$0

B. Registration Statements for VSMP MS4 General Permit Coverage. The fee for filing a permit application (registration statement) for coverage under a VSMP MS4 stormwater general permit issued by the permit issuing authority is as follows:

TYPE OF VSMP PERMIT	ISSUANCE
Municipal Stormwater / MS4 General Permit (Small)	$600

C. Registration Statements for VSMP Construction General Permit Coverage. The fee for filing a permit application (registration statement) for coverage under a VSMP Construction stormwater general permit issued by the permit issuing authority is as follows:

TYPE OF VSMP PERMIT	ISSUANCE
Construction General / Stormwater Management - Phase I Land Clearing ("Large" Construction Activity - Sites or common plans of development or sale equal to or greater than 5 acres)	$500
Construction General / Stormwater Management - Phase II Land Clearing ("Small" Construction Activity - Sites or common plans of development or sale equal to or greater than 1 acre and less than 5 Acres)	$300
Construction General / Stormwater Management - 2,500 square feet of land disturbance and less than 1 acre in designated Chesapeake Bay Preservations Area and not part of a common plan of development or sale.	$0

D. Permit Maintenance Fees. The annual permit maintenance fees apply to each VSMP permit identified below, including expired permits that have been administratively continued.

TYPE OF PERMIT	MAINTENANCE
VSMP Municipal Stormwater / MS4 Individual (Large and Medium)	$3,800
VSMP Municipal Stormwater / MS4 Individual (Small)	$400
VSMP General / Stormwater Management - Phase I Land Clearing ("Large" Construction Activity - Sites or common plans of development equal to or greater than 5 acres)	$0
VSMP General / Stormwater Management - Phase II Land Clearing ("Small" Construction Activity - Sites or common plans of development equal to or greater than 1 acre and less than 5 Acres)	$0

Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

VSMP General Permit for Discharges of Stormwater from Construction Activities (VAR10)

Registration Statement

(Please Type or Print All Information)

1. **Construction Activity Operator** *(The permit will be issued to this operator, and the Certification in Item #13 must be signed by the appropriate person associated with this operator [see the instructions])*

   Name:_____

   Mailing Address:_____

   City:_____ State:_____ Zip:_____ Phone:_____

2. **(Must be included for renewals of coverage only) Existing Permit Coverage #:**_____

3. **Location of Construction Activity**

   Name:_____

   Address:_____

   Town, City, County:_____ State:_____ Zip:_____

   Decimal degrees to the nearest 15 seconds : Latitude _____ Longitude _____

   Location of all Offsite Support Activities to be Covered Under the Permit

   Name:_____

   Address:_____

   Town, City, or County:_____ State:_____ Zip:_____

   If street address unavailable: Latitude _____ Longitude _____

4. **Status of Activity:** Federal ❑ State ❑ Public ❑ Private ❑ (Check one only)

5. **The Nature of the Construction Activity** (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.)**:**

   _____

6. **Name of the Receiving Water(s):** _____

   Hydrologic Unit Code (HUC): _____

   (Receiving waters identified as impaired on the 305(b)/303(d) Water Quality Assessment Integrated Report or for which a TMDL WLA has been established for stormwater discharges from a construction site shall be noted in an attached list.)

7. **If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the municipal operator of the storm sewer:**_____

8. **Estimated Project Start Date (mm/dd/yyyy):** _____ **Estimated Project Completion Date (mm/dd/yyyy)**: _____

9. **Total Land Area of Development** (to the nearest one-tenth acre)**:** _____

   Estimated Area to be Disturbed (to the nearest one-tenth acre)**:** _____

10. **Is the area to be disturbed by the construction activity part of a larger common plan of development or sale?** Yes❑ No❑

11. **Are nutrient offsets intended to be acquired for this activity?** Yes❑ No❑ Under consideration❑

12. **A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VSMP Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.**

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

    Print Name: _____ Title: _____

    Signature:_____ Date:_____

(Please sign in INK. The person signing this form must be authorized to sign on behalf the operator identified in Item #1 above.)

Mail to: Department of Conservation and Recreation, Stormwater Permitting, 203 Governor Street, Suite 206 Richmond, VA 23219

INSTRUCTIONS for FORM DCR 199-146

VSMP General Permit Registration Statement - Construction Activity Stormwater Discharges

General
A Registration Statement must be submitted to the Department of Conservation and Recreation to register for coverage under the General VSMP Permit for Stormwater Discharges from Construction Activities.

Section 1 Construction Activity Operator Information
"Operator" means the owner or operator of any facility or activity subject to the VSMP permit regulation. In the context of stormwater associated with a large or small construction activity, operator means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications or (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions).

The entities who are considered operators will commonly consist of the owner or developer of a project (the party with control of project specifications) and the general contractor (the party with day to day operational control of the activities at the project site which are necessary to ensure compliance with the permit). Contractors and subcontractors who are under the general supervision of the general contractor are not considered operators and would not need to submit a registration statement. Give the legal name of the operator, do not use a colloquial name. Enter the complete address and phone number of the operator. **The permit will be issued to this operator.**

Section 2 Existing Permit Coverage Number

For reapplications only, indicate the existing permit coverage number for the project. This section does not need to be completed for initial applications for coverage for new projects.

Section 3 Location of Construction Activity Information
Enter the activity's official name and complete street address, including town, city or county, state and ZIP code.

If the site lacks a street address, enter the town, city or county and the latitude and longitude in degrees to the nearest 15 seconds of the approximate center of the site (example 37° 30' 15" N 77° 20' 15" W).

Location of Offsite Support Activities
This permit also authorize stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that: (a) The support activity is directly related to the construction site that is required to have VSMP permit coverage for discharges of stormwater associated with construction activity; (b) The support activity is not a commercial operation serving multiple unrelated construction projects by different operators, and does not operate beyond the completion of the construction activity at the last construction project it supports; and (c) Appropriate control measures are identified in a stormwater pollution prevention plan and implemented to address the discharges from the support activity areas.

Provide the information required for each off-site support activity seeking coverage. If an off-site support activity is going to be covered by this permit the total land area of the off-site support activity and area to be disturbed by the off-site support activity need to be included in the Estimated Area to be Disturbed (Section 8).

Section 4 Status of Activity
Indicate the appropriate status (Federal, State, Public, or Private) of the activity.

Section 5 Nature of the Construction Project
Indicate the nature of the construction project (commercial, residential, agricultural, oil and gas, etc). This list is not all inclusive.

Section 6 Name of Receiving Water(s)
Enter the name of the receiving water(s) for all stormwater discharge(s), including any stormwater discharges from off-site support activities to be covered under the permit. Receiving waters identified as impaired on the 305(b)/303(d) Water Quality Assessment Integrated Report or for which a Total Maximum Daily Load (TMDL) Waste Load Allocation (WLA) has been established for stormwater discharges from a construction site shall be noted.

Hydrologic Unit Code (HUC) is a watershed unit established in the most recent version of Virginia's 6th order national watershed boundary dataset.

Section 7 Name of MS4 Operator
If the stormwater is discharged through a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4. The name of the MS4 operator is usually the Town, City, County, Institute or Federal facility where the construction activity is located.

Section 8 Estimated Project Start Date
Enter the date (Month/Day/Year) the projected is expected to start.

Estimated Project Completion Date
Enter the date (Month/Day/Year) the project is expected to be complete.

Section 9 Total Land Area of the Development
Enter the total area (to the nearest one tenth acre) of the development (meaning the total acreage of the larger common plan of development or sale). Include the total acreage of any offsite support activities to be covered under the permit.

Estimated Area to be Disturbed
Enter an estimate of the total number of acres (to the nearest one tenth acre) to be disturbed. Include in the Estimated Area to be Disturbed the area of disturbance that will occur at off-site support activities to be covered under the permit.

Section 10 Larger Common Plan of Development or Sale
Indicate if the area to be disturbed by the construction activity is part of a larger common plan of development or sale. Larger common plan of development or sale defines a contiguous are where separate and distinct construction may be taking place at different times on different schedules. Plan is broadly defined as any announcement or documentation, including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, etc., or physical demarcation such as boundary signs, lot stake, and surveyor markings indicating that construction activities may occur.

Section 11 Nutrient Offsets

Indicate if nutrient offsets are intended to be acquired in accordance with §10.1-603.8:1 of the Code of Virginia. If the acquisition of offsets is being considered but is not certain, select "under consideration."

Section 12 A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VSMP Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.

Section 13 Certification
The operator identified in Section 1 of this Registration Statement is responsible for certifying and submitting this Registration Statement. Please sign the form in INK. State statutes provide for severe penalties for submitting false information. State regulations require this Registration Statement to be signed as follows:

For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes: (i) the chief executive officer of the agency or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

The Department of Conservation and Recreation reserves the right to request additional information not directly addressed by the Registration Statement if, in its discretion, a facility or operation poses a potential impact on water quality.

Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

VSMP General Permit Notice of Termination - Construction Activity Stormwater Discharges (VAR10)

(Please Type or Print All Information)

1. **Construction Activity Operator:**

   Name:_____

   Mailing Address:_____

   City:_____ State:_____ Zip:_____ Phone:_____

2. **Name and Location of Construction Activity** (As listed on registration statement)**:**

   Name:_____

   Address: _____

   City, Town or County:_____ State:_____ Zip:_____

   If street address unavailable: Latitude _____ Longitude _____

3. **VSMP Stormwater General Permit Number:** _____

4. **The Reason for Terminating Coverage Under the General Permit** (The construction activity operator may only submit a Notice of Termination after one or more of the conditions below have been met)**:**
   - ❑ **Necessary post-construction control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible;**
   - ❑ **Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;**
   - ❑ **Coverage under an alternative VPDES or VSMP permit has been obtained; or**
   - ❑ **For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.**

The Notice of Termination must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight on the date that the Notice of Termination is submitted.

5. **Permanent Control measures Installed:** Attach a list of permanent control measures (both structural and non-structural) that will be installed at the construction site. For each BMP, include the following information: (a) Type of control measure installed and the date that it became functional as a permanent control measure; (b) Geographic location (county or city and Hydrologic Unit Code) (latitude and longitude may additionally be included if available); (c) Waterbody the control measures discharge into; and, (d) Number of acres that will be treated (to the nearest one-tenth of an acre). If no permanent control measures were installed please check this box ❑
6. **Participation in a Regional Stormwater Management Plan:** Where applicable, attach the following information related to participation in a regional stormwater management plan: (a) type of regional facility or facilities to which the site contributes; (b) geographic location of any regional facility to which the site contributes (county or city and Hydrologic Unit Code); (c) geographic location of the site (county or city and Hydrologic Unit Code) (latitude and longitude may additionally be included if available); and (d) number of acres treated by a regional facility.
7. **Nutrient Offsets:** Where applicable, attach the following information related to nutrient offsets that were acquired in accordance with §10.1-603.8:1 of the Code of Virginia: (a) name of the broker from which offsets were acquired; (b) geographic location (county or city and Hydrologic Unit Code) of the broker's offset generating facility; (c) number of nutrient offsets acquired (lbs. per acre per year); and (d) nutrient reductions achieved on site (lbs. per acre per year).
8. **Certification:**

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

   Print Name: _____ Title: _____

   Signature:_____ Date:_____

(Please sign in INK. The person signing this form must be authorized to sign on behalf the operator identified in Item #1 above.)

Mail to: Department of Conservation and Recreation
Stormwater Permitting
203 Governor Street, Suite 206
Richmond, VA 23219

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

INSTRUCTIONS for FORM DCR 199-147

VSMP General Permit Notice of Termination - Construction Activity Stormwater Discharges

General

A VSMP General Permit Notice of Termination must be submitted when an operator no longer wishes to be covered under the VSMP General Permit for Stormwater Discharges from Construction Activities.

Mail to: Department of Conservation and Recreation
Stormwater Permitting
203 Governor Street, Suite 206
Richmond, VA 23219

Section 1 Activity Operator Information

Give the legal name of the person, firm, public organization, or any other entity that was issued the general permit for the site described in this Notice of Termination. Do not use a colloquial name. Enter the complete address and phone number of the operator.

Section 2 Activity Location Information

Enter the activity's official name and complete street address, including city, state and ZIP code. If the activity or site lacks a street address, indicate the latitude and longitude to the nearest 15 seconds of the approximate center of the site.

Section 3 Permit Information

Enter the existing VSMP Stormwater General Permit number assigned to the activity or site identified in Section 1 that the operator wishes to be terminated.

Section 4 Reason for Termination

Check the appropriate statement indicating the reason for submitting this Notice of Termination. The Notice of Termination may only be submitted after one or more of the following conditions have been met:

1. Necessary post-construction control measures included in the SWPPP for the site are in place and functioning and final stabilization has been achieved on all portions of the site for which the operator is responsible;
2. Another operator has assumed control over all areas of the site that have not been finally stabilized;
3. Coverage under an alternative VPDES or VSMP permit has been obtained; or
4. For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

The Notice of Termination must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight on the date that the Notice of Termination is submitted.

Section 5 Permanent Control Measures Installed

Attach a list of the permanent control measures (both structural and non-structural) that will be installed at the construction site. For each control measure, include the following information:

(a) Type of control measure installed
(b) Geographic location (county or city and Hydrologic Unit Code)
(c) Waterbody the control measure discharge into
(d) Number of acres that will be treated (to the nearest one-tenth of an acre)

Check the box if no permanent control measures were installed.

Section 6 Participation in a Regional Stormwater Management Plan

Where applicable, attach the following information related to participation in a regional stormwater management plan: (a) type of regional facility or facilities to which the site contributes; (b) geographic location of any regional facility to which the site contributes (county or city and Hydrologic Unit Code); (c) geographic location of the site (county or city and Hydrologic Unit Code) (latitude and longitude may additionally be included if available); and (d) number of acres treated by a regional facility.

Section 7 Nutrient Offsets

Where applicable, attach the following information related to nutrient offsets that were acquired in accordance with §10.1-603.8:1 of the Code of Virginia: (a) name of the broker from which offsets were acquired; (b) geographic location (county or city and Hydrologic Unit Code) of the broker's offset generating facility; (c) number of nutrient offsets acquired (lbs. per acre per year); and (d) nutrient reductions achieved on site (lbs. per acre per year).

Section 8 Certification

State statutes provide for severe penalties for submitting false information on this Notice of Termination.

State regulations require this Notice of Termination to be signed as follows:

For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

The Department of Conservation and Recreation reserves the right to request additional information not directly addressed by the registration statement if, in its discretion, a facility or operation poses a potential impact on water quality.

Erosion and Sediment Control Plan for Projects with Land Disturbance Less Than 1 Acre

Project: _____

Project Manager: _____

Responsible Land Disturber: _____

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

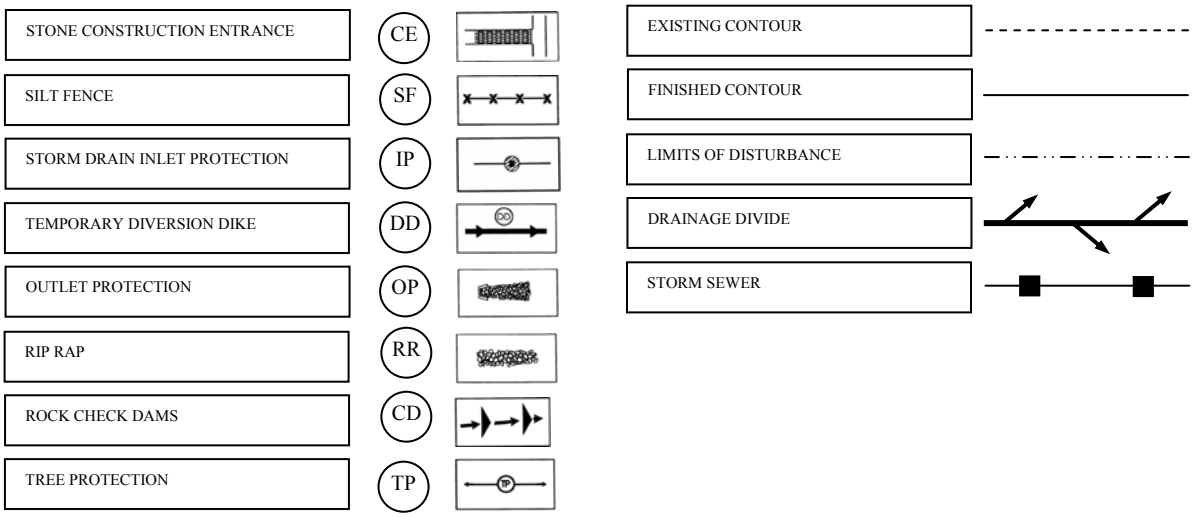
The following information is required:

1. Describe the nature, purpose, and scope of land disturbing activity
2. List all E&SC practices that will be required during all land-disturbing activities provided on the next two pages. Responsible Land Disturber should sign the acknowledgement.
3. Provide a Site Map with description of E&SC practices.

Map must include the following:

- Indicate North
- Indicate all areas that are to be cleared and graded.
- Show all improvements such as buildings, parking lots, access roads, utility construction, etc.
- Show the locations of all erosion and sediment controls and stormwater management practices used on the site.
- Show existing and final contour lines and drainage divides.

Recommended Plan Symbols:



4. Describe any off-site land-disturbing activities that will occur (including borrow sites, stockpiles, etc.)
5. Provide a schedule of regular inspections and repair of erosion and sediment control structures. Identify all post-construction maintenance requirements and responsible party for effecting all actions.
6. Use Fax Cover provided and Fax information to the Environmental Compliance Section, NREA Branch.

Erosion and Sediment Control Notes:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site.

2. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days.

3. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

4. During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures.

5. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

6. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized.

7. Permanent vegetation shall not be considered established until a ground cover is achieved that, is uniform, mature enough to survive and will inhibit erosion.

8. All measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

9. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

10. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion.

11. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

12. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

13. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

14. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

15. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
    a. No more than 500 linear feet of trench may be opened at one time.
    b. Excavated material shall be placed on the uphill side of trenches.
    c. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
    d. Restabilization shall be accomplished in accordance with the current edition of the VESCH.
    e. Applicable safety regulations shall be complied with.

17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface.

18. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day.

19. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

20. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority.

21. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

22. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system.

23. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

24. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

25. All Land Disturbing Activities aboard MCB Quantico will be conducted in accordance with the current edition of the Virginia Erosion and Sediment Control Law and Regulations (VESCLR) and the Virginia Erosion and Sediment Control Handbook, 1992 Edition (VESCH). A copy of the handbook and the approved E&SC Plan will be kept on-site at all times.

This Plan is not applicable to projects with the following characteristics:

1. Project requires a sediment trap or basin.
2. Work will be performed in live watercourses.
3. Work will be performed in any areas that could potentially be characterized as wetlands.
4. Project will involve de-watering operations.
5. Project will increase peak flows rates of stormwater runoff, add additional impervious area, or create new drainage channels.
6. Existing conditions at the project site have inadequate stormwater management measures.

Responsible Land Disturber's Acknowledgement:

Signature **(Date)**

Print Name

Title

Facsimile Transmittal

EROSION AND SEDIMENT CONTROL PLAN

MARINE CORPS BASE, QUANTICO, VIRGINIA

FROM: Company: _____

POC: _____

Phone: _____

Fax: _____

E-mail: _____

TO: Water Program, Environmental Compliance Section, NREA Branch (G-5)

Phone: (703) 784-4030

Fax: (703) 784-4953

SUBJ: **EROSION AND SEDIMENT CONTROL PLAN**

PAGES TRANSMITTED: ☐

Notes:

The Contractor should include in their E&SC and their SWPPP submittal the following type of information. This format is recommended for ease of reference.

	Pre-Construction	Post-Construction	LID Device #1	LID Device #2	LID Device #3	Location within Plans/Specs
Drainage Area A						
Drainage Area B						
Drainage Area C						

LID Practices and BMP's	Drainage Area Location	Volume Required	CFS Required	Actual Volume/CFS	Location within Plans/ Specs
Soil Amendments					
Bioretention					
Dry Wells					
Filter Strips					
Vegetated Buffers					
Grassed Swales					
Infiltration Trenches					
Inlet Devices					
Rain Barrels					
Cisterns					
Tree Box Filters					
Vegetated Roofs					
Permeable Pavers					
Permeable Pavement					

NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH
MCB QUANTICO, VIRGINIA

CHECKLIST FOR EROSION & SEDIMENTATION CONTROL (E&SC) PLAN REVIEW FOR MCB QUANTICO CONSTRUCTION PROJECTS

Construction Project Name: _____ Review Date/Time: _____

Reviewer: Nikki Bennett Title: Water Program Manager

A. PROJECT NARRATIVE REQUIREMENTS

	YES	NO	N/A
1. **Project Description:**			
a. Nature and purpose of land disturbance described?	☐	☐	☐
b. Land area (in acres) to be disturbed specified in the narrative?	☐	☐	☐
2. **Existing Site Conditions:** Description of existing topography, drainage, and vegetation provided?	☐	☐	☐
3. **Adjacent Areas:** Description of neighboring areas which might be affected by the land disturbance provided?		☐	☐
4. **Off-Site Areas:** Description of any off-site land disturbing activities (borrow pit, waste, surplus, etc.) provided?	☐	☐	☐
5. **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?	☐	☐	☐
6. **Critical Areas:** Description of areas on the site that are potential erosion problems (steep slopes, channels, underground springs) provided?	☐	☐	☐
7. **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?	☐	☐	☐
8. **Permanent Stabilization:** Brief description, including specifications, of how the site will be stabilized provided?	☐	☐	☐
9. **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?	☐	☐	☐
10. **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?	☐	☐	☐
11. **Maintenance:** A plan or schedule of regular inspections and repair of E&SC devices described?	☐	☐	☐

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?	☐	☐	☐
4. **Existing Contours:**			
a. Existing contours on site shown?	☐	☐	☐
b. Existing contours at offsite areas which will affected by the land disturbance shown?	☐	☐	☐

B. SITE PLAN REQUIREMENTS (Continued)

	YES	NO	N/A
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: _____

Construction Start Date: _____

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

Contractor POC: _____
Email:_____
Phone: _____

MCBQ ROICC POC: _____
Email:_____
Phone: _____

MCBQ PWB POC: _____
Email:_____
Phone: _____

Storm Water Pollution Prevention Plan Checklist

Site:_____ **Inspected by:**_____

SITE DESCRIPTION	YES	NO	N/A
1. Description of the nature of the construction activity			
2. 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)			
3. 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			
4. An estimate of the runoff coefficient of the site prior to construction and after construction activities are completed			
5. Existing data describing the soil or the quality of any discharge from the site			
6. A description of existing vegetation at the site			
7. A description of any other potential pollution sources, such as vehicle fueling, storage of fertilizers or chemicals, sanitary waste facilities, etc.			
8. The name of the receiving water(s) and the ultimate receiving water(s), and areal extent of wetland acreage at the site			
9. A site map indicating:			
a. drainage patterns and approximate slopes or contours anticipated after major grading activities			
b. areas of soil disturbance and areas of the site which will not be disturbed			
c. the location of major structural and nonstructural controls identified in the plan			
d. the location of areas where stabilization practices are expected to occur including the types of vegetative cover			
e. surface waters (including wetlands)			
f. locations where storm water is discharged to a surface water with an outline of the drainage area for each discharge point			
g. existing and planned paved areas and buildings			
h. locations of permanent storm water management practices to be used to control pollutants in storm water after construction activities have been completed			
i. locations of offsite mate Hal, waste, borrow or equipment storage areas covered by the plan			
j. locations of other potential pollution sources as described in 7. 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			
CONTROLS	**YES**	**NO**	**N/A**
For ***each*** specific major activity, the plan will address the following:			
1. Erosion and Sediment controls for each site			
a. 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,			
b. 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			
c. Statement saying that sediment must be removed from sediment traps or			

Storm Water Pollution Prevention Plan Checklist

Site:_____ **Inspected by:**_____

sedimentation ponds when design capacity has been reduced by 50%.			
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).			
e. Offsite material storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) where storm water discharges are authodzed by this permit are considered a part of the project and shall be addressed in the plan			
2. 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			
d. 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			
3. 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			
STORM WATER MANAGEMENT	**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			
OTHER CONTROLS	**YES**	**NO**	**N/A**
1. Statement saying that no solid materials, including building materials, garbage, and debris shall be discharged to surface waters of the State, except as authorized by a **CWA Section 404 permit**			
2. Sediment removed from the roads each day			
3. The plan shall ensure and demonstrate compliance with applicable State or local waste disposal, sanitary sewer or septic system regulations			
4, Description of construction and waste materials expected to be stored onsite with updates as appropriate			
5. 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			
6. Description of pollutant sources from areas other than the permitted construction			

Storm Water Pollution Prevention Plan Checklist

Site:_____ Inspected by:_____

activity (including storm water discharges from dedicated asphalt plants and dedicated concrete plants) that contribute to the permitted discharge			
7. Except for flows from fire fighting activities, sources of nonstorm water that are combined with storm water discharges from the construction site must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the nonstorm water component(s) of the discharge			
MAINTENANCE	**YES**	**NO**	**N/A**
1. 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			
2. If site inspections required by Part II.D.4. 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			
INSPECTIONS	**YES**	**NO**	**N/A**
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 0.5 inches or greater			
2. Inspection reports shall include:			
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			

NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH

MCB QUANTICO, VIRGINIA

CHECKLIST FOR LID (Low Impact Development) PLAN REVIEW

FOR MCB QUANTICO CONSTRUCTION PROJECTS

Construction Project Name: Review Date/Time:

Reviewer: **Steve Clark** Title: **Water Programs Manager** 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. _____	h. Inlet Devices	☐	qty. _____
b. Bioretention	☐	qty. _____	i. Rain Barrels	☐	qty. _____
c. Dry Wells	☐	qty. _____	j. Cisterns	☐	qty. _____
d. Filter Strips	☐	qty. _____	k. Tree Box Filters	☐	qty. _____
e. Vegetated Buffer	☐	qty. _____	l. Vegetated Roofs	☐	qty. _____
f. Grassed Swales	☐	qty. _____	m. Permeable Pavers	☐	qty. _____
g. Infiltration Trenches	☐	qty. _____	n. Permeable Pavement	☐	qty. _____

APPENDIX E
STANDARD OPERATING PROCEDURES

SOP Air Facility Truck Refuelers Building 5170

SOP FLSS Construction Equipment Repair Building 27054

SOP FLSS Facility Maintenance Building 3252

SOP FLSS Guad Maintenance Buildings 27000, 27001, and 27002

SOP FLSS Motor Transport Maintenance Building 2013

SOP FLSS Mainside Sewage Treatment Plant Building 660

SOP FLSS Water Treatment Plant Building 1303

SOP Logistics G-4 Fuel Farm Building 27263

SOP HMX Ground Support Equipment Building 2112

SOP HMX Hangars Airfield Buildings 2101 – 2109

SOP HMX Supply Warehouse Building 2121

SOP HMX Test Cell

SOP 4th Light Armored Reconnaissance Building 26100

SOP Logistics Division Motor Transport Maintenance Buildings 2056 and 3016

SOP MCCS Aero Club Building 5164

SOP MCCS Auto Hobby Shop Building 2080

SOP MCCS Golf Maintenance Buildings 3063, 3066, 3303 and 3306

SOP MCCS Marina Buildings 25 and 3215

SOP MCSC Amphibious Raids and Recon Building 3230

SOP MCSC Transportation Demonstration Support Area, Buffalo Area Buildings 28000, 28004, 28005, and 28009

SOP NREA Hazardous Waste Storage Facility Building 27401

SOP Command and Control Systems School Building 3185

SOP TBS Armory Building 24018

SOP TBS Maintenance Building 24101

SOP TBS Motor Transport Maintenance Building 24009

SOP FLSS TBS Power Plant Building 24162

SOP TBS Tracked Vehicle Maintenance Building 24009

SOP Weapon Training Battalion Buildings 27211, 27212, and Weapons Precision Lab

SOP Tier 1 NREA Environmental Compliance Section

SOP Tier 2 Public Works Section

SOP Tier 2 Facilities Logistic Support Services

SOP Tier 2 Resident Officer in Charge of Construction

SOP Tier 3 Construction Site Inspections

SOP Tier 3 Illicit Discharge

SOP Tier 3 Pollution Prevention

SOP Tier 3 Post Construction

SOP Tier 3 Public Education

SOP Tier 3 Public Involvement and Participation

CY11 SWP2 Inspections/Training at Industrial Sites

2011 Medium & High Risk Sites								Internal Audit (quarterly)				1st quarter			2nd quarter			3rd quarter			4th quarter		
Code	Site	Bldg. #	POC at Site	Phone #	Annual Inspection	Risk	Training Comp.	1	2	3	4	e-mail	Letter	NOV	e-mail	Letter	NOV	e-mail	Letter	NOV	e-mail	Letter	NOV
MCAF	Airfield Refueling	5170	Jim Scott	784-1453		H																	
MCCS	Auto Hobby Shop	2080	Jeff Weaver	784-1401		M																	
CCSS	Communications School	3185	GySgt Amous	432-6088		M																	
FLSS	Facilities Maintenance	3252	Ralph Williams	784-2360		H	6/29/09																
G-4	Fuel Farm	27263	Jim Woodson	784-5372		M	6/17/09																
MCCS	Golf Course Maintenance	3303, 3306, 3063, and 3066	Mike Morgan	784-2597		M																	
FLSS	Guad Maintenance	27000, 27001, and 27002	Donna Martinelli	784-5931		M	6/30/09																
MCAF	HMX-1	2101 - 2109 and Test Cells	Cpl McKinnon	784-1477		H																	
MCCS	Marina	25	Dean Atwood	784-2359		H																	
G-4	Motor Pool	3016	Andre McDonald	784-2576		M																	

CY11 SWP2 Inspections/Training at Industrial Sites

2011 Medium & High Risk Sites								Internal Audit (quarterly)				1st quarter			2nd quarter			3rd quarter			4th quarter		
Code	Site	Bldg. #	POC at Site	Phone #	Annual Inspection	Risk	Training Comp.	1	2	3	4	e-mail	Letter	NOV	e-mail	Letter	NOV	e-mail	Letter	NOV	e-mail	Letter	NOV
LAR	Motor Pool	26100	SSgt Wicker	784-4247		M																	
FLSS	Motor T Maintenance	2013	Stevan Boozer	784-2958		M	7/29/09																
FLSS	Motor Transport Maint. West	27054	Mike Butts	784-5271		M	7/29/09																
MCSC	Raids & Recon	3230	Kevin O'Brien	432-6006		H																	
TBS	TBS Maintenance	24009	Anna Smith	784-4541		M																	

CY11 SWP2 Inspections/Training at Industrial Sites

2011 Low Risk Sites

Code	Site	Bldg. #	POC at Site	Phone #	Annual Inspection	Risk	Training Completed	Internal Audit (annually)	Annual Correspondence		
								Annual Audit	e-mail	Letter	NOV
G4	Bobo Hall Dining Facility	5000				L					
MCSC	Engineer Support Area (TDSA)	28000, 28003, and 28009	Mike Anderson Jack Heric	869-2396		L	11/8/2008 1/2/2009				
NREA	Hazardous Waste Storage	27401	Dwaine O'Barr	784-0532		L					
MCAF	HMX-GSE	2112	Cpl. McKinnon	784-1477		L					
FLSS	Mainside WTP	1303	Danny Gilley	784-2698		L	7/13/09				
FLSS	Mainside WWTP	660	Dave Crosley	784-0157		L	6/19/09				
MCCS	Maintenance & Motor T	2112				L					
	Museum Restoration	2112				L					
MCAF	Supply Warehouse	2121	Cpl. McKinnon	784-1477		L					
TBS	TBS Armory	24018	Anna Smith	784-4541		L					
TBS	TBS Maintenance	24101	Anna Smith	784-4541		L					
FLSS	TBS Power Plant	24162	Lyttleton Weedon	784-1159		L	9/1/09				
WTBn	Weapons Training Battalion	27241	Sgt Romig	784-5524		L					

APPENDIX F
FORMS

F-1 Outfall Evaluation Blank

F-2 Comprehensive Site Compliance Building Evaluation Sheet with Explanation

Form F-1
MCB Quantico - Outfall Evaluation Form

Quarter:_____ Year_____

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
002 Mainside WTP		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	
Discharge Type: Filter Backwash Receiving Water: Chopawamsic Creek Treatment: Sedimentation (1 Lagoon) Sig. Materials:				
003 Mainside WTP		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Filter Backwash Receiving Water: Chopawamsic Creek Treatment: Sedimentation (1 Lagoon) Sig. Materials:				
009 NCO Swimming Pool		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Swimming Pool Filter Backwash & SW Receiving Water: Treatment: Dechlorination Sig. Materials:				

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
010 Mainside, N		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Steam condensate, NCCW, SW Receiving Water: UT to Potomac Treatment: None Sig. Materials: Herbicides, pesticides				

Form F-1

MCB Quantico - Outfall Evaluation Form

Quarter:_____ Year_____

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
013 MCCS Hobby Shop		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	
Discharge Type: Steam condensate, SW Receiving Water: UT to Potomac Treatment: None Sig. Materials: Oil, antifreeze				
014 HMX-1 Hangars		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Steam condensate, NCCW, SW Receiving Water: Potomac Treatment: None Sig. Materials: AFFF, deicing materials, oil				
016 Mainside, South		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Steam condensate, SW Receiving Water: Potomac Treatment: 2-OWS Sig. Materials: Fuels, oils				
018 HMX-1 Supply		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT to Potomac Treatment: None Sig. Materials: Paints, paint thinners, oil,				

Form F-1
MCB Quantico - Outfall Evaluation Form

Quarter:_____ Year_____

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
019 Aero Club		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	
Discharge Type: SW Receiving Water: UT to Potomac Treatment: None Sig. Materials: Fuels, oils				
022 MCCS Hobby Shop Lot		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT to Potomac Treatment: None Sig. Materials: Fuels, oil				
030 BoBo Hall		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: Refrigeration Unit Condensate Receiving Water: Potomac Treatment: None Sig. Materials: Behind Mess Hall and Building 2121				
035 BOQ		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: NCCW, Steam Condensate Receiving Water: Treatment: None Sig. Materials:				

Form F-1
MCB Quantico - Outfall Evaluation Form

Quarter:_____ Year_____

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
072 Fuel Farm		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	
Discharge Type: Hydrostatic tank test waters, SW Receiving Water: UT to Beaverdam Run Treatment: OWS Sig. Materials: Fuels				
073 MCB-2 Landfill		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT to Beaverdam Run Treatment: None Sig. Materials: Solid Waste from MCCDC				
074 MCB-2 Landfill		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT to Beaverdam Run Treatment: None Sig. Materials: Solid Waste from MCCDC				
075 CER		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Foam? ☐ Yes ☐ No Sheen? ☐ Yes ☐ No Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT to Beaverdam Run Treatment: None Sig. Materials: Fuels, oil, antifreeze				

Form F-1

MCB Quantico - Outfall Evaluation Form

Quarter:_____ Year_____

Outfall ID	Date/Time of Evaluation	Evaluation Method	Outfall Evaluation	Comments:
086 Russel Road Landfill		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	
Discharge Type: SW - Basin #1 Receiving Water: UT to Chopawamsic Treatment: Sedimentation Sig. Materials: Sediment				
090 Russel Road Landfill		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW - Basin #6 Receiving Water: UT to Chopawamsic Treatment: Sedimentation Sig. Materials: Sediment				
091 Jet Engine Test Pad		**Visual**	Discharge Present? ☐ Yes ☐ No (If **Yes**, complete the remaining): Color/Tint: _____ Odor: _____ Clarity: _____ (Indicate 1-10: 1 = Clear; 10 = Cloudy) Foam? ☐ Yes ☐ No TSS: _____ (Indicate 1-10: 1 = None; 10 = Muddy) Sheen? ☐ Yes ☐ No Floating Solids: _____ (Indicate 1-10: 1 = None; 10 = Covered)	Comments:
Discharge Type: SW Receiving Water: UT To Potomac Treatment: None Sig. Materials: Fuels, Oils				

APPENDIX G
COMPREHENSIVE SITE COMPLIANCE EVALUATION
(Beginning in FY 2012)

Instruction for Completing
Comprehensive Site Compliance Evaluation Checklist for
Building: *(Building or Facility Number)*

Date: Date of Inspection
Inspectors: Name of Inspector(s)
Building No.: Building or Facility Number
Facility Description: Facility Description
Map Sheet No.: Map Sheet
Outfall: Outfall watershed where facility is located

Tenant/Command: Building tenants

Personnel Interviewed (if applicable): Personnel at facility who provided information

Industrial Activity Description: Brief description of activity which takes place at facility with SIC code included.

Describe Material Management Practices: Simple verbiage which captures how material is managed at facility

Identify and Assess Sufficiency of Existing Structural/Non-structural/Manufactured BMPs:
Existing BMPs will be listed with a unique identification number.

Status: The status of each existing BMP will be provided. The status will indicate the sufficiency of the BMP.

Describe Status of Recommended BMPs:
Recommended BMPs will be listed with a unique identification number.

Status: The status of each recommended BMP will be provided. If the BMP was from an earlier SWPPP, the status will indicate if it has been implemented or the rationale for nonimplementation. If the BMP is from the current SCE/SWPPP Update effort, the status will indicate such.

Assess Sufficiency of Housekeeping Efforts and BMP Maintenance:

Housekeeping Efforts:

This is the assessment of the sufficiency of housekeeping efforts. If the area is orderly and well swept, it will be indicated here.

BMP Maintenance:

Each existing BMP will be identified by the same unique number used above. The observed maintenance efforts for each BMP will addressed.
Recommended BMPs will not be included in this section.

Describe Observed Evidence of Past or Potential Storm Water Pollution and Its Source:
Any indication of non-storm water discharges not allowed in the VPDES Permit will be listed and described here. In addition, any situations noted which are likely to present a potential for storm water pollution are described here.

List Any Leaks and/or Spills at this Location Since SWPPP Implementation:
Any spills at the facility will be listed here. This historical information is dependent on the facility contact.

Inspect and Inventory Spill Cleanup Equipment:
The presence of spill cleanup equipment will be indicated here. Some facilities have no need for such equipment and this line item is listed as "N/A". Some facilities may use spill equipment from an adjacent building. This information is provided when available.

Deficiencies Noted in Prior Facility Inspection Report:
Any items found to be deficient in the prior Site Compliance Evaluation are listed here and a status of the deficiency will be provided. A facility will be considered out of compliance if a prior deficiency has not been resolved.

Describe Whether the Site/Location is in Compliance with the SWPPP and Provide Recommendations to Bring the Site into Compliance, Including Additional BMPs:
For those facilities found to be in compliance with the SWPPP, a statement to that effect will be printed here. BMPs recommended to enhance storm water quality may be listed here as recommendations for the Program Manager to consider, but are not mandatory for continued compliance.

For those facilities found to be out of compliance, a statement to that effect will be listed here with specific actions to required to return to a fully compliant status.

Comprehensive Site Compliance Evaluation Checklist for Building:

Date:
Building No.:
Map Sheet No.:

Inspectors:
Facility Description:
Outfall:

Tenant/Command:

Personnel Interviewed (if applicable):

Industrial Activity Description:

Describe Material Management Practices:

Identify and Assess Sufficiency of Existing Structural/Non-structural/Manufactured BMPs:

Describe Status of Recommended BMPs:

Assess Sufficiency of Housekeeping Efforts and BMP Maintenance:

Housekeeping Efforts:

BMP Maintenance:

Describe Observed Evidence of Past or Potential Storm Water Pollution and Its Source:

List Any Leaks and/or Spills at this Location Since SWPPP Implementation:

Inspect and Inventory Spill Cleanup Equipment:

Deficiencies Noted in Facility Inspection Report:

Describe Whether the Site/Location is in Compliance with the SWPPP and Provide Recommendations to Bring the Site into Compliance, Including Additional BMPs:

APPENDIX H

List of MS4 Permit Minimum Control Measure BMPs

Site	Disturbed Acres	Total Acres	Location	New BMP	BMP Type	Receiving HUC	Impaired Waters
TBS P-567 and Parking Lot (phase II)	20.5	22	TBS	Underground Retention	Retention Pond	PL56	Unnamed Tributary
Golf Course Bridges	1	1	MS	n/a	riprap	PL52	Unnamed Tributary
Old NREA Bldg Demo	1	1	MS	none	none	PL54	Unnamed Tributary
Whiteside Apron & Hangar	21.5	21.5	MS	Detention Pond	Detention Pond	PL54, PL53	Unnamed Tributary
Greenside Apron & Hangar Phase II	22.4	26.4	MS	Detention Pond	Detention Pond	PL54	Unnamed Tributary
TBS Student Quarters Phase I	6.3	9	TBS	Retention Pond	Retention Pond	PL56	Unnamed Tributary
TBS Student Quarters Phase II	6.3	9	TBS	Retention Pond	Retention Pond	PL56	Unnamed Tributary
SNCO	1.84	1.84	MS	Bio-Retention Pond	Retention Pond	PL54	Unnamed Tributary
TECOM	2.8	4.9	MS	Detention Pond	Detention Pond	PL54	Unnamed Tributary
Camp Upshur P110 Warehouse	2.5	1.4	CU	Detention Pond	Detention Pond	PL40	Unnamed Tributary
MDIA	129.4	129.4	WS	Detention Pond	Detention Pond	PL53, PL55	Unnamed Tributary
MDIA Russell Road Ext			WS	Detention Pond	Detention Pond	PL53	Unnamed Tributary
Warfare Support Center	3.7	4.9	MS	SWM Pond	SWM Pond	PL54	Unnamed Tributary
MCIOC	4.9	14.2	WS	Detention Pond	Detention Pond	PL57	Unnamed Tributary
Russell Road Infrastructure	6.2	2	WS	Detention Pond	Detention Pond	PL53	Unnamed Tributary
Marine Corps Museum Pathways	4.3	4.3	WS	Wet / Detention Pond	Detention Pond	PL53	Unnamed Tributary
OCS Messhall	4.6	4.6	MS	Detention Pond	Detention Pond	PL53 / PL54	Unnamed Tributary
OCS Headquarters	1.4	1.4	MS	none	none	PL53 / PL54	Unnamed Tributary
Bldg #2003	0.19	0.19	MS	none	none	PL54	Unnamed Tributary
Bldg #2006	1.5	1.5	MS	none	none	PL54	Unnamed Tributary
Package Store Renovations	0.93	1.85	MS	none	none	PL53	Unnamed Tributary
Commissary Addition	3.1	16.5	MS	Detention Pond	Detention Pond	PL53	Unnamed Tributary
MSG Battalion	6.18	6.18	WS	Detention Pond	Detention Pond	PL55	Unnamed Tributary
MCIA Parking Garage	1.38	1.5	MS	n/a	n/a	PL54	Unnamed Tributary
33 Mile of Cable	30.1	34.7	WS	n/a	n/a	PL40,52,53,55	Unnamed Tributary
Mainside STP Denitrification	0.9	0.1	MS	no	none	PL54	Unnamed Tributary
Total Acres Disturbed:	284.92	321.36					

Location:
MS = Mainside
TBS = TBS
CU = Camp Upshur
WS = West Side

HUC Codes

- PL40 Cedar Run- Slate Run
- PL52 Quantico Creek
- PL53 Chopawamsic Creek
- PL54 Potomac River – Tank Creek
- PL55 Beaverdam Run
- PL56 (Upper) Aquia Creek – Cannon Creek
- PL57 (Lower) Aquia Creek – Austin Run

APPENDIX I
MS4 ANNUAL REPORT

MARINE CORPS BASE QUANTICO

MS4 Annual Report

July 2010 – June 2011

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1. INTRODUCTION

Polluted stormwater runoff is commonly transported through Municipal Separate Storm Sewer Systems (MS4s), from which it is often discharged untreated into local water bodies. To prevent harmful pollutants from being washed or dumped into an MS4, operators must obtain a NPDES permit and develop a stormwater management program.

Discharges from MS4s are regulated under the Virginia Stormwater Management Act and the Federal Clean Water Act. MS4 regulations were developed and implemented in two phases. The second phase of MS4 regulations, which became effective March 23, 2003, require that operators of small MS4s in "urbanized areas" (as defined by the U.S. Census Bureau's latest decennial census) obtain permit coverage for storm-water discharges. Small MS4s include storm sewer systems operated by cities, counties, towns, federal facilities such as military bases, Department of Defense facilities and parkways, and state facilities such as VDOT, community colleges and public universities. Marine Corps Base Quantico (MCBQ) is considered a small MS4 operator, permitted under the Virginia Stormwater Management Program MS4 General Permit; permit# VAR040069.

Small MS4 programs must be designed and implemented to control the discharge of pollutants from their storm sewer system to the maximum extent practicable in a manner that protects the water quality in nearby surface waters and wetlands.

The MS4 General Permit requires that small MS4s develop, implement and enforce a program that includes the following "six minimum control measures":

- Public education and outreach on stormwater impacts.
- Public involvement and participation.
- Illicit discharge detection and elimination.
- Construction site stormwater runoff control.
- Post-construction stormwater management in new development and redevelopment.
- Pollution prevention/good housekeeping for municipal operations.

Each of these minimum control measures has multiple requirements that the MCBQ must accomplish as part of its stormwater management program. To meet these requirements, the MCBQ has developed a stormwater program plan with proposed best management practices to help reduce the negative effects of stormwater runoff. The best management practices to be implemented by the MCBQ to meet the requirements of the MS4 General Permit are described in the CSMAP and this annual report.

The Marine Corps Base Quantico (MCB Quantico) is currently implementing Best Management Practices (BMPs) to meet each of the six Minimum Control Measures (MCMs) required by Permit Number VAR040069, issued on July 9, 2008. This report format addresses the MCMs. **Additional MS-4 Annual Report requirements can be identified by referencing Table ES-1 of the MCBQ CSMAP.**

MCB Quantico is not relying on another government entity or any qualifying local programs to satisfy any permitting requirements.

2. BACKGROUND

MCB Quantico is covered under Phase II of the federal storm water program. This rule regulates storm water discharges at MCB Quantico from two categories, which are:

- Operational requirements related to its Municipal Separate Storm Sewer System (MS4), which is defined as the system of storm water conveyances (including ditches, catch basins, piping) owned and operated by MCB Quantico.
- Construction activities disturbing land between 1 and 5 acres in size which occur on MCB Quantico property.

As a Department of Defense (DOD) facility in an urbanized area (UA), MCB Quantico is considered a small MS4, which subjects it to the federal Phase II storm water requirements and state requirements. MCB Quantico is also subject to the requirements of the Chesapeake Bay Preservation Act, which places additional restrictions on land disturbing activities.

MCB Quantico maintains Virginia Pollutant Discharge Elimination System (VPDES) permit VA002151 for industrial waste water discharges and an associated storm water pollution prevention plan (SWP3). The SWP3 partially overlaps with the requirements under the MS4 permit and was consolidated in Fiscal Year 2011 into the existing Comprehensive Storm Water Management Action Plan (SWMAP).

For reporting purposes, the watersheds surrounding MCBQ are assigned a specific code. The United States Geological Survey has categorized all of the watersheds in the United States by using Hydrologic Unit Codes (HUC). The HUC is an 8-digit code that refers to the specific watershed in which the site (in this case, Quantico) is located. The code for the mid-Atlantic region is 02. Within the mid-Atlantic region, the code for the lower Chesapeake region is 0208, and 0207 is the code for the Potomac region. The code for the lower Potomac (MCB Quantico is in this region) is 02070011. All discharges of concern from MCB Quantico are to the Potomac.

3. CURRENT PERMIT BMPS AND GOALS

MCB Quantico has selected BMPs under each of the six MCMs to help in its overall objective of reducing the discharge of pollutants into receiving waters, including the Potomac River. These BMPs were documented in the General Permit Registration Statement, submitted to the Virginia Department of Environmental Quality (DEQ) and dated November 26, 2007.

Information on compliance with each of the six minimum control measures, an assessment of the appropriateness of the selected BMPs, and progress towards achieving them are described below.

3.1 PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

The Public Education and Outreach MCM consist of BMPs that focus on the development of educational materials. They are designed to inform the public about the impact storm water discharges have on local water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

3.1.1 Current BMP and Goals

Currently Quantico provides storm water education by means of a website (http://nreabweb.emainc.com/MCBQ_SW_Training/) as well as classroom training for elementary school children using an Enviroscape model. Quantico also has a website where information on storm water can be downloaded (http://www.quantico.usmc.mil/activities/display.aspx?PID=1786&Section=NREA) Frequently asked questions, links to articles, important templates for storm water construction, and other pertinent information is kept on this site. Also, Charity car wash functions are common at Quantico, and brochures for proper car washing protocol, as well as brochures to hand out to car wash patrons, have also been developed.

Goal #1: Publish storm water articles in the base newspaper and on the Natural Resources and Environmental Affairs (NREA) website.

Tasks:

An article dealing with storm water issues will be prepared and published on the Quantico Sentry (newspaper).

Status:

For the reporting year of July 2010 – June 2011, one article on storm water was published in the base newspaper, the Sentry.

Goal #2: Education in storm water, via classroom education and web-based training.

Tasks:

a) Participation in the web-based training will be monitored through the reporting period and reported annually.

b) Conduct on-site classroom training for contract officers and other environmental installation staff.

c) Conduct on-site classroom training for school-age children aboard Marine Corps Base Quantico.

Status:

a) All new construction contractors are required to take the online stormwater training module. All others are voluntary training only.

b) November 17, 2010, QMCB NREA Staff organized and provided training to 88 participants. The audience attendees ranged from

DCR staff and contract officers to Environmental Coordinators and other local military installations.

c) **On April 10, 2011, NREA provided training to Burrows elementary School students on stormwater pollution prevention.**

Please see the below table for annual numbers of base personnel that took either the web-based training, or other forms of storm water training (including in-house training by NREA staff, training by DVD/video, etc.)

Web-Based Storm Water Voluntary	Web Based Construction	Enviroscape Classroom Training	LID Training Event	Total
281	74	125	88	568

Goal #3: Provide brochures to charity car wash functions.

Tasks:

- Keep an inventory of charity car wash activities on base. **(annual)**
- Ensure that the activity coordinators receive and pass out the car wash brochures and follow proper car washing procedures. **(ongoing)**

Status:

Car wash brochures were updated and printed in 2010. They are intended for hand-out to the organization conducting the car wash and one for the car wash volunteers to hand out to their patrons. Once the event has concluded, a report of how many

car washes were conducted which identifies how many patrons were handed brochures. During this report period, a total of 320 brochures have been handed out.

3.1.2 BMP Compliance

MCB Quantico is in compliance with this BMP.

3.1.3 BMP Appropriateness

This BMP is appropriate for the target audience. Other BMPs are also being developed to expand public outreach throughout MCB Quantico and ensure more consistent coverage in the storm water training program.

3.1.4 Goals Progress

This goal is currently being met.

3.2 PUBLIC INVOLVEMENT/PARTICIPATION

The Public Involvement/Participation MCM consists of BMPs that focus on involving employees, residents, contractors and active duty personnel in development and implementation of the CSWMAP.

3.2.1 Current BMP and Goals

Basewide involvement with storm water program implementation is a challenging goal. MCB Quantico involves it facilities staff in understanding and reporting incidents involving storm water non-compliance, water and sewer leaks, and area wide clean-up operations.

Goal #1: Roadside Clean-up

Area wide cleanings are conducted routinely by Brigg patrons as part of area beautification. Daily street sweeping is also conducted. This helps to minimize and eliminate debris from being discharged into the waters of the Commonwealth.

Tasks: Routine details of Brigg personnel are utilized not only for cleaning, but their duty offers a chance for public awareness for those that pass-by when it is occurring.

Status: This activity is ongoing year-round.

Goal #2: Earth Day Shoreline Clean-up Activity

Tasks: Enlist the aid of Marine volunteers in the cleaning of excess trash and debris from around the installation waterfront.

Status: During Earth Week activities, over 100 volunteers participated in a boat and shoreline cleaning of the outfalls and shoreline.

3.2.2 BMP Compliance

MCB Quantico is currently in compliance with this BMP.

3.2.3 BMP Appropriateness

This BMP is appropriate for the target audience. Other BMPs are also being developed to expand public involvement throughout MCB Quantico to better meet the purpose of the MCM.

Goal Progress

This goal is currently being met.

3.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION

Maps have been developed for both the east and west side of the base. These maps are maintained on site at the NREA office. Illicit discharge surveys were conducted in December of 2009 (Mainside). West Side of the base will be conducted within the next few years.

3.3.1 Current BMP and Goals

. **Goal #1:** Conduct illicit discharge surveys of the base.

Tasks:

- Completed illicit discharge survey of the Mainside outfalls in 2009.
- Conduct illicit discharge survey of the West Side outfalls in 2012/2013.

Status:

The survey commenced October 2009 and was completed by December 2009. The illicit discharge for the west side is not scheduled until 2012/2013 funding years.

Goal #2: Investigate and eliminate any discovered illicit discharges.

Tasks:

- Determine the cause of the illicit discharge.
- If needed, investigate actions to remove and/or repair the illicit discharge from the system.
- Track all findings and resolutions for the reporting period.

Status:

All illicit discharges reported have been recorded and reviewed. A summary of the illicit discharges are reported below:

Date of last Illicit Discharge Study	Number of Illicit Discharges Reported	Number Resolved	Number still open for investigation and resolution
CY10	13	13	0

3.3.2 BMP Compliance

MCB Quantico is currently in compliance with this BMP.

3.3.3 BMP Appropriateness

This BMP is appropriate for the MCM because it will lead to the identification and elimination of any further identified illicit discharges.

3.3.4 Goal Progress

This goal is completed. The next illicit discharge survey is scheduled for Westside in CY2011/2012.

3.4 CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

The current Construction Site Runoff MCM consists of BMPs focusing on the reduction of pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to 10,000sqft.

3.4.1 Current BMP and Goal

All construction sites at MCB Quantico greater than 10,000 square feet are required to have an approved erosion and sediment control (ESC) Plan. All construction sites that have one acre or greater of disturbed ground (or greater than or equal to 2,500 square feet if located within a resource protection area (RPA)) are also required to obtain a Storm Water Construction Permit from the Virginia Department of Conservation Recreation (DCR), which includes development of a SWP3. All plans must be submitted and approved by MCB Quantico's Natural Resources and Environmental Affairs Branch (NREAB).

Goal #1: Continue to monitor and inspect all construction site activity that is over one acre, or requires an erosion and sediment control plan.

Tasks:

- Continue to inspect sites for E&SC and storm water pollution prevention controls.

- Ensure that all new construction activity >10,000 sq.ft. obtain an approved E&SC Plan, and all new construction activity > 1 acre obtain a DCR storm water construction permit, an approved E&SC Plan, and an approved Storm Water Management Plan (SWMP) before any land disturbing activities take place. Land disturbing activities in a sensitive area will also obtain E&SC plans if the activities disturb more than 2,500sqft.

Status: A program is in place to ensure that the goal is met. During this reporting period, single sites were found to have begun work without the approved permit and plans. An internal Notice of Violation (NOV) was sent and the contractors for the site were directed to obtain the correct permit and submit plans for approval by NREA staff. All violations were addressed within a timely manner. Other NOV's and warning letters have been issued during the report period. NOV's usually result

from a failure on the part of the Contractor in addressing the noted deficiency within an acceptable amount of time. Current NOV origination occurs at the NREA level. Subsequent NOV's for the same discrepancy are to be signed and enforced at the Command level, if they occur. No command NOV's have been issued for this period.

3.4.2 BMP Compliance

MCB Quantico is currently in compliance with this BMP for all NREAB approved construction sites.

3.4.3 BMP Appropriateness

This BMP is appropriate for the MCM because it will minimize erosion from construction sites and limit sediment runoff.

3.4.4 Goal Progress

This goal is ongoing. Copies of all construction site permits and SWP3s are maintained by NREAB for sites greater than one acre in area. Additional goals have been prepared that will lead to greater consistency in controlling construction site runoff.

3.5 POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT.

The Post-Construction Storm Water Management MCM consists of BMPs focusing on the prevention or minimization of water quality impacts from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development that discharges into the small MS4.

3.5.1 Current BMP and Goal

Completed construction sites are initially inspected by NREAB to ensure all development is complete and follows the Base SWP3 guidelines. A list of the engineering control structures at MCB Quantico is found in Appendix A.

.**Goal #1:** Continue to inspect (annually) BMPs from new development and redevelopment.

Tasks:

- Add any new BMPs to the schedule, as they are completed.
- Conduct annual inspections of BMPs.
- Note any problems, put in repair ticket for maintenance work if necessary.
- Perform follow-up inspections as necessary.

Status:

The table below summarizes BMP inspections for Reporting Period of 2010-2011.

	# of Working Structures	# of Structures Inspected
July 2010- June 2011	**59**	**59**

A contract to sub out the inspections was finalized at the end of CY09 and was completed by March 2010.

3.5.2 BMP Compliance

MCB Quantico is currently in compliance with this BMP. The contract for inspections and maintenance will ensure that the storm water management structures are thoroughly inspected by qualified personnel, and maintained correctly.

3.5.3 BMP Appropriateness

This BMP is appropriate for the MCM.

3.5.4 Goal Progress

This goal is being met, is ongoing and is dependant on the number of active construction activities. Additional goals have been prepared that will lead to greater consistency in controlling construction site runoff.

3.6 POLLUTION PREVENTION/GOOD HOUSEKEEPING

The Pollution Prevention/Good Housekeeping MCM consists of BMPs that focus on training and on the prevention or reduction of pollutant runoff from municipal operations.

3.6.1 Current BMP and Goal

Good housekeeping procedures are outlined in the SWP3. These procedures include vehicle and aircraft maintenance, fueling operations, material storage, painting procedures, outdoor maintenance, and recycling.

3.6.2 BMP Compliance

MCB Quantico is currently in compliance with this BMP.

3.6.3 BMP Appropriateness

This BMP is appropriate for the MCM because it will lead to improved operations and reductions in storm water contamination.

3.6.4 Goal Progress

The goal is currently being met and is ongoing.

4. ADDITIONAL INFORMATION COLLECTED

This section is a summary of the results of the information collected to assist the Water Programs Manager in implementing the MS4 program.

4.1 PUBLIC EDUCATION AND OUTREACH

In 2010, updated training modules were posted on the web. An updated module for Storm Water Pollution Prevention training replaced the older version, and a new module dealing with erosion and sediment control at construction sites was added in 2009, to incorporate workers at construction sites. A new Low Impact Design (LID) module is being planned for future web based training.

4.2 ILLICIT DISCHARGE DETECTION AND ELIMINATION

A Stormwater Management Systems Inspection was completed in September of 2010. The results indicated a need for maintenance at numerous BMP's throughout the installation. Funding to address these maintenance needs is currently being sought for contracting in CY 2011-2012 but is dependent on available funding.

4.3 CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

Between July 2010 and June, 2011, Quantico had a total of 18 active permitted construction sites, totaling 373.12 acres of disturbed area, and 492.19 acres of total area. These sites are listed on the next page in the table provided.

Construction Site Report					
Site Name:	Total Area (acres):	Active:	HUC:	Disturbed Area (acres):
HM Station	12.90	Yes	PL40	11.70
P590 CDC	10.30	Yes	PL53	10.30
MSG Training BN - Phase I	11.00	Yes	PL53	11.90
Electrical Substation	27.80	Yes	PL53	27.80
Flight Simulator	1.00	Yes	PL53	1.00
Breckenridge Water Line Repair	5.00	Yes	PL53	5.00
Demo Officers Pool Complex	2.20	Yes	PL54	2.20
FBI Bypass	10.07	Yes	PL56	10.00
Demo Building 3035	1.00	Yes	PL54	1.00
Lunga/Breckenridge Dam Tree Removal	1.00	Yes	PL55, PL53	1.00
MCIOC - MCNOSC	18.40	Yes	PL55, PL56	18.40
Demo of Bobo Hall	1.26	Yes	PL54	1.26
MCIA Parking Garage	1.50	Yes	PL54	1.38
TBS, P-546 Enhanced Parking Lot	2.35	Yes	PL56	2.35
TBS, P-565 Parking Lot	7.10	Yes	PL56	7.10
QRC Stables	0.80	Yes	PL52	0.80
TBS Ph. IV, P-548 Student Dining Facility	4.11	Yes	PL56	4.03
Total	492.19			373.12

4.4 POST CONSTRUCTION SITE STORM WATER MANAGEMENT

Between July, 2010 and June, 2011, seventeen (17) new storm water management facilities were installed at Quantico. These Structures are as follows:

NEW STORM WATER MANAGEMENT FACILITIES 2010-2011		
Site Name:	**HUC:**	**Disturbed Area (acres):**
HM Station	PL40	Bioretention
P590 CDC	PL53	Retention Basin, Bioretention, Large Swales, Rain Cistern
MSG Training BN - Phase I	PL53	Bioretention
Electrical Substation	PL53	Bioretention, Large Swales
Flight Simulator	PL53	Bioretention
Breckenridge Water Line Repair	PL53	n/a
Demo Officers Pool Complex	PL54	n/a
FBI Bypass	PL56	Detention Basin, Bioretention, Large Swales and Shoulders
Demo Building 3035	PL54	n/a
Lunga/Breckenridge Dam Tree Removal	PL55, PL53	Detention Basin
MCIOC - MCNOSC	PL55, PL56	Bioretention
Demo of Bobo Hall	PL54	n/a
MCIA Parking Garage	PL54	Bioretention
TBS, P-546 Enhanced Parking Lot	PL56	Bioretention, Stormceptors, Rain Garden
TBS, P-565 Parking Lot	PL56	Bioretention, Stormceptors, Rain Garden
QRC Stables	PL52	n/a
TBS Ph. IV, P-548 Student Dining Facility	PL56	Retention Basin, Rain Garden

5. BMPS AND GOALS FOR 2010-2011

The following section identifies the MS4 BMPs and their associated timeframe for implementation. It is important to note that MCB Quantico is not relying on other government entities to satisfy any of its permit obligations. MCB Quantico is also not participating in any qualifying local programs as part of its permit. MCB Quantico goals and tasks will currently remain the same, but our staff will strive to improve and expand our BMPs and other initiatives. For example, there will be an attempt to increase the educational awareness through more local school involvements and to provide more on-site educational presentations to contractors and engineering staff. More stormwater awareness articles could also be written to facilitate additional public awareness.

In keeping with the Chesapeake Bay Strategic Plan Initiatives, the installation intends to begin identifying and prioritizing BMP retrofits for our older structures dating to pre-1995. This effort will take place at the earliest in calendar year 2012 and is heavily dependent on funding. MCB Quantico is participating in several regional meetings and Committees on TMDL identification and program implementation strategies.

The complete logic model for each BMP can be located within the attached appendices. Each model clearly identifies the goals for each MCM. It further branches down for each supporting task and ties into a common anticipated outcome.

MCB QUANTICO MS4 LOGIC MODEL
PUBLIC EDUCATION AND OUTREACH

GOALS

Goal #1:

Publish storm water articles and other reference materials by utilizing the base newspaper and the Natural Resources and Environmental Affairs website.

Goal #2:

Education will be provided in storm water pollution prevention, via classroom education and web-based training.

Goal #3:

Educate participants of charity car wash functions and to all patrons of the function in the subject of Storm Water Pollution prevention.

TASKS

Task #1.1:
Articles (2) dealing with storm water Pollution Prevention will be published on the Quantico Sentry (newspaper) and the NREA web-site (annually).Due Date: 6/1/2012

Task #2.1:
Participation in the web-based training will be monitored throughout the reporting period and reported annually.
DueDate: 6/1/2012

Task #3.1:
Keep an inventory of charity car wash activities on base
Due Date: Ongoing

Task #1.2:
New protocols for contract plan submission/review, SWPPP preparation tools, templates, and training will be posted on the world wide web.
Due Date: 1/1/2010

Task #2.2:
Classroom education in the Quantico school system; also initiate a Symposum & Expo On LID Due Date: 6/1/2012

Task #3.2:
Require coordinators receive and pass out the car wash brochures and follow proper car washing procedures. Coordinators report # of brochures handed out (ongoing).

OUTCOMES

Public Education and Outreach
Increase Public Awareness in Storm Water Pollution Prevention Measures Within Their Immediate Community and the Chesapeake Bay

MCB QUANTICO MS4 LOGIC MODEL
PUBLIC INVOLVEMENT/PARTICIPATION

GOALS

TASKS

OUTCOMES

Goal #1:

Arrange for a community storm water awareness activity

Goal #2:

Monitor and track storm water problems and concerns.

Task #1.1:

Coordinate with Earth Day activitie to promote community storm water awareness activity

Task #2.1:

Coordinate with Lincoln Family Housing to ensure that a hotline is set up for the housing area to report any storm water concerns. Due date 6/1/2012.

Task #1.2:

Identify and develop a Tenant or Brig "adoption program" for specific outfalls locations.

Task #2.2:

Ensure that all storm water issues are investigated and a log of reports and the solutions to the storm water problems are maintained. Due Date: 6/1/2012

Public Involvement and Participation

Increase Public Awareness regarding Storm Water Pollution Prevention Measures Within The Immediate Community

MCB QUANTICO MS4 LOGIC MODEL
ILLICIT DISCHARGE DETECTION & ELIMINATION

GOALS

TASKS

OUTCOMES

Goal #1:

Continue the Ongoing Illicit Discharge Survey Program Schedule established for MCB Quantico

Goal #2:

Investigate and eliminate illicit discharges as funding will allow.

Task #1.1:

Conduct an illicit discharge survey of the Mainside outfalls (2013)

Task #2.1:

Determine the cause of the illicit discharge as they are identified

Task #1.2:

Conduct an illicit discharge survey of the West Side outfalls (2012)

Task #2.2:

Investigate actions to remove theses illicit dischares from the area and report

Illicit Discharge Detection & Elimination

Identify and reduce contaminants from polluting the waters of the Commonwealth

MCB QUANTICO MS4 LOGIC MODEL
CONSTRUCTION SITE RUNOFF CONTROL

GOALS

TASKS

OUTCOMES

Goal #1:
Continue to monitor and inspect all construction site activity as required by Virginia State Law and implemented by the Virginia Department of Conservation and Recreation.

Goal #2:

Ensure Proper Plan Review and Coordintation are implemented with NAVFAC and local Contracting Offices

Task #1.1:

Continue to inspect sites for E&SC and storm water pollution prevention controls

Task #2.1:
Provide instructions for form submittals, form templates, and other pertinent information on the world wide web for all contracting officers review and access.

Task #1.2:
Ensure that all new construction activity > 10,000* square feet obtain an approved E&SC plan and SWPPP . construction activity > 1 acre obtain a DCR storm water construction permit, an approved E&SC Plan, and an approved Storm Water Management Plan before any land disturbing activity takes place. Land disturbing activities in sensitive areas* will also obtain E&SC plans & SWPPP if activities disturb more than 2,500 square feet.

Task #2.2:

Communicate through meetings, email, and mail correspondence with Contracting Officers from both FMS and NAVFAC

Construction Site Runoff Control
Maintain Compliance with State and Federal Laws and Regulations concerning Erosion and Sediment Control for the Installation

BMPS AND GOALS FOR 2011-2012

MCB QUANTICO MS4 LOGIC MODEL POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

GOALS

TASKS

OUTCOMES

Goal #1:

Continue to inspect storm water BMPs from new development and redevelopment.

Goal #2:

Provide education on BMP purpose and maintenance.

Goal #3:

Install storm water management for new development and redevelopment.

Task #1.1:

Add any new BMPs to the schedule, as they are completed (ongoing)

Task #2.1:

Erect signs at large BMP areas; Distribute curb medallions to identify storm drains that discharge to the River from MCB Quantico Mainside. Due Date: June 1, 2012

Task #3.1:

Ensure that all new construction with land disturbance install proper storm water management to treat for water quality/quantity of any increase of an impervious area (ongoing).

Task #1.2:

Conduct annual inspections of BMPs. Due Date 6/1/12
Note any problems, put in repair ticket for maintenance work as necessary. Perform follow-up inspections as necessary.

Task #2.2:

Provide training opportunities for key personnel at buildings associated with BMPs. Due Date: June 1, 2012

Task #3.2:

Ensure that all new construction projects >2500sqft and within 100ft from open waters or drainage lines to the Potomac or Chop Creek install proper storm water management. (ongoing)

Post-Construction Storm Water Management in New Development and Redevelopment

Increase access for education to base personnel and contractors on the purpose of effective Best Management Practices in Storm Water management and to conduct inspections and maintenance where needed.

MCB QUANTICO MS4 LOGIC MODEL
POLLUTION PREVENTION/GOOD HOUSEKEEPING

GOALS

TASKS

OUTCOMES

Goal #1:

Continue the Ongoing Illicit Discharge Survey Program Schedule established for MCB Quantico

Goal #2:

Investigate and eliminate illicit discharges as funding will allow.

Task #1.1:

Conduct an illicit discharge survey of the Mainside outfalls (2012/2013)

Task #2.1:

Determine the cause of the illicit discharge as they are identified

Task #1.2:

Conduct an illicit discharge survey of the West Side outfalls (2011/2012)

Task #2.2:

Investigate actions to remove these illicit dischares from the area and report annually

Pollution Prevention/Good Housekeeping

Identify and reduce contaminants from polluting the waters of the Commonwealth

APPENDIX J
ACRONYMS

ACRONYMS

The following is a list of acronyms and abbreviations that may be encountered in reference to Storm Water. They are not necessarily used in this document but are included here for general reference.

AFFF	Aqueous Film Forming Foam
AST	Aboveground Storage Tank
BLDG	Building
BMPs	Best Management Practices
CBPA	Chesapeake Bay Preservation Act
CDO	Command Duty Officer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
CER	Construction Equipment Repair
CFR	Code of Federal Regulations
CLP	Cleaner Lubricant Preservative
CWA	Clean Water Act
DEA	Drug Enforcement Agency
DMR	Discharge Monitoring Report
DoD	Department of Defense
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
E&SC	Erosion and Sediment Control
FBI	Federal Bureau of Investigation
FLSS	Facilities Logistics Support Services
FRP	Facility Response Plan
FWPCA	Federal Water Pollution Control Act
GPS	Global Positioning System
GSE	Ground Support Equipment
HAZCOM	OSHA 1910.120 Hazard Communication
HM	Hazardous Materials
HMX-1	Marine Helicopter Squadron One
HSMS	Hazardous Substance Management System
HW	Hazardous Waste
LAI	Light Armored Infantry
MCAF	Marine Corps Air Facility
MCB	Marine Corps Base
MCBO	Marine Corps Base Order
MCCDC	Marine Corps Combat Development Command
MCCS	Marine Corps Community Services
MCO	Marine Corps Order
MCX	Marine Corps Exchange
MCSC	Marine Corps Systems Command
MEP	Maximum Extent Practical
MOGAS	Motor Vehicle Gasoline
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet

MSL	Mean Sea Level
NCCW	Non Contact Cooling Water
NCO	Noncommissioned Officer
NDI	Non-Destructive Inspection
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NREAB	Natural Resources and Environmental Branch
OCS	Officer Candidate School
OCS Comm	Officer Candidate School Communications Section
ODCP	Oil Discharge Contingency Plan
OHS	Oil and Hazardous Substance
OSHA	Occupational Safety and Health Administration
OWS	Oil/Water Separator
P2	Pollution Prevention
PCB	Polychlorinated Biphenyl
POL	Petroleum Based Fuels, Oil or Lubricants
POTW	Publicly Owned Treatment Works
POV	Personal Owned Vehicle
PSTMP	Petroleum Storage Tank Management Plan
QA/QC	Quality Assurance and Quality Control
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/ Feasibility Study
ROICC	Resident Officer in Charge of Construction
RQ	Reportable Quantity
SAA	Satellite Accumulation Area
SARA	Superfund Amendments and Reauthorization Act
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control and Countermeasure
SPR	Spill Prevention and Response
STP	Sewage Treatment Plant
SVOC	Semi-Volatile Organic Compound
SW	Storm Water
SWMP	Storm Water Management Plan
SWP3	Storm Water Pollution Prevention Plan
TBS	The Basic School
TDSA	Transportation Demonstration Support Area
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids
USMC	United States Marine Corps
UST	Underground Storage Tank
UT	Unnamed Tributary
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program

WLA	Waste Load Allocation
WPM	Water Program Manager
WQS	Water Quality Standard
WTBN	Weapons Training Battalion
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

DEFINITIONS

Backfill is earth used to fill a trench or an excavation.

Baffles are fin-like devices installed vertically on the inside walls of liquid waste transport vehicles that are used to reduce the movement of the waste inside the tank.

Baseline General Permit is a storm water permit (issued under the NPDES program) intended to initially cover the majority of storm water discharges associated with industrial activities. For example, EPA is planning to issue two baseline general permits: NPDES General Permits for Storm Water Discharges From Construction Activities that are classified as "Associated with Industrial Activity" and NPDES General Permits for Storm Water Discharges from Industrial Activities that are classified as "Associated with Industrial Activities." EPA is also encouraging delegated States which have an approved general program to issue baseline general permits.

Berm is an earthen mound used to direct the flow of runoff around or through a structure.

Best Management Practices (BMPs) means a practice or a combination or series of practices and measures designed to prevent or minimize the amount of pollution generated from sources such as access roads and haul roads, spoil storage and stockpile areas, site preparation, installation of culverts, steam crossings and bridges, and other related activities.

Biodegradable is the ability to breakdown or decompose under natural conditions and processes.

Boom (1) is a floating device used to contain oil on a body of water.

Buffer Strip or Zone is a strip of grass or other erosion-resistant vegetation between a waterway and an area of more intensive land use.

Bypass means the intentional diversion of wastes from any portion of a treatment facility.

By-product is material, other than the principal product, that is generated as a consequence of an industrial process.

Calendar Day is defined as any 24-hour period.

Calibration is a check of the precision and accuracy of measuring equipment.

Chock is a block or wedge used to keep rolling vehicles in place.

Clay Lens is a naturally occurring, localized area of clay that acts as an impermeable layer to runoff infiltration.

Clean Water Act or *Act* means the Federal Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972), as amended.

Concrete Aprons are pads of non-erosive material designed to prevent scour holes developing at the outlet ends of culverts, outlet pipes, grade stabilization structures, and other water control devices.

Conduit is any channel or pipe for transporting the flow of water.

Conveyance is any natural or manmade channel or pipe in which concentrated water flows.

Corrosion is the dissolving and wearing away of metal caused by a chemical reaction such as between water and the pipes that the water contacts, chemicals touching a metal surface, or contact between two metals.

Culvert is a covered channel or a large-diameter pipe that directs water flow below the ground level.

Denuded is land stripped of vegetation such as grass, or land that has had vegetation worn down due to impacts from the elements or humans.

Dike is an embankment to confine or control water, often built along the banks of a river to prevent overflow of lowlands; a levee.

Director means the State Director of the Division of Water or his authorized representative.

Discharge is a release or flow of storm water or other substance from a conveyance or storage container.

Drip Guard is a device used to prevent drips of fuel or corrosive or reactive chemicals from contacting other materials or areas.

Emission is pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities and from motor vehicle, locomotive, or aircraft exhausts.

Erosion is the wearing away of land surface by wind or water. Erosion occurs naturally from weather or runoff but can be intensified by land-clearing practices related to farming, residential or industrial development, road building, or timber-cutting.

Excavation is the process of removing earth, stone, or other materials.

Fertilizer is materials such as nitrogen and phosphorus that provide nutrients for plants. Commercially sold fertilizers may contain other chemicals or may be in the form of processed sewage sludge.

Filter Fabric is textile of relatively small mesh or pore size that is used to (a) allow water to pass through while keeping sediment out(permeable), or (b) prevent both runoff and sediment from passing through (impermeable).

Filter Strip is usually long, relatively narrow area of undisturbed or planted vegetation used to retard or collect sediment for the protection of watercourses reservoirs, or adjacent properties.

Flange is a rim extending from the end of a pipe; can be used as a connection to another pipe.

Flow Channel Liner is a covering or coating used on the inside surface of a flow channel to prevent the infiltration of water to the ground.

Flowmeter is a gauge that shows the speed of water moving through a conveyance.

General Permit is a permit issued under the NPDES program to cover a certain class or category of storm water discharges. These permits allow for a reduction in the administrative burden associated with permitting storm water discharges associated with industrial activities.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

Grading is the cutting and/or filling of the land surface to a desired sloe or elevation.

Hazardous Substances (1) are any materials that pose a threat to human health and/or the environment. Hazardous substances can be toxic, corrosive, ignitable, explosive or chemically reactive. (2) Any substance named required by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise emitted into the environment.

Hazardous Waste is by-products of human activities that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Holding Pond is a reservoir, typically earthen, built to store polluted runoff for a limited time.

Illicit Discharge is any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges authorized by an NPDES permit (other than the NPDES permit for discharges from the municipal separate storms sewer) and discharges resulting from fire fighting activities.

Infiltration (1) The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls. (2) A land application technique where large volumes of wastewater are applied to land, allowed to penetrate the surface and percolate through the underlying soil.

Inflow is water other than wastewater that enters a sewer system (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains form springs and swampy areas, manhole covers, cross connections between storm

sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration.

Inlet is an entrance into a ditch, storm sewer, or other waterway.

Intermediates are chemical compounds formed during the making of a product.

Irrigation is human application of water to agricultural or recreational land for watering purposes.

Jute is a plant fiber used to make rope, mulch, netting, or matting.

Landfills (1) Sanitary landfills are land disposal sites for non-hazardous solid wastes at which the waste is spread in layers, compacted to the smallest practical volume, and cover material applied at the end of each operating day. (2) Secure chemical landfills are disposal sites for hazardous waste. They are selected and designed to minimize the chance of release hazardous substances into the environment.

Large municipal separate storm sewer system means all municipal separate storm sewers that are either:

1. Located in an incorporated place with a population of 250,000 or more as determined by the latest Decennial Census by the Bureau of Census (40 CFR Part 122 Appendix F (2001)); or
2. Located in the counties listed in 40 CFR Part 122 Appendix H (2001), except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or
3. Owned or operated by a municipality other than those described in subdivision 1 or 2 of this definition and that are designated by the Board as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under subdivision 1 or 2 of this definition. In making this determination the Board may consider the following factors:
    a. Physical interconnections between the municipal separate storm sewers;
    b. The location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers described in subdivision 1 of this definition;
    c. The quantity and nature of pollutants discharged to surface waters;
    d. The nature of the receiving waters; and
    e. Other relevant factors; or
4. The Board may, upon petition, designate as a large municipal separate storm sewer system, municipal separate storm sewers located within the boundaries of a region defined by a storm water management regional authority based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems described in subdivision 1, 2, or 3 of this definition.

Leaching is the process by which soluble constituents are dissolved in a solvent such as water and carried down through the soil.

Level Spreader is a device used to spread out storm water runoff uniformly over the ground surface as sheetflow (i.e., not through channels). The purpose of level spreaders are to prevent concentrated, erosive flows from occurring and to enhance infiltration.

Liming is treating soil with lime to neutralize acidity levels.

Liner (1) a relatively impermeable barrier designed to prevent leachate from leaking from a landfill. Liner materials include plastic and dense clay. (2) An insert or sleeve for sewer pipes to prevent leakage or infiltration.

Liquid Level Detector is a device that provides continuous measures of liquid levels in liquid storage areas or containers to prevent overflows.

Major municipal separate storm sewer outfall (or major outfall) means a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), with an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

Material Storage Areas are on-site locations where raw materials, products, final products, by-products, or waste materials are stored.

Medium municipal separate storm sewer system means all municipal separate storm sewers that are either:

1. Located in an incorporated place with a population of 100,000 or more but less than 250,000, as determined by the latest Decennial Census by the Bureau of Census (40 CFR Part 122 Appendix G
(2001)); or
2. Located in the counties listed in 40 CFR Part 122 Appendix I (2001), except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or
3. Owned or operated by a municipality other than those described in subdivision 1 or 2 of this
definition and that are designated by the Board as part of the large or medium municipal separate
storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under subdivision 1 or 2 of this definition. In making this determination the Board may consider the following factors:
    a. Physical interconnections between the municipal separate storm sewers;
    b. The location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers described in subdivision 1 of this subsection;
    c. The quantity and nature of pollutants discharged to surface waters;

d. The nature of the receiving waters; or
e. Other relevant factors; or

4. The Board may, upon petition, designate as a medium municipal separate storm sewer system, municipal separate storm sewers located within the boundaries of a region defined by a storm water management regional authority based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems described in subdivisions 1, 2, or 3 of this definition.

Monthly Average Concentration is a limitation on the discharge concentration in milligrams per liter, as the arithmetic mean of all daily concentrations determined in a one-month period.

Mulch is a natural or artificial layer of plant residue or other materials covering the land surface which conserves moisture, holds soil in place, aids in establishing plant cover, and minimizes temperature fluctuations.

Municipal separate storm sewer means a conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains:

1. Owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to surface waters;
2. Designed or used for collecting or conveying storm water;
3. Which is not a combined sewer; and
4. Which is not part of a Publicly Owned Treatment Works (POTW).

Municipal separate storm sewer system or MS4 means all separate storm sewers that are defined as "large" or "medium" or "small" municipal separate storm sewer systems, or designated under 9 VAC 25- 31-120 A 1.

Municipality means a city, town, county, district, association, or other public body created by or under state law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

National Pollutant Discharge Elimination System (NPDES) means the Federal Environmental Protection Agency's (EPA) national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing water quality permits.

Non-contact Cooling Water is water used to cool machinery or other materials without directly contacting process chemicals or materials.

Non-Point Source is pollution such as sediment, nitrogen and phosphorous, hydrocarbons, heavy metals, and toxics whose sources cannot be pinpointed but rather is washed from the land surface in a diffuse manner by stormwater runoff.

Notice of Intent is an application to notify the permitting authority of a facility's intention to be covered by a general permit; exempts a facility from having to submit an individual or group application.

NPDES is EPA's program to control the discharge of pollutants to waters of the United States.

NPDES Permit An authorization, license, or equivalent control document issued by EPA or an approved State agency to implement the requirements of the NPDES program.

Nutrient Loading is the quantity of nutrients entering an ecosystem in a given period of time.

Oil and Grease Traps are devices which collect oil and grease, removing them from water flows.

Oil Sheen is a thin, glistening layer of oil on water.

Oil/Water Separator is a device installed, usually at the entrance to a drain, which removes oil and grease from water flows entering the drain.

Organic Pollutants are substances containing carbon which may cause pollution problems in receiving streams.

Organic Solvents are liquid organic compounds capable of dissolving solids, gases, or liquids.

Outfall is the point, location, or structure where wastewater or drainage discharges from a sewer pipe, ditch, or other conveyance to a receiving body of water.

Permeability is the quality of a soil that enables water or air to move through it. Usually expressed in inches/hour or inches/day.

Permit is an authorization, license, or equivalent control document issued by EPA or an approved State agency to implement the requirements of an environmental regulation; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.

Permit Issuing Authority (or Permitting Authority) is the State agency or EPA Regional office which issues environmental permits to regulated facilities.

Plunge Pool is a basin used to slow flowing water, usually constructed to a design depth and shape. The pool may be protected from erosion by various lining materials.

Pneumatic Transfer is a system of hoses which uses the force of air or other gas to push material through; used to transfer solid or liquid materials from tank to tank.

Point Source is any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

Pollutant is any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 (U.S.C. 2011 et seg.)), heat, wrecked or discharged equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. It does not mean: (i) Sewage from vessels; or (ii) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Porous Pavement is a human-made surface that will allow water to penetrate through and percolate into soil (as imperious asphalt pavement or concrete). Porous asphalt pavement is comprised of irregular shaped crush rock pre-coated with asphalt binder. Water seeps through into lower layers of gravel for temporary storage, then filters naturally into the soil.

Precipitation is any form of rain or snow.

Preventative Maintenance Program is a schedule of inspections and testing at regular intervals intended to prevent equipment failures and deterioration.

Process Wastewater is water that comes into direct contact with or results from the reduction or use of any raw material, intermediate product, finished product, by-product, waste product, or wastewater.

PVC (Polyvinyl Chloride) is any product or material that is converted into another material by processing or manufacturing.

Process Generated Wastewater is any wastewater used in the slurry transport of mined material, air emissions control, or processing exclusive of mining. The term also includes any other water which becomes commingled with such wastewater in a pit, pond, lagoon, mine or other facility used for treatment of such wastewater.

Recycle is the process of minimizing the generation of waste by recovering usable products that might otherwise become waste. Examples are the recycling of aluminum cans, wastepaper, and bottles.

Regional Administrator means the Administrator for the Environmental Protection Agency or his authorized representative.

Reportable Quantity (RQ) is the quantity of a hazardous substance or oil that triggers reporting requirements under CERCLA or the Clean Water Act. If a substance is released in amounts exceeding its RQ, the release must be reported to the National Response Center, the State Emergency Response Commission, and community emergency coordinators for areas likely to be affected.

Residual is an amount of pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or particulate remaining in air after the air passes through a scrubbing or other pollutant removal process.

Retention is the holding of runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

Retrofit is the modification of storm water management systems in developed areas through the construction of wet ponds, infiltration systems, wetland plantings, stream bank stabilization, and other BMP techniques for improving water quality. A retrofit can consist of the construction of a new BMP in the developed area, the enhancement of an older storm water management structure, or a combination of improvement and new construction.

Rill Erosion is the formation of numerous, closely spread streamlets due to uneven removal of surface soils by storm water or other water.

Riparian Habitat are areas adjacent to rivers and streams that have a high density, diversity, and productivity of land and animal species relative to nearby uplands.

Run On is storm water surface flow or other surface flow which enters property other than that where it originated.

Runoff is that part of precipitation, snow met, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into the receiving waters.

Sanitary Sewer is a system of underground pipes that carries sanitary waste or process wastewater to a treatment plant.

Sanitary Waste is domestic sewage.

Scour is the clearing and digging action of flowing water, especially the downward erosion caused by stream water in sweeping away mud and silt from the stream bed and outside bank of a curved channel.

Sealed Gates is a device used to control the flow of liquid materials through a valve.

Secondary Containment are structures, usually dikes or berms, surrounding tanks or other storage containers and designed to catch spilled material from the storage containers.

Sediment Trap is a device for removing sediment from water flows; usually installed at outfall points.

Sedimentation is the process of depositing soil particles, clays, sands, or other sediments that were picked up by flowing water.

Sediments are soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers, and harbors, destroying fish-nesting areas and holes of water animals and cloud the water so that needed sunlight might not reach aquatic plants. Careless farming, mining, and

building activities will expose sediment materials, allowing them to be washed off the land after rainfalls.

Sheet Erosion is the erosion of thin layers of surface materials by continuous sheets of running water.

Sheetflow is runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

Shelf Life is the time for which chemicals and other materials can be stored before becoming unusable due to age or deterioration.

Significant materials, as defined at 122.26(b)(12) include, but are not limited to: Raw materials; fuels; materials such as solvents, detergents and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have a potential to be released with storm water discharges.
Slide Gates is a device used to control the flow of water through storm water conveyances.

Sloughing is the movement of un-stabilized soil layers down a slope due to excess water in the soils.

Sludge is a semi-solid residue from any of a number of air or water treatment processes. Sludge can be a hazardous waste.

Small municipal separate storm sewer system or Small MS4 means all separate storm sewers that are: (i) Owned or operated by the United States, a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under subsection 208 of the CWA that discharges to surface waters; and (ii) Not defined as "large" or "medium" municipal separate storm sewer systems, or designated under 9 VAC 25-31-120 A 1. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

Soil is the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of plants.

Solids Dewatering is a process for removing excess water from solids to lessen the overall weight of the wastes.

Source Control is a practice or structural measure to prevent pollutants from entering storm water runoff or other environmental media.

Spent Solvent is a liquid solution that has been used and is no longer capable of dissolving solids, gases, or liquids.

Spill Guard is a device used to prevent spills of liquid materials from storage containers.

Spill Prevention Control and Countermeasures Plan (SPCC) is a plan consisting of structures, such as curbing, and action plans to prevent and respond to spills of hazardous substances as defined in the Clean Water Act.

Stopcock Valve is a small valve for stopping or controlling the flow of water or other liquid through a pipe.

Storm Drain is a slotted opening leading to an underground pipe or an open ditch for carrying surface runoff.

Storm Water is runoff from a storm event, snow melt runoff, and surface runoff and drainage.

Storm Water Application Rule is the EPA Regulation promulgated on November 16, 1990, and amended March 21, 1991, November 5, 1993, and April 2, 1992, requiring that application be made for NPDES permit for storm water discharges associated with industrial activity.

Storm Water Discharge Associated with Industrial Activity is the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under 40 CFR Part 122. For the categories of industries identified in subparagraphs (i) through (x) of this subsection, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handing sites; refuse sites; sites used for the application of disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in subparagraph (xi), the term includes only storm water discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste material, by-products, or industrial machinery are exposed to storm water). For the purposes of this paragraph, material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separated from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in this paragraph (i)-(xi) include those facilities designated under the provision of

122. 26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards which are excepted under category (xi) of this paragraph;

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285) 29, 311, 32 (except 323), 33, 3441, 372;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas on non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990 and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, byproducts or waste products located on the site of such operations; (inactive mining operations are mining site that are not being actively mined, but which have an identifiable owner/operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining mining claim);

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under status or a permit under Subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobiles junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40,41, 42 (except 4221-25), 43, 44, 45 and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (i)-(vii) or (ix)-(xi) of this subsection are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with Section 405 of the CWA;

(x) Construction activity including clearing, grading and excavation activities except; operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;
(xi) Facilities under Standard Industrial Classification 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (iii)-(x));

Note: The Transportation Act of 1992 provides an exemption from storm water permitting requirements for certain facilities owned or operated by municipalities with a population of less that 100,000. Such municipalities must submit storm water discharge permit applications for only airports, power plants, and uncontrolled sanitary landfills that they own or operate, unless a permit is otherwise required by the permitting authority.

Storm Water Pollution Prevention Plan (SWPPP) is the plan developed, documented, and maintained by the Permittee to improve the quality of storm water discharging from the site and to minimize exposure of industrial activities to the storm drainage system.

Storm water discharges associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial facility.

Subsoil is the bed or stratum of earth lying below the surface soil.

Sump is a pit or tank that catches liquid runoff for drainage or disposal.

Surface Impoundment is treatment, storage, or disposal of liquid wastes in ponds.

Surface Water is all water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, wetlands impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors which are directly influenced by surface water.

Swale is an elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales direct storm water flows into primary drainage channels and allow some of the storm water to infiltrate into the ground surface.

Tarp is a sheet of waterproof canvas or other material used to cover and protect materials, equipment, or vehicles.

The term *Ten-year, 24-Hour Precipitation Event* means the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S., " May 1961, and subsequent amendments or equivalent regional or rainfall probability information developed therefrom.

Topography is the physical feature of a surface area including relative elevations and the position of natural and human-made features.

Toxic Pollutants are any pollutants listed as toxic under Section 501 (a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA. Please refer to 40 CFR Part 122 Appendix D.

Treatment is the act of applying a procedure or chemicals to a substance to remove undesirable pollutants.

Tributary is a river or stream that flows into a larger river or stream.

Underground Storage Tanks (USTs) are storage tanks with at least 10 percent or more of its storage capacity underground (the complete regulatory definition is at 40 CFR Part 280.12).

Waste is unwanted materials left over from a manufacturing or other process.

Water Table is the depth or level below which the ground is saturated with water.

Waters of the United States

(a) All waters, which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(b) All interstate waters, including interstate "wetlands";
(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, play lakes, or natural ponds, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
(d) All impoundments of waters otherwise defined as waters of the United States under this definition;
(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
(f) The territorial sea; and
(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11 (m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States.

Waterway is a channel for the passage or flow of water.

Wet Well is a chamber used to collect water or other fluid and to which a pump is attached.

Wetlands are those area that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marches, bogs, and similar areas.

Wind Break is any device designed to block wind flow and intended for protection against any ill effects of wind.