



## **Municipal Separate Storm Sewer System (MS4) Annual Report**

JBLE–Eustis, Virginia

Permit Year 2: 1 July 2019 – 30 June 2020



**JBLE–Eustis**  
**733d CED/CEIE**  
1407 Washington Blvd.  
JBLE–Eustis, VA 23604



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- Attachment 6. Chesapeake Bay TMDL Action Plan Implementation Status Memo
- Attachment 7. Bacteria TMDL Action Plan Implementation Status Memo

## List of Acronyms and Abbreviations

733 CED/CEIE	733d Civil Engineer Division/Environmental Element
AAFES	Army and Air Force Exchange Service
ACS	Army Community Service
AEM	Advanced Environmental Management
BMP	Best Management Practice
CBAT	Chesapeake Bay Action Team
CFT	Cross-Functional Team
CSCE	Comprehensive Site Compliance Evaluation
DoD	Department of Defense
E&SC	Erosion and Sediment Control
EMAC	Environmental Management Awareness and Competency
EMP	Environmental Management Procedure
EMS	Environmental Management System
EPA	U. S. Environmental Protection Agency
ESOH	Environmental, Safety and Occupational Health
FOG	Fats, Oil & Grease
FSE	Food Service Establishments
FSS	Force Support Squadron
GIS	Geographic Information System
HRSD	Hampton Roads Sanitation District
HQ	Headquarters
IDDE	Illicit Discharge Detection and Elimination
ISO	International Organization of Standardization
JBLE–Eustis	Joint Base Langley Eustis – Eustis
MCM	Minimum Control Measure
MFH	Military Family Housing
MS4	Municipal Separate Storm Sewer System
MWR	Morale, Welfare, and Recreation
NMP	Nutrient Management Plan
O&M	Operation and Maintenance
P4	Public-Public; Public-Private
POC	Pollutants of Concern
PY	Permit Year

## List of Acronyms and Abbreviations (Continued)

SC	Special Condition
SCM	Stormwater Control Measure
SWCB	State Water Control Board
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TA	Training Area
TEACH	The Environmental Awareness Course Hub
TMDL	Total Maximum Daily Load
TRADOC	Training and Doctrine Command
TSS	Total Suspended Solids
VDEQ	Virginia Department of Environmental Quality
VESCL	Virginia Erosion and Sediment Control Law
VESCP	Virginia Erosion and Sediment Control Program
WG	Wing
WOAC	Warrant Officers Advanced Course

## Municipal Separate Storm Sewer System Program Plan Certification

As required by Part III.K.2. of General Permit No. VAR040035, all reports required by state permits and other information requested by the board shall be signed by a principal executive office or ranking elected official as described in Part III.K.1.c., or a duly authorized representative.

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.

Type or Print the following information:

Name: Miguel L. Capellan Area Code and  
Telephone No.: (757) 878-3642

Official Title: Director, 733d Civil Engineering Division

Signature: CAPELLAN.MIGU Digitally signed by  
 CAPELLAN.MIGUEL.L.1016538660  
Date: 2020.09.29 10:22:28 -04'00'  
Date Signed: 9/29/20

Permit Number: VAR040035 MS4 Name: JBLE–Eustis

## Section 1: Introduction

Joint Base Langley-Eustis – Fort Eustis (JBLE–Eustis), Virginia, holds a General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), General Permit No. VAR040035, issued by the Commonwealth of Virginia Department of Environmental Quality (VDEQ) on 01 November 2018. In accordance with provisions outlined in this permit, JBLE–Eustis has continued implementing their comprehensive stormwater management program designed to prevent or reduce the discharge of sediment and other pollutants into the base's stormwater conveyance system. General Permit No. VAR040035 Part I.D.2.e. requires JBLE–Eustis to evaluate the MS4 program on an annual basis to assess program compliance, the appropriateness of the identified Best Management Practices (BMP), and progress towards achieving the identified measurable goals.

This report describes the progress and status of the JBLE–Eustis MS4 Program during Permit Year (PY) 2 from 01 July 2019 to 30 June 2020.

The remainder of this annual report is presented as follows:

- Section 2 – Provides an overview of the MS4 including its physical characteristics
- Section 3 – Presents a listing of the base's stormwater program guidance
- Section 4 – Discusses the minimum control measures (MCM) JBLE–Eustis is implementing under the permit
- Section 5 – Reviews the special conditions (SC) JBLE–Eustis is implementing under this permit

These sections are supported by the following attachments:

- Attachment 1– Illicit Discharge Detection Elimination (IDDE) Map
- Attachment 2 – Stormwater Management Educational Brochures
- Attachment 3 – Public Involvement/Participation Documentation
- Attachment 4 – Illicit Discharge Investigation Details
- Attachment 5 – Stormwater Management (SWM) Facility Inventory Tracking Spreadsheet
- Attachment 6 – Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan Implementation Status Memo
- Attachment 7 – Bacteria TMDL Action Plan Implementation Status Memo

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## Section 2: Storm Sewer System Information

### Permit Holder

Commanding Officer, 633 Air Base Wing  
JBLE–Eustis  
Fort Eustis, Virginia

### Facility Information

JBLE–Eustis  
Fort Eustis, Virginia  
MS4 General Permit No. VAR040035

### Mailing Address

Director, 733d Civil Engineering Division  
1407 Washington Blvd.  
Fort Eustis, VA 23604

### Population Served

The total population attached to the base is approximately 22,090, comprised of approximately 7,160 military personnel and 11,428 dependents, as well as approximately 3,500 civilian non-residents who commute to the base daily.

### MS4 Service Area

JBLE–Eustis is located adjacent to the City of Newport News, Virginia which is part of the Norfolk, Hampton, and Newport News metropolitan area. The base is located on Mulberry Island, a small peninsula bordered by the James River to the west, Warwick River to the east, and Skiffes Creek toward the north. Smaller waterbodies on or bordering the base include Jail Creek, Morrison's Creek, Island Creek, Bailey Creek, and Eustis Lake. The base occupies approximately 8,000 acres and houses a variety of military organizations and support activities. Most of the development is located at the northern end of the base, while the southern portion of the peninsula remains largely undeveloped. A golf course and an airfield are located near the center of the base.

The base does not rely on another government entity to satisfy permit obligations. In addition, no program approvals are required as specified in Part I.C.5. of the permit.

### MS4 Conveyance System

JBLE–Eustis' stormwater conveyance system consists of sheet flow areas, swales, ditches, and pipes. In addition, the base has mapped the stormwater system for JBLE–Eustis as well as the stormwater control measures (SCM) using Geographic Information System (GIS).

There are three subwatersheds that include portions of JBLE–Eustis. These include Morrison's

Creek, Skiffes Creek, and the Warwick River. River basins, streams, and other bodies of water into which the stormwater from the MS4 discharges are shown in Table 1. The table lists the subwatershed and waterbody that receive stormwater runoff from the MS4 jurisdictional area.

Table 1. Subwatersheds		
Subwatershed (Hydrologic Unit Code)	Waterbody Name	Waterbody ID <sup>1</sup>
Morrison's Creek - James River (020802060804)	Fort Creek	VAT-G11E_ZZZ01A00
	James River - Gravel Neck to Pagan River	VAT-G11E_JMS01A06
	Morrison's Creek - Mulberry Island	VAT-G11E_MRS01A06
Skiffes Creek - James River (020802060802)	Bailey Creek	Unavailable <sup>2</sup>
	Blows Creek	VAT-G11E_ZZZ01A00
	Eustis Lake	Unavailable <sup>2</sup>
	James River - Gravel Neck to Pagan River	VAT-G11E_JMS01A06
	Skiffes Creek System [Admin Cond]	VAT-G11E_SFF02A08
Warwick River (020802060901)	Browns Lake	Unavailable <sup>2</sup>
	Jail Creek - Lower Tidal Portion	Unavailable <sup>2</sup>
	Milstead Island Creek	Unavailable <sup>2</sup>
	Warwick River - Lower Tidal Portion	VAT-G11E_WWK03A08
	Warwick River - Middle Tidal Portion	VAT-G11E_WWK02A08
	Warwick River - Upper Tidal Portion	VAT-G11E_WWK01A08

**Note:**

<sup>1</sup> The Waterbody ID is referenced from the 2016 Integrated Report GIS layers (<https://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityAssessments/GISData/ir16gisdata.zip>)

<sup>2</sup> Waterbody IDs, categories, and impairments were not included in the 2016 VDEQ Integrated Report.

Part I.E.3.a(1) of Permit No. VAR040035 requires that JBLE–Eustis maintain a stormwater drainage system map that shows the location of all MS4 outfalls as well as the name and location of all waters receiving discharges from the MS4 outfalls and the associated hydrologic unit code. A map is included as Attachment 1. No new outfalls were identified during the MS4 stormwater drainage system mapping update by 733d Civil Engineer Division/Environmental Element (733 CED/CEIE) staff.

## **Total Maximum Daily Load and Impaired Stream Identification**

### *TMDLs Other than the Chesapeake Bay TMDL*

The U.S. Environmental Protection Agency (EPA) or VDEQ has the authority to establish and issue a TMDL allocation on a body of water or receiving stream. The Warwick River and Skiffes Creek subwatersheds are subject to a TMDL for fecal bacteria. On 28 April 2009, the VDEQ State Water Control Board (SWCB) approved TMDLs to address fecal coliform bacteria impairment in the Warwick River (James River) and Skiffes Creek. Both the Warwick and James Rivers impaired segment (waterbody ID# VAT-G11E) and Skiffes Creek impaired segment (waterbody ID# VAT-G11E) are considered Condemned Shellfish Areas that do not support the Virginia Department of Health fecal coliform standards for shellfish harvesting. These waterbodies receive runoff from JBLE–Eustis and the TMDLs for these waterbodies include wasteload allocation assignments to JBLE–Eustis.

### *Chesapeake Bay TMDL*

In 2010 the EPA established the Chesapeake Bay TMDL to address pollutants of concern (POC) in the Chesapeake Bay. The POCs include excess nitrogen, phosphorus, and total suspended solids (TSS). The Chesapeake Bay watershed encompasses over 64,000 square miles across the District of Columbia and large sections of Delaware, Maryland, New York, Pennsylvania, West Virginia, and Virginia. JBLE–Eustis sits within the Chesapeake Bay Watershed.

In the Phase I and Phase II Chesapeake Bay Watershed Implementation Plan for the Chesapeake Bay TMDL, the Commonwealth of Virginia committed to a phased approach to reducing the POCs discharging from MS4s. Part II.A.11(a)-(f) of MS4 Permit No. VAR040035 requires JBLE–Eustis to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans to meet the required POC reductions.

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## Section 3: Water Quality Programs and Guidance

This section discusses the local and state water quality programs that are implemented by JBLE–Eustis or the state, respectively, within the base boundaries.

### Local Programs and Guidance

JBLE–Eustis has developed and implements local programs and guidance in order to comply with the MS4 permit. These programs and guidance documents are listed below.

- JBLE–Eustis Environmental Policy Statement (24 August 2017)
- JBLE–Eustis Instruction 32-101 - Environment Management (28 January 2014)
- JBLE–Eustis Environmental Management Procedures (EMP) (updated annually)
- JBLE–Eustis IDDE Procedure Manual (August 2016)
- JBLE–Eustis Structural Stormwater Control Measures (SCM) Inventory, Annual Inspection and Management Plan
- JBLE–Eustis Erosion and Sediment Control Standards and Specifications (May 2016)
- JBLE–Eustis MS4 Program Plan (January 2019)

### State Programs

In addition to the local programs that the base is implementing, there are state programs established by VDEQ, which are also being implemented. These programs are listed below.

- **Erosion and Sedimentation Program** – The Virginia Erosion and Sediment Control Law (VESCL) delegates the authority to administer a Virginia Erosion and Sediment Control Program (VESCP) to local municipalities. Local municipal VESCPs must be approved by the State Water Control Board; however, this is an optional requirement for JBLE–Eustis per the VESCL. JBLE–Eustis has not developed a specific erosion and sediment control program for the base; however, erosion and sediment control standards and specifications were developed and implemented in 2016 for small projects (land disturbance between 2,500 and 10,000 square feet). The base utilizes EMP 4.4.6.2.2, Stormwater Management, to outline roles and responsibilities, as well as procedures related to erosion and sediment control.
- **Stormwater Permitting Program** – The VDEQ Water Division implements the stormwater permitting program to develop, plan, and implement statewide stormwater control policies, strategies, and rules designed to protect the state surface waters from the impacts of stormwater pollutants and runoff.

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## Section 4: Minimum Control Measures

This section discusses the MCMs that JBLE–Eustis is implementing under Permit No. VAR040035. MCMs include:

- MCM 1: Public Education and Outreach
- MCM 2: Public Involvement/Participation
- MCM 3: IDDE
- MCM 4: Construction Site Stormwater Runoff Control
- MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands
- MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

Details regarding program requirements, achievements, and planned initiatives are discussed on the following pages.

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### **MCM 1: Public Education and Outreach**

JBLE-Eustis is required to develop and implement a public education and outreach program with the objective to comply with Commonwealth and local requirements to educate the base community regarding the impacts of stormwater discharges on the receiving waters as well as measures that the community can take to reduce the introduction of pollutants to the stormwater drainage system.

JBLE-Eustis plans to utilize a combination of relevant messages and outreach materials to educate target audiences for each of the three high priority water quality issues, as well as other stormwater topics of interest to the public (using a minimum of two of the strategies listed on Part I.E.1.d, Table 1 - Strategies for Public Education and Outreach. The table below outlines program achievements during PY1 as well as planned education and outreach activities for the upcoming PY, in accordance with Part I.E.1.g.(2) of the permit. Additional details are included in Section 3.1 of the JBLE-Eustis MS4 Program Plan.

Management Practices & Techniques		Program Achievements (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Identify three high priority water quality issues	Continued to monitor previously identified high priority water quality issues, which include: <ol style="list-style-type: none"><li>1. Curb illegal fats, oils, and grease (FOG) disposal at food service establishments (FSE), including food trucks, to the stormwater drainage system</li><li>2. Curb illegal dumping within military family housing (MFH) and the dormitories.</li><li>3. Training Area (TA) erosion and sediment control.</li></ol>		<ul style="list-style-type: none"><li>• High priority water quality issues remain unchanged for PY3.</li></ul>

Management Practices & Techniques		MCM 1: Public Education and Outreach (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Curb illegal fats, oils, and grease disposal at FSE, including food trucks, to the stormwater drainage system.	<ul style="list-style-type: none"> <li>The FSE Inventory identified which FSEs had trained workers in FOG management and which had not. It also identified the procedures Army Air Force Exchange Service (AAFES) has in place for food trucks doing business on the base.</li> <li>FSEs must have two workers trained in FOG management using the training provided by Hampton Roads Sanitation District (HRSD) at <a href="http://www.hrfog.com">www.hrfog.com</a>. (Part I E.1.d Table 1 – Training Materials)</li> <li><b>Goal:</b> Provide information regarding proper washing procedures to target audience.</li> </ul>	<ul style="list-style-type: none"> <li>The areas of concern for this water quality issue will continue to be monitored for continued compliance by the target audience.</li> <li>Continue to require FSE staff to maintain appropriate training for FOG management.</li> <li>Continue to post signage related to FOG BMPs in kitchen areas.</li> <li>Resume Food Handler Training</li> </ul>	<ul style="list-style-type: none"> <li>The areas of concern for this water quality issue will continue to be monitored for continued compliance by the target audience.</li> <li>Continue to require FSE staff to maintain appropriate training for FOG management.</li> <li>Continue to post signage related to FOG BMPs in kitchen areas.</li> <li>Resume Food Handler Training</li> </ul>

Management Practices & Techniques		MCM 1: Public Education and Outreach (1 July 2019 – 30 June 2020)	Program Achievements (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
<b>Curb illegal dumping within MFH and the dormitories.</b>	<ul style="list-style-type: none"> <li>Stormwater pollution prevention training was provided to base personnel (active duty, civilian, and contractor). Training activities include Environmental Management Awareness and Competency (EMAC) and Advanced Environmental Management (AEM). (Part I E.1.d Table 1 – Training Materials) <ul style="list-style-type: none"> <li>The EMAC course is provided in an online format through The Environmental Awareness Course Hub (TEACH) website (<a href="https://usaf.learningbuilder.com">https://usaf.learningbuilder.com</a>) and is required for all base personnel within 30 days of arrival and annually thereafter.</li> <li>The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH. (2,735 people took the AEM training.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Publish articles in the Warrior newspaper related to illegal dumping (e.g., privately owned vehicle car washing in undesigned areas, littering, and disposal of household chemicals) on a semi-annual basis during the PY.</li> <li>Develop and post information to the JBLE-Eustis and MFH Facebook pages at least semi-annually during the PY.</li> <li>Send a mass email to MFH residents regarding illegal dumping at least semi-annually during the PY.</li> <li>Continue to conduct EMAC, AEM, and WOAC training.</li> <li>Continue to distribute the informational brochures relevant to curbing illegal dumping within MFH and the dormitories.</li> </ul>	<ul style="list-style-type: none"> <li>• Stormwater pollution prevention training was provided to base personnel (active duty, civilian, and contractor). Training activities include Environmental Management Awareness and Competency (EMAC) and Advanced Environmental Management (AEM). (Part I E.1.d Table 1 – Training Materials) <ul style="list-style-type: none"> <li>○ The EMAC course is provided in an online format through The Environmental Awareness Course Hub (TEACH) website (<a href="https://usaf.learningbuilder.com">https://usaf.learningbuilder.com</a>) and is required for all base personnel within 30 days of arrival and annually thereafter.</li> <li>○ The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH. (2,735 people took the AEM training.)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Publish articles in the Warrior newspaper related to illegal dumping (e.g., privately owned vehicle car washing in undesigned areas, littering, and disposal of household chemicals) on a semi-annual basis during the PY.</li> <li>• Develop and post information to the JBLE-Eustis and MFH Facebook pages at least semi-annually during the PY.</li> <li>• Send a mass email to MFH residents regarding illegal dumping at least semi-annually during the PY.</li> <li>• Continue to conduct EMAC, AEM, and WOAC training.</li> <li>• Continue to distribute the informational brochures relevant to curbing illegal dumping within MFH and the dormitories.</li> </ul>

Management Practices & Techniques		MCM 1: Public Education and Outreach (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Address TA erosion and sediment control	<ul style="list-style-type: none"> <li>733 CED/CEIE continued to pursue an opportunity to partner with the Virginia Institute of Marine Science to obtain Legacy Department of Defense funding to develop an oyster reef at TA 1 to resolve erosion issues (Part I E.1.d Table 1 – Speaking engagements).</li> <li>Discussed erosion and sediment control at Wing (WG) and Cross-Functional Team (CFT) meetings, as well as Environmental Safety and Occupational Health (ESOH) Council briefings (Part I E. 1.d Table 1 – Speaking engagements).</li> </ul> <p><b>Goal:</b> Provide information regarding reducing erosion and providing sediment control procedures to target audience.</p>	<ul style="list-style-type: none"> <li>Meet with Range Control personnel to discuss erosion and sediment control issues at the TA.</li> <li>Discuss at WG and CFT meetings, as well as at ESOH Council briefings.</li> <li>Distribute TA Erosion and Sediment Control (E&amp;SC) outreach materials to Range Control, FSS, and other users.</li> <li>Develop an outreach plan for the TAs.</li> </ul>	

## MCM 2: Public Involvement/Participation

The base is required to cultivate a public involvement and participation program with the objective to comply with commonwealth and local public notice requirements, implementing four activities per year from a minimum of two of the categories listed in Part I.E.2 c. Table 2. JBLE–Eustis has taken steps to implement the program BMPs as specified in Part I.E.2 of the permit.

MCM 2: Public Involvement/Participation		
Management Practices & Techniques	Program Achievements (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
JBLE–Eustis Environmental Website	The 733 CED/CEIE maintains a website that provides information to the public, including the MS4 Program Plan and the MS4 Annual Reports. The website is located here: <a href="https://www.jble.af.mil/Units/Army/Eustis-Environmental/">https://www.jble.af.mil/Units/Army/Eustis-Environmental/</a>	Continue to maintain the JBLE–Eustis Environmental website and post educational and reference information for the base population.
Public Involvement Participation	<ul style="list-style-type: none"> <li>• Public involvement and participation activities include:           <ul style="list-style-type: none"> <li>○ Worked with Army Community Service (ACS) and Morale, Welfare, and Recreation (MWR) for Trunk or Treat (25 October 2019) and provided candy collection bags (Part I.E.2 c. Table 2 – Educational event). There were approximately 1,100 participants in Trunk or Treat. America Recycles Day (15 November 2019).</li> <li>○ The 733d Air Base Wing Public Affairs Office participated in the recycling event by collecting plastic bags from 02 December 2019 through 15 April 2020 (Part I.E.2 c. Table 2 – Restoration).</li> <li>○ World Water Day (22 March 2020) events were cancelled due to COVID-19 restrictions. The base will reschedule to a later date.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Continue to host events during Earth Week to engage base personnel and residents.</li> <li>• Continue to participate in World Water Day.</li> <li>• Resume participating in Clean the Bay Day as well as Earth Week events hosted by MFH and FSS based on guidance and recommendations associated with COVID-19 response.</li> </ul>

Management Practices & Techniques		Program Achievements (1 July 2019 – 30 June 2020)	MCM 2: Public Involvement/Participation	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Public Involvement/ Participation (Continued)	<ul style="list-style-type: none"> <li>• Public involvement and participation activities include (continued): <ul style="list-style-type: none"> <li>○ Earth Week (20 - 24 April 2020) – The 733 CED/CEIE posted information on Facebook to promote volunteers for Earth Week. (Part I.E.2 c. Table 2 – Educational Events, Restoration and Monitoring). Due to the COVID-19 pandemic, in-person Earth Week events were cancelled. In lieu of in-person events. The 733 CED/CEIE posted activities on Facebook to be completed at home. Activities included: Earth Day coloring book, recycled crayon activity, Earth Day Bingo, Earth Day themed sidewalk chalk art, Earth Day lesson plans for at home activities provided by AskHRGreen, and a reminder that car washing byproducts that go into storm drains flow directly into waterways. Examples of these posts can be found in Attachment 3.</li> <li>○ Environmental Partnership – JBLE–Eustis participates in the Secretary of the Air Force Program to partner with our local public and private neighbors. The Public-Private; Public-Private (P4) Partnership Program seeks to identify and develop opportunities to share resources, increase efficiency and improve effectiveness of operational, educational and recreational programs (Part I.E.2 c. Table 2 – Educational events). The JBLE P4 program is currently focused on the Virginia Peninsula. As the program matures, there may be opportunities for broader partnerships.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Develop focused educational messages to be disseminated via internal and external websites (e.g., Facebook, Twitter, Nextdoor), the Peninsula Warrior, community group emails and websites.</li> <li>• Develop strategies for alternative public participation events with COVID-19 restrictions in place.</li> <li>• Continue to look for P4 partnerships to share resources and increase program effectiveness.</li> <li>• Partner with a Boy Scout Troop to adopt SCMs.</li> </ul>		

<b>MCM 2: Public Involvement/Participation</b>		
<b>Management Practices &amp; Techniques</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>	<b>Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)</b>
Public Involvement/ Participation ( <i>Continued</i> )	<ul style="list-style-type: none"> <li>• Public involvement and participation activities include (continued): <ul style="list-style-type: none"> <li>○ Communicated with base personnel and residents on a regular basis through internal and external websites, the base community cable channel, the Peninsula W/warrior newspaper, as well as regular interactions with various community groups (e.g., the Department of Game and Inland Fisheries, the York County Extension Office and the City of Hampton). (Part I.E.2 c. Table 2 – Educational Events). An example of this type of communication and other Public Participation documentation is provided in Attachment 3.</li> <li>○ Newcomers training, which includes stormwater training, is conducted with all new soldiers and civilians on base. The course is typically offered in person; however, COVID-19 restrictions have resulted in virtual trainings for April – June 2020.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Continue to provide stormwater training to personnel on base via newcomers training.</li> </ul>

### MCM 3: Illicit Discharge Detection and Elimination

The base is required to develop, implement, and enforce a program to detect and eliminate illicit discharges into the MS4. JBLE–Eustis has taken steps to implement the IDDE program BMPs as specified in Part I.E.3 of the permit.

MCM 3: IDDE		
Management Practices & Techniques	Program Achievements (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Develop and maintain an accurate MS4 map and information table	Updated MS4 storm sewer system and outfall maps that reflects all changes occurring prior to 01 October 2020 as required by Part I.E.3.a.(4).	Update the MS4 map and information table as needed by 01 October following the end of the PY.
List any written notifications of physical interconnection given by the operator to other MS4s	There are no known physical interconnections with other MS4s.	733 CED/CEIE will continue to monitor the MS4 area to ensure there are no interconnections with other MS4s.
Outfall screenings	<ul style="list-style-type: none"> <li>• Fifty (50) of the 83 non-industrial outfalls were inspected during PY2. Details regarding the inspection findings are included on the outfall inspection records.</li> <li>• Copies of the outfall inspection records are maintained by 733 CED/CEIE and will be made available upon request.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect non-industrial outfalls as required by the IDDE Procedure Manual, and document the inspection utilizing the outfall inspection forms.</li> </ul>
Investigations of suspected illicit discharges	<ul style="list-style-type: none"> <li>• JBLE–Eustis personnel utilized the IDDE procedures to investigate potential illicit discharges.</li> <li>• Investigated potential illicit discharges: <ul style="list-style-type: none"> <li>○ Pool water discharge to MS4 (24 October 2019) – The Fire Department discovered swimming pool water being discharged (approximately 20,000 gallons). Discharge was ceased immediately, and remaining water was discharged to the sanitary sewer system. The discharge was reported to VDEQ and the contractor was informed of the regulation prohibiting discharging swimming pool water to the MS4. The investigation was closed on 25 October 2019. A tracking spreadsheet of potential illicit discharges is provided in Attachment 4.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Continue to utilize IDDE procedures to investigate potential illicit discharges.</li> <li>• Continue to report all spills or unauthorized releases, whether it enters the MS4 or not, in accordance with JBLE–Eustis EMPI 4.7.7, Spill Prevention and Response, and log the incident in the spill database maintained by the 733 CED/CEIE Spill Program Manager.</li> </ul>

#### **MCM 4: Construction Site Stormwater Runoff Control**

The base is required to comply with the Virginia Stormwater Management Program in order to maintain compliance with the Construction Site Runoff Controls. These controls are designed to assist with the development, implementation and enforcement of an E&SC Program to reduce the pollutants (e.g., total suspended solids, total phosphorus, and total nitrogen) related to “land-disturbing activities including clearing, grading, or excavation that results in a land disturbance equal to or greater than 2,500 square feet and less than one acre in all areas of jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations ([9VAC25-830](#)) adopted pursuant to the Chesapeake Bay Preservation Act.” The base has taken steps to implement the program BMPs as specified in Part I.E.4 of the permit.

<b>MCM 4: Construction Site Stormwater Control</b>		
<b>Management Practices &amp; Techniques</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>	<b>Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)</b>
Track regulated land-disturbing activities	<ul style="list-style-type: none"> <li>Land disturbing projects that occurred during the reporting period have been conducted in accordance with the current department approved standards and specifications for erosion and sediment control.</li> <li>Continued to track all regulated land disturbing activities           <ul style="list-style-type: none"> <li>○ Inspections performed –               <ul style="list-style-type: none"> <li>■ Internal inspections conducted weekly and after every major storm event</li> <li>■ Three (3) VDEQ regulatory inspections conducted during PY2</li> </ul> </li> <li>○ Total number of land disturbing activities – 2               <ul style="list-style-type: none"> <li>■ Battalion Complex</li> <li>■ Aviation Maintenance Instruction Building</li> </ul> </li> <li>○ Total number of acres disturbed – 54 acres               <ul style="list-style-type: none"> <li>■ Battalion Complex – 42 acres</li> <li>■ Aviation Maintenance Instruction Building – 12 acres</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Continue to track regulated land-disturbing activities, including:           <ul style="list-style-type: none"> <li>○ Number of on-going land disturbing activities</li> <li>○ Number of acres disturbed</li> <li>○ Number of inspections conducted</li> </ul> </li> </ul>
Land-disturbing activity enforcement actions	No enforcement actions during PY2.	Not applicable.

### **MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands**

The base is required to develop, implement and enforce a program to address stormwater runoff related to new development and redevelopment projects throughout the service area, including a combination of structural and non-structural BMPs. In addition, JBLE-Eustis is required to ensure that the structural BMPs (i.e., SWM facilities) are functional through long term operation and maintenance (O&M) practices. The base has taken steps to implement the program BMPs as specified in Part I.E.5 of the permit.

<b>MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands</b>	
<b>Management Practices &amp; Techniques</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>
Maintain an updated electronic database of all known operator-owned and privately-owned SWM facilities that discharge into the MS4	JBLE-Eustis utilized an excel spreadsheet to track SWM facilities. The spreadsheet is included electronically as Attachment 5.
Identify new SWM facilities brought online during the PY	<p>Four additional Contech StormFilter devices were identified, inspected, and added to the SWM facility inventory in PY2.</p> <ul style="list-style-type: none"><li>• Track construction projects and planned SWM facilities and include in the inventory as they are brought online.</li><li>• Work closely with 733 CED/CEIE planning and engineering departments to review plans and specifications associated with upcoming construction projects.</li></ul>

<b>MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands</b>		
<b>Management Practices &amp; Techniques</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>	<b>Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)</b>
SWM facility O&M management	<ul style="list-style-type: none"> <li>• Phase I of SWM facility rehab was conducted during PY2. This included SWM facilities that were noted to be of the highest priority during the PY1 annual inspection. Rehabbed SWM facilities include:           <ul style="list-style-type: none"> <li>◦ WR-BB-011, WR-DB-013, WR-BB-038, WR-FT-052, WR-BB-062, WR-WB-076, WR-DE-077, EL-DB-084, EL-DB-088, BC-IB-098, WR-WB-001, BC-DE-100, EL-DE-090, EL-DE-089, BC-WB-104, WR-DB-074, EL-DB-080, WR-FT-046, WR-FT-047, WR-FT-048, and EL-BB-092</li> <li>• Completed an annual inspection of the 114 SWM facilities from February – May 2020.</li> </ul> </li> </ul>	Rehab SCMs based on SWM facility inventory assessment. Contract is currently out for bid.
Maintain contact with the VDEQ BMP Warehouse	The electronically reported BMPs were submitted to the VDEQ for inclusion in the BMP Warehouse in accordance with Part I.E.5.g in October 2019.	Send electronically-reported BMPs to VDEQ BMP Warehouse as needed.

## MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations

The base is required to develop and implement a program to address pollution prevention and good housekeeping procedures, including a training program for base personnel and the community. JBLE-Eustis has taken steps to implement the program BMPs as specified in Part I.E.6 of the permit.

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations		
Management Practices & Techniques	Program Achievements (1 July 2019 – 30 June 2020)	Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)
Develop and implement daily operational procedures	<ul style="list-style-type: none"> <li>▪ JBLE-Eustis utilizes an environmental management system (EMS) that conforms to International Organization of Standardization (ISO) 14001:2004, to manage environmental program requirements.</li> <li>▪ All base environmental and management requirements are codified in JBLE Instruction 32-101, <i>Environmental Management</i>.</li> <li>▪ EMPS have been developed and are used to implement the environmental program. These EMPS are reviewed and updated (as required) on an annual basis. EMPS that are related to the Stormwater Management Program include:</li> <li>▪ EMP 4.4.2, Environmental Awareness &amp; Competency Training</li> <li>▪ EMP 4.4.2 Tab 2, Environmental Management Training Programs of Instructions</li> <li>▪ EMP 4.4.6.2, Wastewater-Stormwater Management</li> <li>▪ EMP 4.4.6.5, Pollution Prevention</li> <li>▪ EMP 4.4.6.6, Hazardous Materials Management</li> <li>▪ EMP 4.4.6.7, Solid Waste and Recycling Management</li> <li>▪ EMP 4.4.6.12, Integrated Pest Management</li> <li>▪ EMP 4.4.6.14.1, Aboveground Storage Tanks Management</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to implement an EMS that conforms to ISO 14001:2004.</li> <li>• Post EMPS on the JBLE-Eustis Environmental website and advertise them on the JBLE-Eustis Facebook pages.</li> </ul>

<b>Management Practices &amp; Techniques</b>	<b>MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations</b> <b>Program Achievements</b> <b>(1 July 2019 – 30 June 2020)</b>	<b>Initiatives Planned for Coming Year</b> <b>(1 July 2020 – 30 June 2021)</b>
Develop and implement daily operational procedures (continued)	<ul style="list-style-type: none"> <li>○ EMPS that are related to the Stormwater Management Program (continued):           <ul style="list-style-type: none"> <li>▪ EMP 4.4.6.14.2, Underground Storage Tanks Management</li> <li>▪ EMP 4.4.6.16, Tab 1, Assessment Management Special Conditions and Affirmative Procurement</li> <li>▪ EMP 4.4.7, Spill Prevention and Response</li> <li>▪ EMP 4.5.2.1, Activity Assessments Conducted by 733 CED/CEIE</li> <li>▪ EMP 4.5.2.2, Regulatory and Permit Inspections</li> <li>▪ EMP 4.5.2.3, Internal Inspections Conducted by Activities</li> <li>▪ EMP 4.5.2.3.1, Activity Corrective Action Plans</li> <li>○ Wastewater and stormwater EMPS were consolidated into one EMP, EMP 4.4.6.2, Wastewater/Stormwater Management, issued 25 June 2020.</li> <li>○ EMPS are posted on the JBLE-Eustis Environmental website (<a href="https://www.jble.af.mil/About-Us/Units/Army/Eustis-Environmental/EMPs/">https://www.jble.af.mil/About-Us/Units/Army/Eustis-Environmental/EMPs/</a>).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Review all EMPS related to stormwater and update as needed.</li> </ul>
Develop and implement required Stormwater Pollution Prevention Plans (SWPPP)	<ul style="list-style-type: none"> <li>• High priority non-industrial facilities have been included in the comprehensive SWPPP (the Pines Golf Course, AAFES gas station and associated facilities, Base Exchange, and FSS Sport Field Maintenance facility) in order to manage to the same standard as the base's industrial facilities.</li> <li>• High priority non-industrial facilities incorporated in the SWPPP were inspected for compliance with the SWPPP as part of the annual Comprehensive Site Compliance Evaluation (CSCE).</li> <li>• The annual CSCE was completed and no new SWPPPs are currently required.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct the annual CSCE of the high-priority non-industrial areas.</li> <li>• Continue to review and update the list of municipal/non-industrial high priority facilities and determine if they require a SWPPP in PY3.</li> <li>• Create additional SWPPPs based on the developed schedule in PY3.</li> </ul>

<b>MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations</b>		<b>Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)</b>
<b>Management Practices &amp; Techniques</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>	
Develop and implement turf and landscape nutrient management plans (NMP)	<ul style="list-style-type: none"> <li>FSS began applying nutrients to the youth athletic fields, and it was determined that an NMP was required. An NMP was completed in June 2018 and is being implemented.</li> <li>Each of the three existing areas with NMPs (Pines Golf Course, FSS Athletic Fields, and MFH) have been visited to ensure compliance with the NMP requirements. No additional training is needed at this time.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to implement the NMPs at each of the four locations.</li> <li>Review previously developed training materials and conduct follow-up training with each of the locations subject to an NMP.</li> </ul>
Develop training material	<ul style="list-style-type: none"> <li>Good Housekeeping Procedures (GHP) training was conducted in person (October 2019). The GHP training was uploaded to TEACH (May 2020)</li> <li>IDDE training was uploaded to TEACH (May 2020)</li> </ul>	<ul style="list-style-type: none"> <li>Review the training material and update based on changes to the applicable EMPS covering the pollution prevention/good housekeeping procedures.</li> <li>Update training materials to reflect updates associated with the consolidated EMIP 4.4.6.2.</li> </ul>
Required training	<ul style="list-style-type: none"> <li>Stormwater pollution prevention training was provided to base personnel (i.e., active duty, civilian, contractor). Training activities include EMAC and AEM training.           <ul style="list-style-type: none"> <li>The EMAC course is provided in an online format through the TEACH website (<a href="https://usaf.learningbuilder.com">https://usaf.learningbuilder.com</a>) and is required for all base personnel within 30 days of arrival and annually thereafter.</li> <li>The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH.</li> </ul> </li> <li>The Environmental Element also provided environmental awareness training, including stormwater pollution prevention training, for the US Army Transportation School, Advanced Marine WOAC.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to conduct stormwater pollution prevention training and continue to track base personnel that have received training.</li> <li>Continue to track training events, including date of event, number of attendees, and objective of the training.</li> </ul>

<b>Management Practices &amp; Techniques</b>	<b>MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations</b>	<b>Program Achievements (1 July 2019 – 30 June 2020)</b>	<b>Initiatives Planned for Coming Year (1 July 2020 – 30 June 2021)</b>
Required training ( <i>continued</i> )	<ul style="list-style-type: none"> <li>• Newcomer's Orientation included stormwater pollution prevention</li> <li>• Target Audience Reached: <ul style="list-style-type: none"> <li>◦ EIMAC – 1,696</li> <li>◦ AEM – 2,736</li> </ul> </li> <li>• Newcomer's Orientation – 1,107</li> </ul>		

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## Section 5: Special Conditions

### **SC1: TMDL Special Conditions Compliance for the Chesapeake Bay TMDL**

JBLE–Eustis' Phase II Chesapeake Bay TMDL Action Plan was developed and submitted November 2019. The Action Plan presented a discussion of the compliance requirements for JBLE–Eustis.

The Action Plan presents the JBLE–Eustis estimated load contribution, required load reductions and pollutant reduction credits. The plan also reported progress made toward meeting the 40% cumulative pollutant reduction requirement for the first and second permit cycles.

The Chesapeake Bay TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY2 and is included as Attachment 6. Implementation will continue in PY3.

### **SC2: TMDL Special Conditions Compliance other than the Chesapeake Bay TMDL**

Part II.B. of the JBLE–Eustis MS4 permit, Permit No. VAR040035, requires the base to maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4 in an approved TMDL.

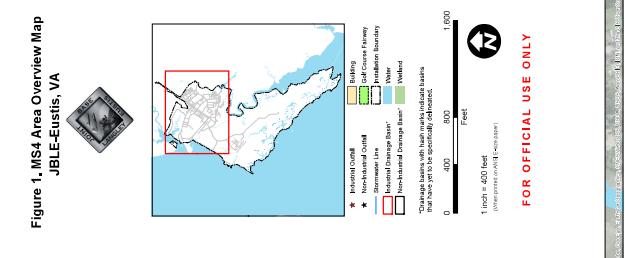
As part of maintaining its MS4 Program Plan, JBLE–Eustis has developed the Bacteria TMDL Action Plan to address bacteria impairment in those water bodies. Implementation continued in PY2 and will continue in PY3. The Bacteria TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY2 and is included as Attachment 7. Implementation will continue in PY3.

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**Attachment 1: Illicit Discharge Detection Elimination Maps**

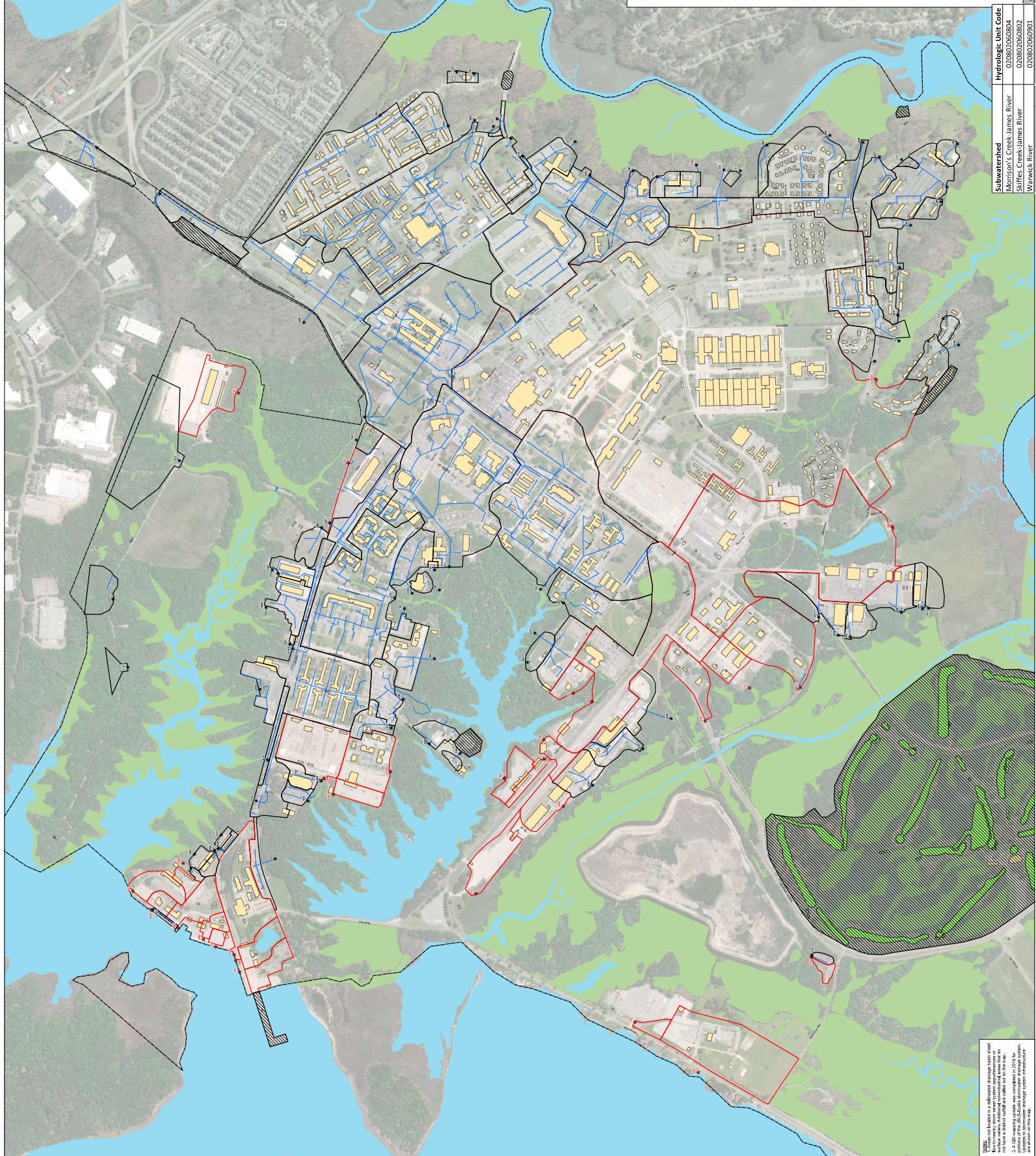
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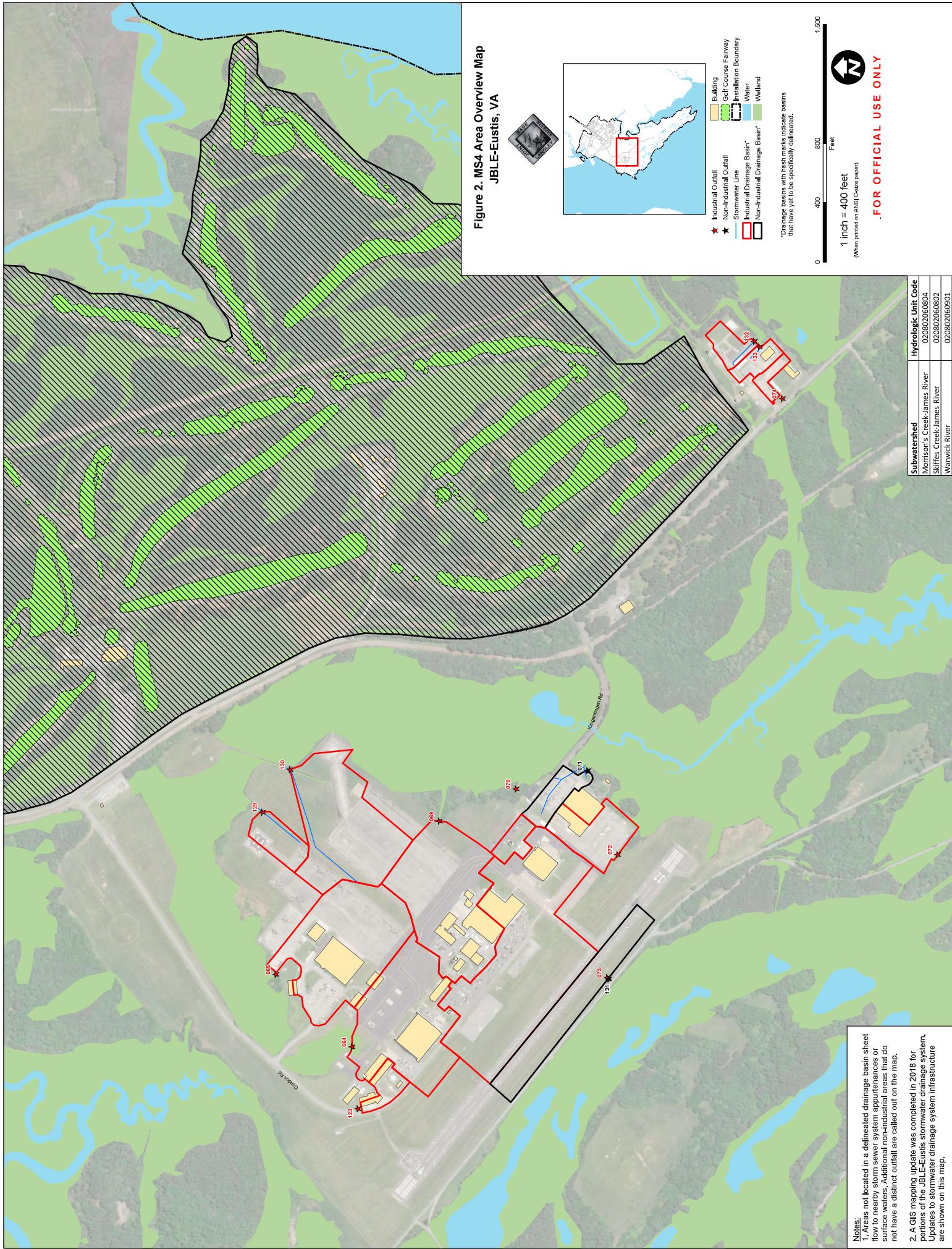
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**Figure 1. MS4 Area Overview Map  
JBLE-Eustis, VA**

FOR OFFICIAL USE ONLY





**Attachment 2: Stormwater Management Educational Brochures**

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# America Recycles Day

## Fort Eustis Plastic Bag Collection Project



Starting 1 November 18 through 30 April 19 the 733d Civil Engineer Division/Environmental Element will be collecting plastic grocery bags, along with several other plastics as listed below, with a goal of collecting 500 lbs.

If we can reach our goal, the Trex company will make a bench for the installation, which will go on the Nature Trail.



You can bring your plastic items to the following locations:

Recycle Center – Bldg. 1209  
733 CED – Bldg 1407  
BBC – Community Center



**Fact: It takes approximately 90 grocery bags to make one pound.**

### **What can be recycled?**

- Pallet wrap and stretch film
- Grocery bags
- Bread bags
- Case overwrap
- Dry cleaning bags
- Newspaper sleeves
- Ice bags
- Wood pellet bags
- Ziplock and other reclosable food storage bags
- Produce bags
- Bubble wrap and air pillow
- Salt bags
- Cereal bags

All plastic must be clean, dry and free of food residue



For further information please contact Donna Haynes at 757-878-4123 or by email at donna.c.haynes.civ@mail.mil



# Earth Week

## 49 years of celebrating our earth!!!

### 22-26 April 2019



22

Clean-up of  
Dry Retention  
Ponds (BMPs)

23

Nature Trail  
Maintenance  
and Plantings

24

Wildlife Boat  
Tours



## Tips

**Picking up pet waste is no one's favorite job.**

**Hopefully the tips below will make the job a little less icky.**

- You can turn pet waste collection baggies inside out over your hand to use the bag as a glove when picking up the waste.
- Many pet owners prefer to double bag the collected pet waste.

- After collection, you can tie the baggies onto the leash so that you do not have to hold or put the full baggie in your pocket.
- Long handled pet waste scoopers are available at pet stores to assist with waste collection.

- Although you can purchase baggies specifically for pet waste at pet stores, you can also re-use other bags including newspaper bags, bread bags, or sandwich baggies.

- Pet waste digesters are available for purchase at pet stores.

## Additional Information

For more information, contact a Joint Base Langley Eustis Water Media Manager at 757-878-5218 (Fort Eustis) or 757-641-1141 (Langley AFB).

Additional information is available at:

### EPA Pet Waste Management:

<https://cfpub.epa.gov/nptstbx/files/Pet%20Care%20Fact%20Sheet.pdf>

### City of Hampton

<http://www.hampton.gov/DocumentCenter/View/9075>

### Hampton Roads

[www.hrpdcva.gov/departments/water-resources/stormwater-management](http://www.hrpdcva.gov/departments/water-resources/stormwater-management)

<http://askhrgreen.org/scoop-the-poop/>

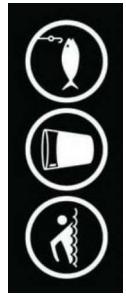
### Water Environment Federation

[www.wef.org/AWIK/pages\\_cs.aspx?id=6392](http://www.wef.org/AWIK/pages_cs.aspx?id=6392)  
[www.wef.org/blogs/blog.aspx?id=8780&blogid=17296](http://www.wef.org/blogs/blog.aspx?id=8780&blogid=17296)

## Preventing Pollution from Pet Waste



April 2016



## The Problem

Pet waste is not only smelly and unsightly, but also is a health risk to pets, people, and our local water bodies.

You may think that pet waste left on a lawn or sidewalk fertilizes the soil. However, in most cases the waste is washed into storm drains that lead directly into nearby waterways without being treated first.

The problem is that pet waste contains harmful bacteria such as E. coli and fecal coliform, making the water unfit for irrigation, recreation (such as swimming, fishing, or tubing), and other uses.

Pet waste contains parasites and bacteria that can spread gastrointestinal illnesses in humans such as Giardia and Salmonella.

These pollutants are harmful to the thousands of species of plants and animals (including fish, crabs and shellfish, birds, grasses, mammals, reptiles, and amphibians). People who eat food from contaminated water can get very sick.

Furthermore, pet waste also contains nutrients that can cause excessive algae growth in water, leading to fish kills and disrupting the water's natural ecology.

## The Facts

Pet waste contains contaminants that are harmful to people, pets, wildlife, and the environment. Some of the harmful effects of pet waste include:

- When pet waste decays, it uses up dissolved oxygen and releases compounds that are harmful to fish and other aquatic life.
- On average nationally, there are 0.58 dogs per household.

- Each dog produces approximately 0.42 pounds of fecal waste per day, or about 150 pounds per year. Just think how much waste is produced by the pets in your neighborhood!

- A single gram of pet waste contains an average of 23 million fecal coliform bacteria that can cause disease in humans.

- A single day's waste from one large dog can contain 7.8 billion fecal coliform bacteria—enough to close 15 acres of shellfish beds.
- EPA estimates that 2 to 3 days of pet waste from a population of 100 dogs would contribute enough bacteria and nutrients to temporarily close an entire bay for swimming and shellfishing..

Source: EPA 1993



## The Solution

Be responsible and clean up after your pets. It is as easy as 1-2-3:

### 1. Bring a bag.



### 2. Use a bag to pick up pet the waste.



### 3. Dispose of the bag properly in the trash...



# *Joint Base Langley-Eustis For Eustis*

**733d CED/CEIE**



## *Stormwater Pollution Prevention*

### **Why Is Stormwater Pollution Prevention So Important?**



#### **Our unique location:**

**The Chesapeake Bay Watershed**

#### **Federal and State Laws**

- ◆ Clean Water Act
- ◆ Virginia Pollutant Discharge Elimination System (VPDES) regulations
- ◆ Municipal Separate Storm Sewer System (MS4) regulations

**For more information, call the  
Storm Water Program Manager**

**(757) 878-5218**

### **Material Storage**

Outdoor storage of materials can also pollute stormwater runoff.

Here are some material storage Best Management Practices:

1. Store materials indoors or under cover where feasible



2. Keep outdoor materials stored away from storm drains and high traffic areas
3. Store materials on pallets to keep dry
4. Use silt fences to filter sediment



5. Install berm for secondary containment of sand and gravel or cover with a tarp.

*Small amounts of contaminants from all over the base add up and cause pollution in our water.*

*Yes, even the little things matter.  
YOU will make a difference,  
no matter how small.*

## The Many Sources of Pollution

- Paint • Leaves
- Fertilizer • Auto Exhaust
- Pet Waste • Motor Oil
- Pesticides • Lubricants
- Grass Clippings • Gas
- Tires • Eroded Soil
- Metal Corrosion • Plastics
- Litter

These materials enter storm drains every day, making stormwater a major contributor to water pollution in our area.

If the pollutants entering each drain can be reduced, so will the pollution in surrounding waterways.

## Best Management Practices (BMPs)

### Vehicle/Equipment

Overfills, leaks and spills are usually picked up by rain and snow, then carried to a storm sewer system. Here are some BMPs:

1. Do not top off fuel tanks
2. Immediately clean spills with absorbents
3. Check for leaks on all equipment
4. Use drip pans when fluid transfer occurs at any location



## Common Sources of Pollution Due to Base Operations

- De-icing Operations
- Construction Debris
- Sedimentation
- Air Pollution
- Erosion
- Spills
- Hazardous Waste

These sources of pollution reduce oxygen levels in the water, killing aquatic animals and covering aquatic plant life.

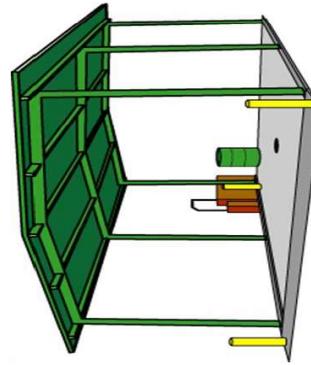
## Pavements

Pollution sources from streets are also picked up by rain and snow. Pavement runoff is carried more quickly to a storm sewer system. Here are some pavement BMPs:

1. Sweep up debris and sediment
2. Reduce deicing materials by using the manufacturer's recommended rates
3. Use products that pollute less
4. Store materials indoors
5. Allow nature to melt snow and ice
6. Maintain your vehicle to prevent fluid leaks



Street sweeping reduces pollution by 80%



# The Impact of Car Washing on Our Rivers and Bay...

When we wash the grime off our cars, it flows down the street and into the storm drain. This runoff carries soap, sediment, oil, and grease. Once the runoff gets into the storm drainage piping system, it directly discharges without treatment into the nearest lake, river, harbor, or bay.



# The Law

Joint Base Langley Eustis is required to obtain a stormwater permit under the Virginia Pollutant Discharge Elimination System, or VPDES. The goal of this permit is to reduce pollutants found in storm water runoff from urbanized areas to the "maximum extent practicable."

Joint Base Langley Eustis has prepared this educational brochure to meet a requirement of their VPDES permit administered by the Virginia Department of Environmental Quality.



## Contact Information

For more information, contact a **Joint Base Langley Eustis Water Media Manager at 757-878-5218 (Fort Eustis) or 757-764-1141 (Langley AFB)**.

For additional information, see the Commonwealth of Virginia's VPDES Permits, Fees and Regulations website at:

<http://www.deq.virginia.gov/Portals/0/DEQ/Water/PollutionDischargeElimination/VAG75FactSheet2012.pdf>

Environmental Protection Agency's information on vehicle washing:

[https://cfpub.epa.gov/nplstbx/files/KSMO\\_CarWashing.pdf](https://cfpub.epa.gov/nplstbx/files/KSMO_CarWashing.pdf)

Florida DEP's Best Practices for Mobile Vehicle Washing:

<http://www.dep.state.fl.us/water/wastewater/lw/docs/bmps4mobile-vehicle-washing.pdf>

## ...and Why It Matters

Polluted stormwater can harm fish, wildlife, and plants, and it can even contaminate drinking water. The U. S. EPA estimates that at least 50% of our nation's water pollution is caused by polluted stormwater runoff. If every vehicle (some 2.3 million) in the U.S. was washed once a month with 25 gallons of water (5 buckets), over 70.5 billion gallons of polluted water could enter the stormwater system every year. You can help. Use the tips provided in this brochure to help ensure that our waterways remain clean.

# Outdoor Vehicle Washing



May 2016

## Mobile Car Washes: Legal Requirements

Discharges from mobile car washes to the storm sewer system are not allowed at Joint Base Langley Eustis. Owners of mobile vehicle washes may apply for coverage under a permit issued by the Virginia Department of Environmental Quality; however the usual mode of operation for these operations is to prevent the discharge of wash waters to surface waters or the storm sewers. Permit coverage as a mobile operator would require each discharge location to be identified on the registration statement as a separate outfall. JBLE and DEQ urge mobile car wash owners to avoid a discharge to state waters or storm drains by applying technologies to collect wash water and dispose of it properly, recycle it, or use best management practices (evaporation, blocking storm drain entrances, use of permeable surfaces, etc.). Many ideas to avoid a discharge are covered in this brochure and available online.

## Car Washing at Home and for Charity

Washing personal vehicles at home or at a volunteer/ charity event is not regulated. Thus, runoff from these activities does not need to be captured by recycling or catchment devices. Even so, there are several easy ways to help reduce stormwater pollution while you work:

- If possible, use a commercial car wash.
- Commercial car washes have recycling systems or discharge to the sanitary sewer system, which goes to a treatment plant.
- Wash your car on gravel, grass, or other permeable surfaces. These surfaces serve as a filter or a sponge, trapping pollutants from the wash water.
- Block off the storm drain inlets during charity car wash events or use an inlet insert to catch wash water.
- Divert soapy water from car washes into a sanitary sewer drain. If this is not feasible, divert car wash water onto grass or landscaping to provide filtration.
- Use hoses with nozzles that automatically turn off when left unattended.
- Use only biodegradable soaps.

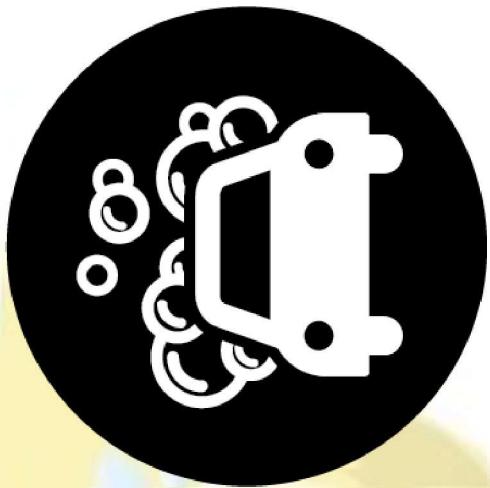
Using these simple rules at home and for charity events helps keep a clean and healthy living environment. This is not only good for us and future generations, it makes for a healthy ecosystem.

## The Best Option

Outdoor car washing has the potential to result in high loads of nutrients, metals and hydrocarbons during dry weather conditions in many watersheds, as the detergent-rich water used to wash the grime off our cars flows down the street and into the storm drain.

Car washing is a common routine for residents and a popular way for organizations such as scout troops, schools, and sports teams to raise funds. This activity is not limited by geographic region, but its impact on water quality will be greatest in more urban areas with higher concentrations of automobiles.

Always consider using a commercial car wash as your first alternative. A properly designed car wash is connected to a sanitary sewer that carries the dirty water to a wastewater treatment plant. Trading a few dollars for a healthy stormwater system is one deal that everyone can live with.



**Attachment 3: Public Involvement/Participation Documentation**

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JBLE-Eustis Environmental

September 4 at 1:09 PM ·

...

The Going back to School situation has changed a little this year, but what hasn't changed is the need for new school supplies. Now what should I do with the old supplies is the question. Here are a few ideas on what you can do with some of those items.

don't have any friends or family members who are in need of your old supplies you can give them to the [school](#). Most teachers would be happy to take your extra supplies that you don't want or need anymore. Just talk to the school or the teacher directly to see if they want the extra supplies.



You could consider donating your old school supplies by to recycle your old school supplies is to give them away, especially ones that take care of kids. For example, who might need them. Now, this idea is only if the supplies are still in good condition. If they are old and broken, you could also give them to a community center if you just don't need them. If you have notebooks which may be in need of school supplies for their students, I would suggest recycling the supplies in store instead of throwing them away.



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JBLE-Eustis Environmental

July 23 ·

...

We are not forgetting those of you who live in Williamsburg. Here is the site that will give you the information about your Recycling Program. Please do your part at home and work.

<https://www.williamsburgva.gov/residents/garbage-recycling>

WILLIAMSBURGVA.GOV



**Garbage & Recycling | City of Williamsburg, VA**

Public Works and Utilities Department Email: publicworks@williams...

Like

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JBLE-Eustis Environmental

July 10 ·

...

Even though we are not all at work recycling is still a major part of our lives. If you live in the City of Newport News check out their recycling program at the link below. There are quite a few ways you may not have known about that you can recycle in your city.

Residential Recycling Program Information:

<https://www.nvna.gov/948/Residential-Recycling-Program-Informatio>

NNVA.GOV

**Residential Recycling Program Information | Newport News, VA - Official Website**

2

1 Share

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JBLE-Eustis Environmental

June 24 ·

...

It doesn't matter if you live on Ft Eustis or off please remember to "Scoop the Poop". The city of Newport News has a great program for their neighborhoods to install pet waste stations.



## WHAT'S THE BIG DEAL?

Dog waste is an environmental pollutant

According to the EPA, dog waste is considered non-point source pollution, along with:

- Herbicides and insecticides
- Oil, grease, and toxic chemicals from urban runoff and energy production
- Salt from irrigation practices and acid drainage from abandoned mines

Bacteria, worms and other parasites thrive in waste, eventually washing away into the water supply.

Two or three days worth of droppings from a population of about 100 dogs can contribute enough bacteria to temporarily close a bay and all watershed areas within 20 miles to swimming and shell fishing.

**100**  
dogs



**20**  
miles



## DOG WASTE CAN HARM YOUR HEALTH

Dog feces are common carriers of:  
**Heartworms**  
**Whipworms**  
**Hookworms**  
**Roundworms**  
**Tapeworms**  
**Parvovirus**  
**Giardia**  
**Salmonella**  
**E. coli**

City of Newport News, VA - Government

June 1 ·

Encourage your community to "scoop the poop" by applying for a free pet waste station to be installed in your neighborhood!

Click the link for more information... [See More](#)



3

3 Shares

Like

Comment

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JBLE-Eustis Environmental

June 23 ·

...

Did you know?



Like

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JBLE-Eustis Environmental · May 22 at 1:41 PM · 

## How does your garden grow?



look for WaterSense • Meets EPA Criteria

Pick drought-tolerant plants native to your region and save water.

#WaterSmartLandscaping

Newport News Waterworks · May 13 · 

How does your garden grow? Growing drought-tolerant plants will help save on your time watering.  
#watersense

1 Like · Comment · Share

Write a comment... 

 JBLE-Eustis Environmental

May 22 at 1:40 PM · 



ASKHRGREEN.ORG

**Biodiversity, Habitats and Humanity - AskHRGreen**

Over the last eight weeks, we've helped Hampton Roads students c...

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 3

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 Like  Comment  Share

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 Write a comment...    



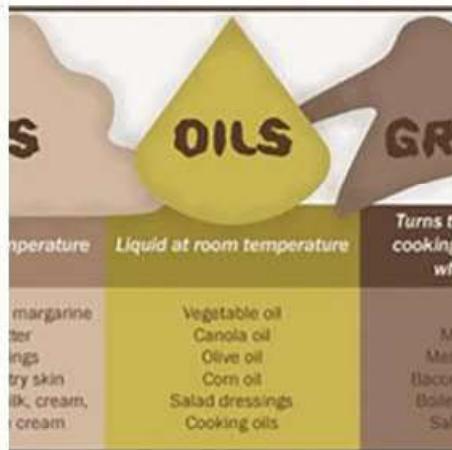
JBLE-Eustis Environmental

May 15 at 10:21 AM ·

...

Please remember not to put these things down your drains and toilets. When you do they clog up our sewer systems making it harder for the system to work and causing backups and overflows. When a system overflows there are higher chances of our sewer water getting into our local waterways.

### Never flush down the toilet:



1

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Comment

Share



Write a comment...



JBLE-Eustis Environmental  
May 7 ·

Did you know.....more ways of protecting our local watershed.

We're here because  
the work never stops ...  
and neither do we.

Newport News Waterworks  
Public Utility Company

Newport News Waterworks  
May 4 ·

Meet our Natural Resources team, they just finished planting approximately 10,800 seedlings. This outdoor loving team maintains over 12,000 acres of watershed p... See More

1

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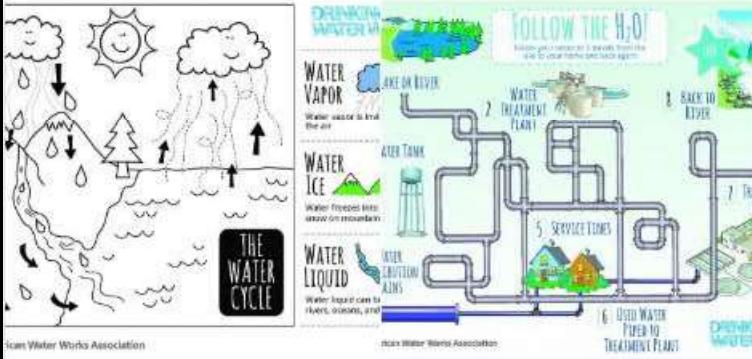
Like Comment Share

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Write a comment...

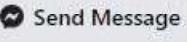
 JBLE-Eustis Environmental  
May 6 · 

Here are some fun things for kids to do provided by Newport News Waterworks in promoting Drinking Water Week.



The Water Cycle diagram shows a sun, clouds, and a mountain with a tree, illustrating precipitation, evaporation, and runoff.

Follow the H2O diagram shows the water cycle from a lake or river to a treatment plant, then through pipes to homes, and finally back to the river.

**Newport News Waterworks**  
Public Utility Company 

**Newport News Waterworks**  
May 5 · 

Enjoy these children activities during Drinking Water Week....  
#DrinkingWaterWeek #WaterMakesItPossible #StaySafe  
#HomeSchool #AllinthisTogether

  2  
 Like  Comment  Share

 Write a comment... 

 JBLE-Eustis Environmental  
April 24 · 



**Fort Eustis Family Homes**  
April 22 · 

Thank you Callahan Family for picking up the neighborhood and for sharing your pictures on this beautiful Earth Day. Just a little makes a big difference.

 2

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 Like     Comment     Share

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 Write a comment...    

JBLE-Eustis Environmental  
April 23 ·

Here is some great information from the DoD Chesapeake Bay Program on keeping our waters clean.



## Clean Water



Excess nutrients, sediment, and toxic contaminants degrade our waterways, harm fish and wildlife, and pose risks to human health. Reducing these pollutants is critical to creating safe, healthy waters for animals and people.

**Doing Our Part in the Watershed**

As the second largest federal land holder in the Chesapeake Bay, the Department of Defense (DoD) contributes to meeting the Chesapeake Bay Program Partnership's water quality goals through compliance with the Clean Water Act and other applicable regulations, and by implementing water quality Best Management Practices (BMPs) on installations that help reduce nutrient and sediment runoff into the Chesapeake Bay and its tributaries.

GOALS

- Water Quality
- Toxic Contaminants
- Healthy Watersheds

 3

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JBLE-Eustis Environmental

April 22 ·

...

**Happy Earth Day!!!!!!**



2

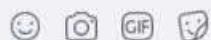
Like

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Write a comment...



 JBLE-Eustis Environmental  
April 22 · 

Let's Chalk the Walk.  
On this beautiful Earth Day lets get outside and have some fun. Get creative and draw some pictures with chalk on your sidewalks show your Earth Day Spirit. Post your pictures back here for everyone to see. Here are some examples.



3

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---

 Write a comment...    

JBLE-Eustis Environmental  
April 22 ·

Busch Gardens Williamsburg   
April 22 ·

In honor of Earth Day today and National Lawn & Garden Month in April, we (as the World's Most Beautiful Theme Park for 29 years ) wanted to share a few tips to... See More

1 Like

Like Comment Share

Write a comment...

 **JBLE-Eustis Environmental**

April 21 · 

Do your kids know where the water goes...



ASKHRGREEN.ORG

**Easy Environmental Lesson Plans:  
Wastewater Treatment - AskHRGreen**

We continue to bring you a weekly easy-to-use environmental lesson plan for parents to use as part of their homeschooling plan. Each of our lessons is a catalog of online learning resources for elementary and middle school students...

1 Share

---

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 Write a comment...       

 JBLE-Eustis Environmental

April 21 · 

Here are some fun things you can do to celebrate Earth Day



ASKHRGREEN.ORG

**Celebrate Earth Day 50 with Simple Lesson Plans - AskHRGreen**

 1

1 Share

 Like       Comment       Share

 Write a comment...    

 JBLE-Eustis Environmental  
April 20 · 

## EARTH DAY BINGO

*social distancing edition*

Celebrating the 50th Anniversary of Earth Day!

 COLLECTED HOUSEHOLD ITEMS/CLOTHES FOR DONATION	 USED MY REUSABLE WATER BOTTLE	 DRANK TAP WATER
 TOOK A SHORTER SHOWER	 ONLY FLUSHED THE 3 P'S	 PICKED UP LITTER AROUND THE YARD
 TURNED OFF THE FAUCET WHILE BRUSHING TEETH	 WENT MEATLESS FOR A DAY	 TELEWORKED



**HRSD**  
April 20 · 

Looking for ideas to celebrate Earth Day? Try our Earth Day Bingo!

1 Like

Like Comment Share

Write a comment...    

 JBLE-Eustis Environmental  
April 17 · 

Here is some Earth Day fun that the family can do together at home. Create something new from old/broken crayons. Use blue and green crayons to get ones that look like the earth.. Post pictures of your new recycled creations.



**Recycle Your Crayons!**



## CRAYON UPCYCLING

Do you have some old crayons that are destined for the trash can? Rather than just throwing them away, reuse them for this awesome upcycling activity. Let your creativity run wild with these easy to follow instructions and bring your old crayons back to life!

**WHAT YOU NEED:**

- Oven (have an adult help with all steps involving the oven)
- Assorted colors of old wax crayons
- Muffin or cupcake tin in any shape; silicon or non-stick coated
- (OPTIONAL) use glitter or scented crayons for a fun twist!

**WHAT TO DO:**

1. With help from an adult: pre-heat your oven to 300 degrees.
2. Remove the paper wrappers from

 1 Like      1 Share

 Like       Comment       Share

 Write a comment...         



JBLE-Eustis Environmental

April 14 ·

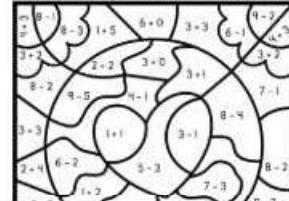
...

Here is a fun way for kids to show some Earth Day Spirit. Do these coloring pages and put them in windows and doors. Take a pic and post it back here on our page.



Earth Day Color By Code - Add & Subtract

2 = pink      3 = blue      4 = green  
5 = orange     6 = purple     7 = yellow



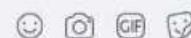
Like

Comment

Share



Write a comment...





JBLE-Eustis Environmental

April 6 ·

...

Earth Day is April 22 and is Celebrating it's 50th Anniversary this year of protecting our environment!!!!  
Let's do our part while we are home.

## 1. Save water

Pay attention to how much water you use. Look for simple ways to cut back, like turning off the tap when you brush your teeth.



## 2. Walk to work

Cut down on CO2 emissions by leaving the car at home. Walking to work is a proven way to improve your health and boost your mood.

## 3. Recycle

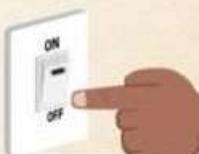
Waste in landfill sites causes air pollution. Recycle instead of just throwing things out or find new homes for products you no longer want.



## 4. Unplug it

Don't leave electronic devices plugged in when you're not using them. A TV left on standby mode wastes energy and costs you money.

## 5. Turn out lights



Like

Comment

Share



Write a comment...



JBLE-Eustis Environmental  
March 30 ·

Fats, Oils and Grease....Keep it out of your drains at home.

10 2 Comments 1 Share

Like Comment Share

Most Relevant

Write a comment...

Mary Shively  
Another one for you...cause sometimes retirement is boring.

Like · Reply · 10w

Donna Haynes  
Mary Shively....thank you...glad we could help with the boredom a little. 1

Like · Reply · 10w



## JBLE-Eustis Environmental

March 26 ·

...

With the run on toilet paper in the past few weeks we have to remember that you should not be putting anything else down your toilets. Doing this can cause damage to our sanitary sewer system, your home and the environment. Please see the attached flyer for what NOT to put down your system.  
Everyone please stay safe.

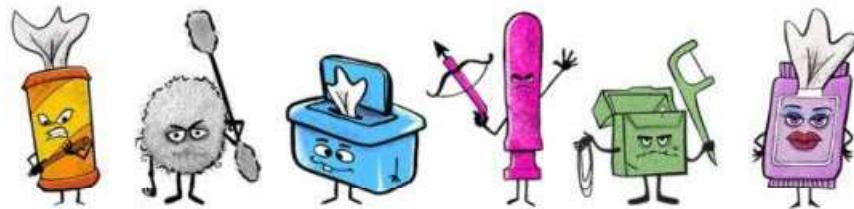
### The Unflushables: Items that Aren't Safe to Flush

Though it may be convenient to flush other bathroom items down the toilet when you don't need them anymore, doing so only creates clogs and damage. It is important to know that you cannot flush these items (or anything other than pee, poo and toilet paper) down the toilet.

- » Hair
- » Floss
- » Pill
- » Paper towels
- » Cigarette butts
- » Cotton balls and swabs
- » Fabric items
- » Tissues or napkins
- » Food waste
- » Deceased goldfish or pets
- » Cat litter
- » Adhesive bandages
- » Diapers
- » Tampons and applicators
- » Wipes of any kind, including those that claim to be 'flushable'

#### TOILET TIP

Always keep a waste bin by your toilet to easily dispose of items that should never be flushed.



2

1 Share

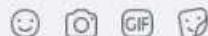
Like

Comment

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Write a comment...



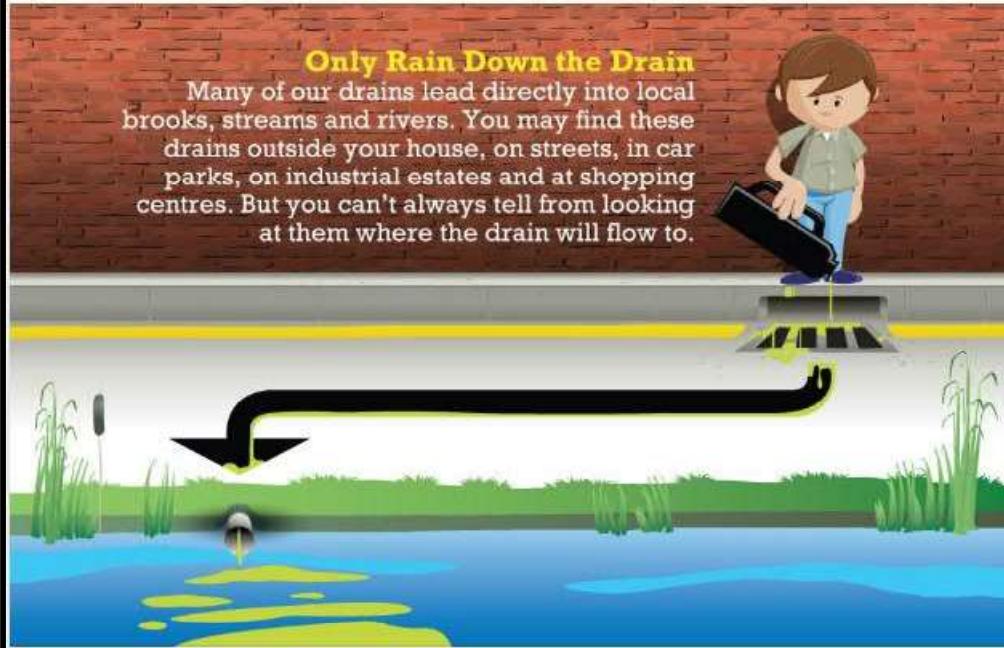


JBLE-Eustis Environmental

August 1, 2019 ·

...

We are in the big swing of summer which means it is time for yard work, washing cars and outside vehicle repairs. Please remember when doing these things that we only want rain to go down the drain.



5

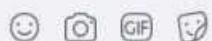
Like

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Write a comment...





America Recycles Day Ft Eustis Plastic Bag Collection Competition!



## America Recycles Day Fort Eustis Plastic Bag Collection Competition

In honor of America Recycles Day (15 Nov), JBLE-Eustis units/organizations are encouraged to participate in the "Plastic Bag Collection Competition", a 6-month campaign in support of the Plastic Film Recycling Challenge.

The campaign goal is to collect 500 lbs or more during this time frame, improve awareness among installation employees and residents, and divert plastics from the landfill.

Units/organizations work together to recycle the most plastic for the chance to earn a composite bench for their organization.

In addition to plastic grocery and retail bags, a major company reuses polyethylene plastic from a variety of common household items such as case overwraps, bread bags, bubble wrap, newspaper sleeves and dry cleaning bags to create composite products that offer a superior alternative to wood and an eco-friendly choice to consumers.

Those who would like to participate please call or email Donna Haynes by 27 Nov 2019.

Once registered you can bring your plastic items to the Recycle Center – Bldg. 1209 to be weighed and logged in on Mon, Wed and Fri between 0700-1400 hrs, starting 2 Dec 2019 through 15 Apr 2020.

Fact: It takes approximately 90 grocery bags to make one pound.



POC: Donna Haynes, 878-4123  
donna.c.haynes.civ@mail.mil

### What can be recycled?

- Pallet wrap and stretch film
- Grocery bags
- Bread bags
- Case overwrap
- Dry cleaning bags
- Newspaper sleeves
- Ice bags
- Wood pellet bags
- Ziplock and other reclosable food storage bags
- Produce bags
- Bubble wrap and air pillow
- Salt bags
- Cereal bags

All plastic must be clean, dry and free of food residue



1

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**Attachment 4: Illicit Discharge Investigation Details**

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Illicit Discharge Tracking Record, JBLE - Eustis

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**Attachment 5: Stormwater Management Facility Inventory Tracking Spreadsheet**

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SWM Facility Inventory - JBLE-Eustis, VA

Year_Installed	Practice_Name	Practices Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC12	Facility_Name	Inspect_Date	Contact_Name	Agency_Name	Year_Ended	SDM_Cost
2009	WetlandRestore	A water impoundment structure that releases it to an open water system at a specified flow rate. These structures retain some portion of the water they intercept and attenuate nutrients/oxides. Unlike practices, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the pooled area; no wetlands directed through vegetated areas to open water release. Nitrogen reduction is minimal.	30.23	15.80	1.264	Systems	1	37.161481	-76.565987	020802060901	JBLE-Langley	11/29/2018	Ken Dunn	Dept of Defense	2008	\$404,576.25
2012	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or term construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	30.23	0.30	0.024	Systems	1	37.161238	-76.571083	020802060901	JBLE-Langley	1/15/2019	Ken Dunn	Dept of Defense	2011	\$311,505.21
2013	PervsPavSysUDCD	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement and/or vegetation and is C or V soil.	0.17	0.11	0.000	Systems	1	37.162054	-76.571652	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$32,739.65
2013	PervsPavSysUDCD	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement and/or vegetation and is C or V soil.	0.03	0.03	0.002	Systems	1	37.161715	-76.571835	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$5,940.93
2013	PervsPavSysUDCD	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement and/or vegetation and is C or V soil.	0.10	0.10	0.008	Systems	1	37.161648	-76.571671	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$15,238.62
2013	PervsPavSysUDCD	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement and/or vegetation and is C or V soil.	0.28	0.28	0.022	Systems	1	37.161684	-76.571570	020802060901	JBLE-Langley	1/15/2019	Ken Dunn	Dept of Defense	2011	\$8,163.53
2013	RainWaterHarv	Rainwater Harvesting systems are practices designed to intercept, divert, store, and release rainwater for future use. Rainwater that falls on the collection area generally a rooftop is collected and conveyed into an above- or below-ground storage tank, which can be used for non-potable water uses including landscape irrigation, exterior building washing, flushing of toilets and urinals, fire suppression systems, and many others.	1.82	1.20	0.096	Systems	1	37.161244	-76.571057	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$17,541.04
2012	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or term construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	1.70	1.46	0.117	Systems	1	37.161244	-76.571057	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2010	\$13,398.00
2017	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or term construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	1.70	1.03	0.082	Systems	1	37.161839	-76.570933	020802060901	JBLE-Langley	2/7/2020	Ken Dunn	Dept of Defense	2011	\$40,124.17
2011	VegOrChanNulUDCD	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has no underdrain and is in C or D soil.	1.00	0.40	0.032	Systems	1	37.160726	-76.566406	020802060901	JBLE-Langley	2/7/2020	Ken Dunn	Dept of Defense	2010	\$45,856.19
2008	VegOrChanNulUDCD	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has no underdrain and is in C or D soil.	7.79	2.40	0.192	Systems	1	37.158715	-76.570106	020802060901	JBLE-Langley	2/7/2020	Ken Dunn	Dept of Defense	2007	\$404,236.23

SWM Facility Inventory - JBLE-Eustis, VA

Year Installed	Practice Name	Practices Description	Total Acres	IMP_Acres	Runoff_treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	Facility_Name	Inspect_Date	Contact_Name	Agency_Name	Year_Ended	SCM_Cost
2011	DryPonds	Dry Depression ponds or basins created by excavation or berms construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	3.49	2.30	0.184	Systems	1	37.160355	-76.570555	JBLELangley	2/7/2020	Ken Dunn	Dept of Defense	2009	\$36,003.31
2011	VegOrChanNoLCD	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	0.77	1.04	0.083	Systems	1	37.160147	-76.571725	JBLELangley	2/6/2020	Ken Dunn	Dept of Defense	2010	\$4,836.37
2011	VegOrChanNoLCD	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	0.94	1.04	0.083	Systems	1	37.159630	-76.571546	JBLELangley	2/6/2020	Ken Dunn	Dept of Defense	2010	\$48,601.58
2011	FiltratingDevice	Filtrating devices are premanufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.20	0.20	0.016	Systems	1	37.161217	-76.570358	JBLELangley	2/6/2020	Ken Dunn	Dept of Defense	2009	\$6,001.34
2011	SCM ID: WR_F_016	Dry extended detention (ED) basins are depressions created by excavation or them construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of stormwater is designed to be longer.													
2012	ExDrnPonds	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and/or through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.60	0.40	0.032	Systems	1	37.162539	-76.571738	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$6,416.20
2012	BioRetnLCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and/or through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.58	0.51	0.041	Systems	1	37.163215	-76.570845	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$27,513.71
2013	BioRetnLCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and/or through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.74	0.19	0.015	Systems	1	37.163550	-76.571544	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$34,084.62
2013	SCM ID: BB_020	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and/or through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.58	0.31	0.025	Systems	1	37.163407	-76.571625	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$26,705.98
2013	BioRetnLCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and/or through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	1.00	0.33	0.026	Systems	1	37.158919	-76.570110	JBLELangley	2/8/2020	Ken Dunn	Dept of Defense	2009	\$27,344.02
2011	InfiltrationBain	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	2.23	3.82	0.306	Systems	1	37.158840	-76.571314	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2010	\$11,340.14
2011	VegOrChanNoLCD	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	2.65	6.49	0.519	Systems	1	37.157866	-76.571639	JBLELangley	2/5/2020	Ken Dunn	Dept of Defense	2010	\$115,584.54
2011	SCM ID: WR_V_024	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	2.34	6.49	0.519	Systems	1	37.157540	-76.571996	JBLELangley	2/4/2020	Ken Dunn	Dept of Defense	2010	\$121,244.34
2011	VegOrChanNoLCD	Open channels or practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales, Runoff passes through either vegetation in the channel subsoil matrix, and/or is infiltrated into the underlying soils. This SCM has to underlain and is in C or D soil.	15.60	6.49	0.519	Systems	1	37.157789	-76.571323	JBLELangley	2/4/2020	Ken Dunn	Dept of Defense	2010	\$81,026.41

SWM Facility Inventory - JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	MMB_Acres	Rainoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC12	Facility_Name	Inspect_Date	Agency_Name	Contact_Name	Year_Builted	SCM_Cost
2011	WetlandRestore	A water impoundment structure that stores stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool of water but have retention times sufficient to allow settlement of some portion of the usually rapid sediments and particulates to settle out. These practices were designed specifically to meet water quantity, not water quality objectives. There is little or no regulation living within the property as no one could be affected if they vegetated areas prior to open water release; nitrogen reduction is minimal.	26.13	14.20	1.136	Systems	1	37.157398	-76.572130	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2010	\$350,097.66
2002	DryPonds	Dry Detention Ponds are depressions or basins created by excavation or berms. These structures are designed specifically to meet water quantity, not water quality objectives. There is little or no regulation living within the property as no one could be affected if they vegetated areas prior to open water release; nitrogen reduction is minimal.	4.58	4.20	0.336	Systems	1	37.156703	-76.56925	020802060901	JBLE-Langley	2/19/2020	Ken Dunn	Dept of Defense	2000	\$47,306.32
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.18	0.36	0.029	Systems	1	37.156741	-76.576565	020801060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$5,310.71
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.18	0.47	0.037	Systems	1	37.156794	-76.576752	020801060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2011	\$5,310.71
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.18	0.36	0.029	Systems	1	37.156677	-76.576790	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$5,310.71
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.18	0.47	0.037	Systems	1	37.156775	-76.57714	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$5,310.71
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.21	0.50	0.040	Systems	1	37.155660	-76.577735	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$6,360.40
2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.18	0.50	0.040	Systems	1	37.155695	-76.577766	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$5,310.71
2017	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.20	0.19	0.015	Systems	1	37.156951	-76.580706	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2016	\$21,153.00
2017	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.28	0.27	0.022	Systems	1	37.156725	-76.580902	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2016	\$21,153.00
2013	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	4.01	1.67	0.134	Systems	1	37.156126	-76.580927	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2010	\$183,583.22
2017	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	2.90	4.87	0.389	Systems	1	37.155377	-76.579772	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2010	\$11,372.00
2017	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	2.90	4.87	0.389	Systems	1	37.155279	-76.579552	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2016	\$11,372.00
2017	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	2.83	0.00	0.000	Systems	1	37.156180	-76.579527	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2014	\$119,750.00
2014	DryPonds	Dry Detention Ponds are depressions or basins created by excavation or berms construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	2.99	1.62	0.130	Systems	1	37.155062	-76.583377	020802060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2012	\$30,879.66
2014	DryPonds	Dry Detention Ponds are depressions or basins created by excavation or berms construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	2.55	1.34	0.107	Systems	1	37.154248	-76.581949	020802060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2012	\$26,303.61
2012	ExxDryPonds	Dry Detention (ED) basins are depressions created by excavation or berms construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	1.98	0.80	0.064	Systems	1	37.153366	-76.580362	020802060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2011	\$6,887.78

SWM Facility Inventory - JBLE-Eustis, VA

Pracice_Name	Practice_Description	Total_Acres	Imp_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC12	Facility_Name	Inspect_Date	Contact_Name	Agency_Name	Year_Ended	SOM_Cont
dry extended detention (ED) basins are depressions created by excavation or term construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	One ED basin is designed to dry out between storm events. In contrast, two basins, which contain standing water, permanently. As such, they are similar in function to detention basins except that the duration of detention of stormwater is designed to be longer, inherently improving treatment effectiveness.	0.81	0.50	0.040	Systems	1	37.151613	-76.580170	020802060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2011	\$3,629.56
drydry ponds															
FilteringDevice	Filtering devices are manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media.	0.21	0.32	0.026	Systems	1	37.151378	-76.578845	020801060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.44	0.31	0.025	Systems	1	37.151388	-76.578262	020801060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.44	0.39	0.031	Systems	1	37.152706	-76.578571	020801060901	JBLE-Langley	2/3/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.18	0.16	0.012	Systems	1	37.152240	-76.577576	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.21	0.16	0.012	Systems	1	37.152306	-76.577574	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.21	0.21	0.016	Systems	1	37.152705	-76.576895	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.21	0.21	0.016	Systems	1	37.152686	-76.576227	020801060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2011	\$18,310.00
FilteringDevice	Filtering devices are manufactured devices that provide treatment through infiltration of stormwater through engineered media.	0.21	0.21	0.016	Systems	1	37.152908	-76.576408	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2011	\$74,980.25
BioRetUDD	An excavated pit, backfilled with engineered media, topsoil, mulch and vegetation. These are planting areas installed in shallow basins in which the stormwater infiltrates temporarily ponded and then treated by filtering through the bed components and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	5.40	3.80	0.304	Systems	1	37.151016	-76.576477	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2009	\$312,097.54
BioRetUDD	An excavated pit, backfilled with engineered media, topsoil, mulch and vegetation. These are planting areas installed in shallow basins in which the stormwater infiltrates temporarily ponded and then treated by filtering through the bed components and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	1.64	0.70	0.056	Systems	1	37.152076	-76.576227	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2009	\$14,980.25
BioRetUDD	An excavated pit, backfilled with engineered media, topsoil, mulch and vegetation. These are planting areas installed in shallow basins in which the stormwater infiltrates temporarily ponded and then treated by filtering through the bed components and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.94	0.87	0.039	Systems	1	37.152908	-76.576408	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2009	\$14,980.25
DryPonds	Dry detention basins are depressions or basins created by excavation or bermed construction that temporarily store and release it slowly via surface flow or groundwater infiltration following storms.	3.55	1.80	0.144	Systems	1	37.152424	-76.572270	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	1995	\$36,659.49
InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.	0.68	0.40	0.032	Systems	1	37.151682	-76.571291	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2008	\$18,702.38
InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.	0.84	0.30	0.024	Systems	1	37.153317	-76.570920	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2007	\$42,921.39
PerviousPavers	Pavers or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through the pavement surface to a washed gravel subsurface storage reservoir, where it then slowly infiltrated into the underlying soils or exfiltrated as runoff. An underdrain, has sand and/or vegetation and is in C or D soil.	0.03	0.002	Systems	1	37.152034	-76.571265	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2008	\$22,856.91	
PermeableSoil	A water impoundment structure that intercepts stormwater runoff then releases it to an open water area at a specified flow rate. These structures retain a permanent pool and usually have retention times sufficient to allow settlement of some portion of the interceded sediments and attached nutrients/stocks. Until recently, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the impounded area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	3.00	1.60	0.128	Systems	1	37.152111	-76.570839	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2008	\$82,032.06
WetlandRestore		14.34836	6.10	0.488	Systems	1	37.151469	-76.574353	020802060901	JBLE-Langley	2/5/2020	Ken Dunn	Dept of Defense	2000	\$192,227.56

## SW/M Facility Inventory - JBLE-Eustis, VA

Year Installed	Practice Name	Practices Description	Total Acres	IMP Acres	Rounds Treated	Measurement Unit	Report Applied Amount	Latitude	Longitude	HUC12	Facility Name	Inspect Date	Contact Name	Agency Name	Year Funded	SCM Cost
2012	BioReticDD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporally ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	1.37	0.110	Systems	1	37.151906	-76.577049	020801060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2011	\$62,822.98	
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.25	0.21	0.017	Systems	1	37.151885	-76.577374	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.20	0.20	0.016	Systems	1	37.151504	-76.577772	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.36	0.36	0.029	Systems	1	37.150894	-76.577729	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.11	0.110	0.009	Systems	1	37.150567	-76.577701	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.03	0.03	0.002	Systems	1	37.149833	-76.579517	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.02	0.020	0.002	Systems	1	37.149782	-76.580801	020802060901	JBLE-Langley	2/6/2020	Ken Dunn	Dept of Defense	2012	\$99,000.00
2011	HydroDynStruct	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.18	0.18	0.014	Systems	1	37.149375	-76.574394	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2008	\$279,722.76
2009	BioReticDD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporally ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	6.10	0.18	0.014	Systems	1	37.149079	-76.574139	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2007	\$279,599.75
2009	BioReticDD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporally ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	6.10	0.18	0.014	Systems	1	37.149123	-76.573688	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2007	\$279,599.75
2009	BioReticDD	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporally ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	6.10	0.18	0.014	Systems	1	37.149263	-76.573988	020802060901	JBLE-Langley	2/4/2020	Ken Dunn	Dept of Defense	2007	\$279,599.75
2009	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berms, and groundwater infiltration following storms.	6.10	0.18	0.014	Systems	1	37.149250	-76.573752	020802060901	JBLE-Langley	11/28/2018	Ken Dunn	Dept of Defense	2007	\$279,599.75
2011	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berms, and groundwater infiltration following storms.	3.24	0.60	0.048	Systems	1	37.149420	-76.569098	020802060901	JBLE-Langley	2/18/2020	Ken Dunn	Dept of Defense	2010	\$168,244.25
2011	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berms, and groundwater infiltration following storms.	3.20	0.60	0.048	Systems	1	37.149420	-76.569098	020802060901	JBLE-Langley	11/27/2018	Ken Dunn	Dept of Defense	2009	\$168,159.26
2011	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berms, and groundwater infiltration following storms.	3.24	3.24	0.259	Systems	1	37.149420	-76.569081	020802060901	JBLE-Langley	2/18/2020	Ken Dunn	Dept of Defense	2009	\$33,432.75
2011	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berms, and groundwater infiltration following storms.	7.32	2.78	0.222	Systems	1	37.149583	-76.576716	020802060901	JBLE-Langley	2/18/2020	Ken Dunn	Dept of Defense	2009	\$75,574.49

SCM ID: WR DB 075

## SWM Facility Inventory - JBLE-Eustis, VA

Year Installed	Practice Name	Practice Description	Total Acres	IMP_Acres	Rainfall_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC22	Facility_Name	Inspect Date	Contact Name	Agency Name	Year Funded	SCM Cost
2011	WetlandRestore	A water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have elevation times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/oxides. Until recently, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the pooled area nor are cutlids directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	3.60	0.90	0.072	Systems	1	37.147291	-76.578117	020802060901	JBLE-Langley	2/18/2020	Ken Dunn	Dept of Defense	2010	\$46,229.85
2011	DryPonds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	0.70	0.60	0.048	Systems	1	37.143429	-76.575889	020802060901	JBLE-Langley	2/18/2020	Ken Dunn	Dept of Defense	2009	\$31,140.80
1992	VegOrChanNulDOD	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subslab manifolds and/or is infiltrated into the underlying soils. This SCM has no underdrain and is in C or D soil.	1.493126	0.601	0.048	Systems	1	37.146591	-76.589711	020802060901	JBLE-Langley	43879	Ken Dunn	Dept of Defense	1991	\$77,530.41
1992	VegOrChanNulDOD	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subslab manifolds and/or is infiltrated into the underlying soils. This SCM has no underdrain and is in C or D soil.	1.493126	0.601	0.048	Systems	1	37.146633	-76.590142	020802060901	JBLE-Langley	43879	Ken Dunn	Dept of Defense	1991	\$77,530.41
2006	DryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	1.688172	0.6	0.048	Systems	1	37.155855	-76.594537	020802060802	JBLE-Langley	43879	Ken Dunn	Dept of Defense	2004	\$17,419.00
2010	ExxDryPonds	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open ponds in the pavement surface to washed gravel/surface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This SCM has an underdrain, has sand and/or vegetation and is in C or D soil.	2.895873	2.5	0.200	Systems	1	37.159425	-76.602143	020802060802	JBLE-Langley	43879	Ken Dunn	Dept of Defense	2008	\$12,933.37
2011	PermPavSysUDC	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open ponds in the pavement surface to washed gravel/surface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This SCM has an underdrain, has sand and/or vegetation and is in C or D soil.	0.050005	0.05	0.004	Systems	1	37.158424	-76.583483	020802060901	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2009	\$9,639.55
2009	PermPavSysUDC	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open ponds in the pavement surface to washed gravel/surface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This SCM has an underdrain, has sand and/or vegetation and is in C or D soil.	0.0630657	0.061	0.005	Systems	1	37.158500	-76.583623	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2008	\$12,144.81
2012	DryPonds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropores, and absorbent pads, that are designed to remove sediments, nutrients, metals, organic chemicals, oil and grease from urban runoff.	0.6003502	0.37	0.030	Systems	1	37.160550	-76.587462	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2011	\$61,194.57
2000	WetlandRestore	A water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have elevation times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/oxides. Until recently, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the pooled area nor are cutlids directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	1.0902103	0.697	0.056	Systems	1	37.161360	-76.589384	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	1998	\$14,605.62
2002	ExxDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	1.1	1	0.080	Systems	1	37.161929	-76.592093	020802060802	JBLE-Langley	43888	Ken Dunn	Dept of Defense	2000	\$13,398.40
2003	ExxDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	4.3164007	3.201	0.256	Systems	1	37.162449	-76.592091	020802060802	JBLE-Langley	43888	Ken Dunn	Dept of Defense	2001	\$197,933.99

## SWM Facility Inventory - JBLE-Eustis, VA

Year Installed	Practice Name	Practice Description	Total Acres	IMP Acres	Rainfall Treated	Measurement Unit	Report Applied Amount	Latitude	Longitude	HUC22	Facility Name	Inspect Date	Contact Name	Agency Name	Year Funded	SCM Cost
2003	Dry Ponds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microplots, and absorbents that are designed to remove sediments, nutrients, metals, organic chemicals, oil and grease from urban runoff.	4.3	3.2	0.256	Systems	1	37.162023	-76.594136	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2001	\$19,293.46
2012	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	0.7130774	0.098	0.098	Systems	1	37.160745	-76.594984	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2010	\$7,667.27
2003	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	1.0559093	0.5	0.040	Systems	1	37.162782	-76.596188	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2001	\$13,398.00
2002	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	0.5712895	0.57	0.046	Systems	1	37.163451	-76.596168	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2001	\$13,398.00
2010	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	1.1329167	2.002	0.160	Systems	1	37.160528	-76.591301	020802060802	JBLE-Langley	43868	Ken Dunn	Dept of Defense	2008	\$51,951.34
2010	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.9843457	2.002	0.160	Systems	1	37.164844	-76.591052	020802060802	JBLE-Langley	43868	Ken Dunn	Dept of Defense	2008	\$45,138.34
2010	BioRetUCCD	An excavated pit backfilled with engineered media, topsoil mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants.	0.3987671	2.002	0.160	Systems	1	37.165449	-76.591024	020802060802	JBLE-Langley	43868	Ken Dunn	Dept of Defense	2008	\$18,285.66
2008	Dry Ponds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	11.6423731	3.6	0.288	Systems	1	37.163658	-76.588366	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2007	\$33,916.37
2008	Dry Ponds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	11.6	3.6	0.288	Systems	1	37.165658	-76.588366	020802060802	JBLE-Langley	43883	Ken Dunn	Dept of Defense	2008	\$11,691.82
1994	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	0.5	0.3	0.024	Systems	1	37.162021	-76.585189	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	1993	\$13,398.00
2010	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.	0.6236989	0.416	0.033	Systems	1	37.162923	-76.584530	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2008	\$17,054.44
2010	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.	0.786	1.017	0.081	Systems	1	37.161315	-76.583031	020802060802	JBLE-Langley	43868	Ken Dunn	Dept of Defense	2008	\$21,492.40

## SWM Facility Inventory - JBLE-Eustis, VA

Year Installed	Practice Name	Practice Description	Total Acres	IMP Acres	Rainoff Treated	Measurement Unit	Report Applied Amount	Latitude	Longitude	HUC22	Facility Name	Inspect Date	Contact Name	Agency Name	Year Funded	SCM Cost
2010	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	9.9162045	5.6	0.448	Systems	1	37.163904	-76.583342	020802060901	JBLE-Langley	43865	Ken Dunn	Dept of Defense	2008	\$44,492.52
2010	ExDryPonds	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.	0.81	0.8	0.054	Systems	1	37.165300	-76.587564	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2008	\$3,634.35
2010	Dry Ponds	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	5.9895315	4.55	0.364	Systems	1	37.167038	-76.589887	020802060901	JBLE-Langley	43892	Ken Dunn	Dept of Defense	2008	\$57,663.92
2006	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.	5.9255133	4.873	0.390	Systems	1	37.167273	-76.593571	020802060802	JBLE-Langley	43880	Ken Dunn	Dept of Defense	2004	\$162,027.35
2010	WetlandRestore	An water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have elevation times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/Toxics. Until recently, these practices were designed specifically to meet water quantity, water quality objectives. There is little or no vegetation living within the pooled area nor are curbs directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	3.2801735	3.28	0.262	Systems	1	37.168156	-76.579818	020802060802	JBLE-Langley	43866	Ken Dunn	Dept of Defense	2008	\$43,945.07
1994	WetlandRestore	An water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have elevation times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/Toxics. Until recently, these practices were designed specifically to meet water quantity, water quality objectives. There is little or no vegetation living within the pooled area nor are curbs directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	28.3246746	2.9	0.232	Systems	1	37.141956	-76.592727	020802060901	JBLE-Langley	43880	Ken Dunn	Dept of Defense	1993	\$379,470.76
1994	WetlandRestore	An water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have elevation times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/Toxics. Until recently, these practices were designed specifically to meet water quantity, water quality objectives. There is little or no vegetation living within the pooled area nor are curbs directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.	19.9913826	6.4	0.512	Systems	1	37.137853	-76.588479	020802060901	JBLE-Langley	43892	Ken Dunn	Dept of Defense	1993	\$267,888.15
2010	BioReticDAB	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planted areas installed in shallow basins in which storm water runoff is temporarily ponded and then treated by filtering through the best components, and through biological and biochemical reactions within the soil matrix and around the zones of the plants.	0.6	0.5	0.040	Systems	1	37.131016	-76.595549	020802060804	JBLE-Langley	43879	Ken Dunn	Dept of Defense	2008	\$27,513.71
2010	VegOrChanNoldUDC	Open channels are practices that convey stormwater runoff and provide treatment as the channel subsides. Runoff passes through either vegetation or the soil underlain and in C or D soils.	3.5	1.3	0.104	Systems	1	37.163071	-76.583550	020802060901	JBLE-Langley	43823	Ken Dunn	Dept of Defense	2008	\$184,736.70
2008	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropoles, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	50	21.7889	1.743	Systems	1	37.147737	-76.586950	020802060901	JBLE-Langley	43864	Ken Dunn	Dept of Defense	2007	\$130,000.00
2011	DryPoints	Dry Detention Ponds and depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms.	0.9	0.084	0.007	Systems	1	37.108834	-76.585382	020802060901	JBLE-Langley	43879	Ken Dunn	Dept of Defense	2009	\$32,286.43
2007	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropoles, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.624	0.431	0.034	Systems	1			JBLE-Langley	43892	Ken Dunn	Dept of Defense	2006	\$18,744.17	
2007	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropoles, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.	0.388	0.304	0.024	Systems	1			JBLE-Langley	43892	Ken Dunn	Dept of Defense	2006	\$11,642.40	

## SWM Facility Inventory - JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Rainoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	Facility_Name	Inspect_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
2007	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_Sf_113	0.382	0.28	0.022		1			JBLE-Langley	43892	Ken Dunn	Dept of Defense	2006	\$11,462.46
2007	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, microponds, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_Sf_114	0.35	0.285	0.023		1			JBLE-Langley	43892	Ken Dunn	Dept of Defense	2006	\$10,502.4

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**Attachment 6: Chesapeake Bay TMDL Action Plan Implementation Status Memo**

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Date: 18 September 2020

Subject: **Chesapeake Bay Phase II Total Maximum Daily Load (TMDL) Action Plan  
Implementation Progress for JBLE–Eustis**

## **1.0 INTRODUCTION**

In 2010 the United States Environmental Protection Agency (EPA) established the Chesapeake Bay Total Maximum Daily Load (TMDL) to address excess nitrogen, phosphorus, and total suspended solids (pollutants of concern or POCs) in the Chesapeake Bay (EPA, 2010). A TMDL is the maximum amount of a pollutant that a waterbody can assimilate and still support its designated use. The Chesapeake Bay watershed encompasses over 64,000 square miles across the District of Columbia and large sections of Delaware, Maryland, New York, Pennsylvania, West Virginia, and Virginia.

In the Phase I and Phase II Chesapeake Bay Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL, the Commonwealth of Virginia committed to a phased approach to reducing nutrients and suspended solids discharging from Municipal Separate Storm Sewer Systems (MS4). Section I.C of the Joint Base Langley Eustis – Eustis (JBLE–Eustis) MS4 permit (Permit No. VAR040035, effective 01 November 2018) requires the base to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans to meet the required nutrient and suspended solids reductions for each permit cycle as specified in the 2012 Phase II WIP (VDEQ, 2012).

JBLE–Eustis developed a Chesapeake Bay TMDL Action Plan for the installation’s MS4 area (JBLE–Eustis, 2020). The Action Plan is an annual report on the progress made by the base in meeting the Chesapeake Bay TMDL pollutant reduction requirements, specifically the Level 2 (L2) scoping run as specified in the 2010 Phase I WIP (VDEQ, 2010). The L2 reductions are to be met in phases corresponding to the permit cycles, as outlined in Table 1-1.

**Table 1-1. Pollutant Percent Reduction Requirements by Permit Cycle**

Permit Cycle	Timeframe	Cycle Percent Reduction	Cumulative Percent Reduction
1	2013-2018	5%	5%
2	2018-2023	35%	40%
3	2023-2028	60%	100%

The purpose of this memorandum is to document progress toward implementing the Chesapeake Bay TMDL Action Plan. The objectives of this memorandum are to present the required pollutant reduction requirements for the second permit cycle and discuss strategies that have been implemented or will be implemented by the Air Force Civil Engineer Center (AFCEC) and JBLE–Eustis to reduce nutrient and sediment loads.

This memorandum is organized into the following sections:

- Section 1.0 presents the background, purpose and objectives.
- Section 2.0 describes the pollutant load reduction requirements.
- Section 3.0 describes the pollutant credits achieved by the base.
- Section 4.0 describes future best management practices (BMP).
- Section 5.0 presents the progress summary.
- Section 6.0 contains a list of references associated with this memorandum.

## **2.0 POLLUTANT LOAD REDUCTION REQUIREMENTS**

The methodology used to calculate the pollutant loads and credits is based on Virginia Department of Environmental Quality (VDEQ) Guidance Memo No. 15-2005 (Guidance Document) (VDEQ, 2015). The base's pollutant loads for existing sources (contributed by the base as of 30 June 2009) and new sources (contributed by the base between 01 July 2009 and 30 June 2020) were calculated from impervious and pervious land use area and loading rates for the James River Basin as specified in the Guidance Document (VDEQ, 2015). Estimated loads for 2009 and 2020 are presented in Table 2-1.

**Table 2-1. Existing and New Loads and Total Load Change at JBLE-Eustis**

Land Cover (Subsource)	Pollutant	Estimated Total Load as of 30 June 2020 (lbs/yr)	Estimated Total Load as of 30 June 2009 (lbs/yr)	Total Load Change (lbs/yr)	
Regulated Urban Impervious	Nitrogen	5,550.7	5,251.3	299.4	1,044.9
Regulated Urban Pervious		9,146.7	8,401.2	745.5	
Regulated Urban Impervious	Phosphorus	1,040.4	984.3	56.1	109.5
Regulated Urban Pervious		654.3	600.9	53.4	
Regulated Urban Impervious	Total Suspended Solids	400,157.7	378,571.0	21,586.7	32,367.2
Regulated Urban Pervious		132,267.0	121,486.5	10,780.5	

**Note and Acronym:**

<sup>1</sup> Minor calculation discrepancies are accounted for in rounding.  
 lbs/yr – Pounds per year

The total load change is adjusted by any credits earned from BMPs implemented during the 2009–2019 timeframe to arrive at the Net Load Change. BMPs installed after 01 July 2009 were included in this analysis when they were implemented under conditions of redevelopment. The base is required to offset 40% of the net load change by the end of the second permit cycle, as shown in Table 2-2.

**Table 2-2. Net Load Changes from New Sources and Additional Reductions Required**

Pollutant	Total Load Change (lbs/yr) <sup>1</sup>	Reductions from BMPs Installed between 01 July 2009 and 30 June 2019 (lbs/yr) <sup>1</sup>	Net Load Change (lbs/yr) <sup>1</sup>	Required Reduction by End of Second Permit Cycle	Additional Reductions Required between 01 July 2019 and 30 June 2023 (lbs/yr) <sup>1</sup>
Nitrogen	1,044.9	133.1	911.8	40%	364.7
Phosphorus	109.5	33.7	75.8	40%	30.3
Total Suspended Solids	32,367.2	19,614.0	12,753.2	40%	5,101.3

**Note and Acronym:**

<sup>1</sup> Minor calculation discrepancies are accounted for in rounding.  
 lbs/yr – Pounds per year

### 3.0 LOAD REDUCTION CREDITS ACHIEVED

This section describes load reduction credits achieved by JBLE–Eustis from post-construction BMPs, street sweeping, land use change, and shoreline management.

### 3.1 Existing Post-Construction BMPs (Post-2006)

A geographic information system (GIS) inventory of existing post-construction BMPs present at JBLE–Eustis and their drainage areas, which was developed in 2020, was used to help calculate existing credits for the Chesapeake Bay TMDL Action Plan. BMPs installed between 01 January 2006 and 30 June 2009 were included in this analysis. BMPs installed prior to 01 January 2006 are not eligible for credit and were thus excluded from consideration for this Action Plan. BMPs installed after 30 June 2009 were tracked separately to facilitate the calculation of new source loads. For BMPs installed after 30 June 2009, only those implemented under conditions of redevelopment were eligible for credits, as described in the Guidance Document (VDEQ, 2015). Summaries of existing BMP types and credits are given in Table 3-1 and 3-2 respectively.

**Table 3-1. Summary of Existing BMP Types**

BMP Type	Timeframe Implemented		
	01 Jan 2006 to 30 June 2009	01 July 2009 to 30 June 2019	Total
Bioretention	2	12	14
Dry Detention Pond	1	14	15
Dry Extended Detention Pond	2	11	13
Permeable Pavement	0	7	7
Rainwater Harvesting	0	1	1
Swale	2	10	12
Wet Pond or Wetland	1	2	3
<b>Total</b>	<b>8</b>	<b>57</b>	<b>65</b>

**Table 3-2. Summary of Credits from Existing Post-Construction BMPs**

BMP Timeframe	Number of BMPs	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
2006–2009	8	68.3	21.1	11,090.0
2009–2019	57	133.1	33.6	19,614.1

**Acronym:**

lbs/yr – Pounds per year

### 3.2 Street Sweeping

The base performs vacuum powered street sweeping on primary roads, secondary roads, and parking lots on a regular basis. Street sweeping credits are calculated based on the methodology described in *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices* (Donner et al., 2016). Data on frequency and linear miles of sweeping was provided by JBLE–Eustis and is used to calculate load reduction credits. A summary of street sweeping credits is presented in Table 3-3.

**Table 3-3. Summary of Annual Street Sweeping Credits**

Lane-Miles Swept	Acres Swept	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
1,383.6	1,686.6	430.6	154.2	207,360.9

**Acronym:**

lbs/yr – Pounds per year

### 3.3 Land Use Change

The base has one land use change BMP, where trees have been planted on an existing pervious parcel. Currently the parcel does not meet the forested lands criteria outlined in the Guidance Document. Therefore, credit for “pervious to grass” land use change will be used for this parcel until the forested lands criteria is met. A summary of land use change credits is presented in Table 3-4.

**Table 3-4. Summary of Land Use Change Credits**

Number of BMPs	Credits (lbs/yr)		
	Nitrogen	Phosphorus	Total Suspended Solids
1	14.8	0.0	0.0

**Acronym:**

lbs/yr – Pounds per year

### 3.4 Shoreline Management

Pollutant load reductions from the 40 linear feet of shoreline restoration activities on the base are presented in Table 3-5.

**Table 3-5. Summary of Shoreline Management Reductions**

Pollutant	Shoreline Restoration (linear feet)	Loading Rate (lbs/ft/yr) <sup>1</sup>	Credit (lbs/yr)
Nitrogen	40	0.01218	0.5
Phosphorus	40	0.00861	0.3
Total Suspended Solids	40	42.0	1,680.0

**Note and Acronyms:**

<sup>1</sup> Source: Forand et al., 2017

lbs/ft/yr: Pounds per foot per year

lbs/yr: Pounds per year

## 4.0 FUTURE BMPs

JBLE-Eustis will continue to investigate the applicability and feasibility of additional BMPs and BMP types in order to meet the pollutant load reduction requirements of the Chesapeake Bay TMDL.

Opportunities for effective retrofit options will be explored and prioritized to make the best use of available resources.

## 5.0 PROGRESS SUMMARY

A summary of the required load reductions is presented in Table 5-1, and the second permit cycle pollutant credits are presented in Table 5-2.

**Table 5-1. Summary of Permit Cycles 1, 2 and 3 Reduction Requirements**

Pollutant	Required Load Reduction by 2018 (lbs/yr)	Required Load Reduction by 2023 (lbs/yr)	Required Load Reduction by 2028 (lbs/yr)
Nitrogen	94.4	755.4	1,888.5
Phosphorus	13.8	110.7	276.9
Total Suspended Solids	4,954.9	39,639.0	99,097.5

**Acronym:**

lbs/yr – Pounds per year

**Table 5-2. Summary of Second Permit Cycle Reduction Requirements and Credits**

Pollutant	Second Permit Cycle Cumulative Percent Reduction Requirement	Required Load Reduction by 2023 (lbs/yr)	Credits from Existing BMPs (lbs/yr) <sup>1</sup>	Second Permit Cycle Target Met?
Nitrogen	40%	755.4	514.2	No
Phosphorus	40%	110.7	175.6	Yes
Total Suspended Solids	40%	39,639.0	220,130.9	Yes

**Note and Acronym:**

<sup>1</sup> Does not include credits related to new sources that were previously accounted for in Table 2-2.

lbs/yr – Pounds per year

Assuming the BMPs considered in this analysis are maintained and fully functional to provide the design performance, it is the conclusion of this analysis that the base currently meets the second permit cycle reduction requirement goals for phosphorus and total suspended solids. The base does not meet the second permit cycle reduction goals for nitrogen, with a remaining 241.2 lbs/yr of nitrogen reduction needed. These additional reductions could be achieved through more frequent street sweeping schedules and additional post-construction BMPs.

## 6.0 REFERENCES

- Donner, S., Frost, B., Goulet, N., Hurd, M., Law, N., Maguire, T., Selbig, B., Shafer, J., Stewart, S., and Tribio, J. 2016. *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices*. Chesapeake Bay Program Office. Accessed at [https://www.chesapeakebay.net/channel\\_files/23064/final\\_street\\_cleaning\\_expert\\_panel\\_report.pdf](https://www.chesapeakebay.net/channel_files/23064/final_street_cleaning_expert_panel_report.pdf).
- EPA. 2010. *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment*. 29 December 2010.
- JBLE–Eustis. 2020. *Chesapeake Bay Phase II Total Maximum Daily Load Action Plan for Joint Base Langley Eustis - Eustis..* May 2020.
- VDEQ. 2010. *Chesapeake Bay TMDL Phase I Watershed Implementation Plan*. 29 November 2010.
- VDEQ. 2018. *General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, General Permit No. VAR040035*. Effective Date 1 July 2013.
- VDEQ. 2015. *Guidance Memo No. 15-2005*. 18 May 2015.

## ACRONYMS

AFCEC	Air Force Civil Engineer Center
BMP	Best Management Practice
EPA	Environmental Protection Agency
GIS	Geographic Information System
JBLE–Eustis	Joint Base Langley Eustis – Eustis
L2	Level 2
lbs/ft/yr	Pounds per foot per year
lbs/yr	Pounds per year
MS4	Municipal Separate Storm Sewer System
POC	Pollutant of Concern
TMDL	Total Maximum Daily Load
VDEQ	Virginia Department of Environmental Quality
WIP	Watershed Implementation Plan

**Attachment 7: Bacteria TMDL Action Plan Implementation Status Memo**

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Date: 18 September 2020

Subject: **Warwick River and Skiffes Creek Bacteria TMDL Action Plan Implementation Progress for Joint Base Langley Eustis – Eustis**

## **1.0 INTRODUCTION**

In 2008, the United States Environmental Protection Agency (EPA) approved Total Maximum Daily Loads (TMDL) for Warwick River and Skiffes Creek to address excess fecal coliform bacteria in these waterbodies (VDEQ, 2007). The TMDL report assigned individual wasteload allocations (WLA) for bacteria to the city of Newport News, York County, and Joint Base Langley Eustis – Eustis (JBLE–Eustis). The WLA is a portion of the TMDL load and represents the allowable load a permittee may discharge to the waterbody and still meet water quality standards.

JBLE–Eustis is authorized to discharge stormwater from the installation in accordance with a Virginia Pollutant Stormwater Discharge Elimination (VPDES) industrial stormwater permit (Permit No. VA0025216) and a Municipal Separate Storm Sewer System (MS4) permit (Permit No. VAR040035), both issued by the Virginia Department of Environmental Quality (VDEQ). The MS4 permit identifies minimum control measures (MCM) and special condition requirements, measurable goals and best management practices (BMP) selected for implementation at JBLE–Eustis. Special Condition 1 found in Section II.B.1 of the JBLE–Eustis MS4 permit requires the installation to maintain a specific TMDL Action Plan for pollutants allocated to the MS4 in an approved TMDL. On 30 November 2015, VDEQ notified JBLE–Eustis that, as part of maintaining its MS4 Program Plan, the installation is required to develop TMDL Action Plans for the Warwick River and Skiffes Creeks to address bacteria impairment in those waterbodies.

JBLE–Eustis updated their Bacteria TMDL Action Plan for the installation's MS4 area. The TMDL Action Plan describes the TMDL waterbodies, JBLE–Eustis installation, existing and proposed bacteria control measures and an implementation schedule for addressing bacteria sources for the Warwick River and Skiffes Creeks watersheds (JBLE–Eustis, 2020b).

The purpose of this memorandum is to document progress toward implementing the Warwick River and Skiffes Creek Bacteria TMDL Action Plan. The objectives of this memorandum are to present the results of the bacteria source assessment at JBLE–Eustis and discuss strategies that have been implemented or will be implemented by the Air Force Civil Engineer Center (AFCEC) and JBLE–Eustis to reduce bacteria sources.

This memorandum is organized into the following sections:

- Section 1.0 presents the background, purpose and objectives
- Section 2.0 describes the schedule and actions for addressing bacteria sources
- Section 3.0 describes the bacteria source assessment

- Section 4.0 describes the bacteria action plan implementation progress
- Section 5.0 describes bacteria-reducing actions in progress
- Section 6.0 presents the summary and next steps
- Section 7.0 contains a list of references associated with this memorandum

## **2.0 ACTION PLAN FOR ADDRESSING BACTERIA IN WARWICK RIVER AND SKIFFES CREEK**

JBLE–Eustis developed an implementation schedule for addressing bacteria impairments in Warwick River and Skiffes Creek as part of the Warwick River and Skiffes Creek Bacteria TMDL Action Plan (JBLE–Eustis, 2020b). During the first MS4 permit cycle (2013 – 2018), the Action Plan lists the following JBLE–Eustis implementation actions:

- Reviewed the final TMDL report to inform actions taken by the base to address sources of bacteria and update this Action Plan.
- Developed the Bacteria TMDL Action Plan and implementation schedule (JBLE–Eustis, 2016c)
- Identified and maintained a list of existing source controls and management practices that are applicable to reducing fecal coliform bacteria.
- Identified opportunities for enhancing education and outreach programs to address bacteria impairment.
- Assessed significant sources of bacteria using desktop evaluations, field investigations and collaboration with key base staff.
- Determined if additional source controls are needed. If additional controls were needed, a summary of potential controls and identified programs and activities to support their implementation was prepared.
- Evaluated new bacteria-related datasets for the watersheds collected by other agencies (e.g., VDEQ) as available.

As described in the updated Warwick River and Skiffes Creek Bacteria TMDL Action Plan, bacteria-reducing activities to be performed during the second MS4 permit cycle (2018 – 2023) include:

- As funding permits, implement activities identified in the implementation schedule (from previous years) as appropriate.
- Evaluate new bacteria-related datasets for the Warwick River and Skiffes Creek watersheds collected by other agencies as available.
- Identify any modified or additional activities to be performed during the subsequent permit cycle.
- Update the Warwick River and Skiffes Creek Bacteria TMDL Action Plan to reflect activities performed during the following year and report on progress annually. Adjust the implementation schedule as needed to reflect findings from field and desktop assessments. Report on progress annually.

### **3.0 BACTERIA SOURCE ASSESSMENT**

The Warwick River and Skiffes Creek TMDL report identifies both natural and anthropogenic sources of bacteria in the watershed (Table 3-1).

**Table 3-1. Fecal Bacteria Source Allocations (%) in the Warwick River and Skiffes Creek Watersheds**  
**(Source: VDEQ 2007, Table 3.7 and Table 3.8)**

Watershed	Wildlife	Human	Livestock	Pet
Warwick River	18	35	23	24
Skiffes Creek	3	21	36	40

The values presented in Table 3-1 are watershed averages across multiple MS4s. To build on this information, JBLE–Eustis conducted a local fecal bacteria source assessment in February 2020 with the goal of identifying potential pollutant “hot spots” or sources across the base. The sources identified, and strategies taken to address these sources are described in Sections 4 and 5.

In March 2019, a bacteria source investigation was conducted via a windshield survey at JBLE–Eustis to locate bacteria sources described in Table 3-1 and to identify other potential sources that might be present. In addition, multiple JBLE–Eustis personnel involved with activities that may be affecting fecal bacteria loading from the base were interviewed to discuss actions that JBLE–Eustis is currently taking to reduce or remove bacteria sources.

### **4.0 BACTERIA ACTION PLAN IMPLEMENTATION PROGRESS**

This section describes programs and activities that are being implemented at JBLE–Eustis to address bacteria sources and accomplish the goals set forth in the JBLE–Eustis Bacteria Action Plan.

#### **4.1 Pets**

Pet waste is the largest contributor of non-human bacteria within the Warwick River and Skiffes Creek watershed. Unlike wildlife, pet waste can be effectively controlled using a variety of management approaches. JBLE–Eustis residents are permitted to have pets and it is reasonable to assume that residents walk their dogs around nearby neighborhoods. Residents are required to clean up after their dogs; however, pet waste disposal receptacles are not available along the walking paths, and this is noted for possible future implementation.

A community dog park was opened at JBLE–Eustis in May 2015. Access to the dog park is restricted, and residents must submit an application, register pets, pay a registration fee, and sign a receipt acknowledging the rules of the dog park. Owners are required to clean-up after their dogs and dog-waste bags are provided near the trash can for pet waste disposal.

JBLE–Eustis has developed and distributed a pet waste brochure that contains educational information and contact information for the Stormwater Program Manager.

#### **4.2      Livestock**

Livestock is the second largest contributor of non-human bacteria within the watersheds. JBLE–Eustis operates horse stables for authorized personnel to utilize. Stable bedding and horse manure are collected by patrons and stored in a roll-off bin located on site, and then disposed of by a contractor off-site. During periods of good weather, horses are allowed to utilize pasture lands.

#### **4.3      Wildlife**

Wildlife is the most challenging bacteria source to control. The southern portion of the base (located in the Warwick River watershed) is largely undeveloped and therefore is prime wildlife habitat. The TMDL report noted that prime raccoon habitat covers a large portion of the base that lies within the Warwick River watershed. In developed areas in the northern part of the base, implementing “No Mow” buffer zones around natural and constructed ponds can deter geese from landing, foraging, and contributing to the bacteria problem. The base also removes wetlands surrounding airfields that would attract wildlife and present bird/animal aircraft strike hazard (BASH) safety concerns. Removal of wetlands reduces habitat for waterfowl and other wildlife that have the potential to contribute bacteria to the Warwick River.

#### **4.4      Human**

The entire JBLE–Eustis installation is currently connected to a sanitary sewer network. There are no septic systems currently located on the installation. Additionally, JBLE–Eustis adheres to an Illicit Discharge Detection and Elimination (IDDE) Program, designed to help detect, identify, and address non-stormwater discharges to the stormwater network. Non-stormwater discharges include untreated sewage that contain fecal bacteria. To help detect and identify illicit discharges, the base regularly screens outfalls to determine if any non-runoff related discharges are occurring. Additionally, any sanitary sewer overflows that occur are tracked and immediately addressed. Initiatives planned include continued inspections of non-industrial outfalls and investigation and reporting of potential illicit discharges. IDDE inspections were conducted during 2019-2020. Initiatives planned include continued inspections of non-industrial outfalls and investigation and reporting of potential illicit discharges.

### **5.0 BACTERIA-REDUCING ACTIVITIES IN PROGRESS (2020-2021)**

JBLE–Eustis has initiated 2020-2021 actions that are identified in Section 2.0 of this memorandum. In addition, JBLE–Eustis conducted a local fecal bacteria source assessment in February 2020. This evaluation included field assessments of potential point and nonpoint sources of bacteria, including wildlife, the community dog park, horse stables, and resident housing area. The evaluation also included interviews with base staff to identify stormwater and bacteria-reducing practices currently used by the base and determine strategies that would improve bacteria reduction on the installation. The evaluation determined that the base continues to implement many of the bacteria-reducing strategies required by section II.B.4 in the MS4 permit. Findings from the source assessment include:

- The base actively manages bird and animal populations, and minimal wildlife was observed during the source assessment.
- No human sources of bacteria were identified.
- Livestock and pet sources continue to be controlled through BMPs at the horse stables, pet waste stations in residential areas, and a pet waste station at the community dog park. Opportunities for improving bacteria-reduction at these facilities may include stormwater controls and riparian management to prevent wash-off of fecal bacteria into streams.
- Illicit discharges and sewer line leaks into the MS4 are being monitored through the IDDE program. Opportunities to improve strategies on illicit discharge prevention may include public education programs on the environmental impacts of dumping materials.
- The base urges residents to use commercial car washing facilities where wash waters are prevented from entering the storm sewer system. Opportunities to further reduce bacteria wash-off may include public education programs on the environmental impacts of car washing.

## 6.0 SUMMARY

In summary, JBLE–Eustis has taken several actions to reduce bacteria and address various sources on the installation. Completed or ongoing actions taken by JBLE–Eustis include the following:

- Prepared the Warwick River and Skiffes Creek as part of the Warwick River and Skiffes Creek Bacteria TMDL Action Plan, including preliminary source investigations and schedule for addressing bacteria sources.
- Active bird and animal population management including BASH.
- Livestock and pet sources are controlled through BMPs at the horse stables, pet waste stations in residential areas, and a pet waste station at the community dog park.
- Developed and distributed to the public educational brochures including the Stormwater Pollution Prevention Educational Flyer and the Pet Waste Pollution Prevention Brochure.
- Illicit discharges and sewer line leaks into the MS4 are being monitored through the IDDE program.

## 7.0 REFERENCES

- JBLE–Eustis. 2020a. *Final MS4 Program Plan for Joint Base Langley Eustis – Eustis*. Prepared by AECOM Technical Services, Inc. January 2020.
- JBLE–Eustis. 2020b. *Warwick River and Skiffes Creek Bacteria Total Maximum Daily Load Action Plan for Joint Base Langley Eustis – Eustis*. Prepared by AECOM. May 2020.
- VDEQ. 2007. *Fecal Bacteria Total Maximum Daily Load Development for Warwick River*. Final Submission December 13, 2007.
- VDEQ. 2015. *Authorization to discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act, VPDES Permit Number VA0025216*. Permit effective September 1, 2015.
- VDEQ. 2018. *General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems General Permit Number VAR040035*. Permit effective 1 November 2018.

## ACRONYMS

AFCEC	Air Force Civil Engineer Center
BASH	Bird/Animal Aircraft Strike Hazard
BMP	Best Management Practice
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
JBLE–Eustis	Joint Base Langley Eustis – Eustis
MS4	Municipal Separate Storm Sewer System
TMDL	Total Maximum Daily Load
VDEQ	Virginia Department of Environmental Quality
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Wasteload Allocation