



Municipal Separate Storm Sewer System (MS4) Annual Report

JBLE—Eustis, Virginia

Permit Year 1

(1 July 2018 - 30 June 2019)

Permit No.: VAR040035



733d CED
JBLE—Eustis
1407 Washington Blvd
Fort Eustis, VA 23604

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List of Acronyms and Abbreviations

733 CED/EE	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: Mark J. Sciacchitano Area Code and Telephone No.: (757) 878-3642

Official Title: Director, 733d Civil Engineering Division

Signature:  Date Signed: 30 Sep 19

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 1 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 installation'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) 1 from 1 July 2018 to 30 June 2019.

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) Maps
- Attachment 2 – Stormwater Management Educational Brochures
- Attachment 3 – Public Involvement/Participation Documentation
- Attachment 4 – Stormwater Management (SWM) Facility Inventory Tracking Spreadsheet
- Attachment 5 – Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan Implementation Status Memo
- Attachment 6 – Bacteria TMDL Action Plan Implementation Status Memo

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 installation 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 installation 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 installation 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 installation include Jail Creek, Morrison's Creek, Island Creek, Bailey Creek, and Eustis Lake. The installation 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 installation, while the southern portion of the peninsula remains largely undeveloped. A golf course and an airfield are located near the center of the installation.

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 a 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 ID¹
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 ²
	Blows Creek	VAT-G11E_ZZZ01A00
	Eustis Lake	Unavailable ²
	James River - Gravel Neck to Pagan River	VAT-G11E_JMS01A06
	Skiffes Creek System [Admin Cond]	VAT-G11E_SFF02A08
Warwick River (020802060901)	Browns Lake	Unavailable ²
	Jail Creek (Lower Tidal Portion)	Unavailable ²
	Milstead Island Creek	Unavailable ²
	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:

¹ Referenced from Table 2-1 of the Jan 2019 MS4 Program Plan.

² 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/EE) 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.

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 installation 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 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 installation 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 (VЕСP) to local municipalities. Local municipal VЕСPs must be approved by the State Water Control Board; however, this is an optional requirement for JBLE–Eustis per the VЕСL. 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.

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.

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 State and local requirements to educate the installation 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.

MCM 1: Public Education and Outreach		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
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">1. Curb illegal fats, oils, and grease (FOG) disposal at food service establishments (FSE), including food trucks, to the stormwater drainage system2. Curb illegal dumping within military family housing (MFH) and the dormitories.3. Training Area (TA) erosion and sediment control.	<ul style="list-style-type: none">• High priority water quality issues remain unchanged for PY2.

MCM 1: Public Education and Outreach		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
<p>Curb illegal fats, oils, and grease disposal at FSE, including food trucks, to the stormwater drainage system.</p> <p>Target Audience: JBLE-Eustis FSE workers, food truck vendors.</p> <p>Goal: Provide information regarding proper washing procedures to target audience.</p>	<ul style="list-style-type: none"> • 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 installation. • FSEs must have two workers trained in FOG management using the training provided by Hampton Roads Sanitation District (HRSD) at www.hrfog.com. (Part I E.1.d Table 1 – Training Materials) • Food truck workers may take either the HRSD FOG training or must have ServSafe training before entering into a contract with AAFES. • Signage is posted in kitchens regarding FOG BMPs and grease management. Examples are included in Attachment 1. (Part I E.1.d Table 1 – Signage) • Recommendations for FOG management have been provided to entities performing food preparation related activities (Part I E.1.d Table 1 - Signage). • Food Handlers Training during April, May, and June 2019 trained 121 personnel. The training includes FOG BMPs. 	<ul style="list-style-type: none"> • The areas of concern for this water quality issue will continue to be monitored for continued compliance by the target audience. • Continue to require FSE staff to maintain appropriate training for FOG management. • Continue to post signage related to FOG BMPs in kitchen areas.

MCM 1: Public Education and Outreach		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
<p>Curb illegal dumping within MFH and the dormitories.</p> <p>Target Audience: JBLE-Eustis MFH residents and dormitory residents</p> <p>Goal: Provide information regarding proper disposal procedures to target audience.</p>	<ul style="list-style-type: none"> 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"> The EMAC course is provided in an online format through The Environmental Awareness Course Hub (TEACH) website (https://usaf.learningbuilder.com) and is required for all base personnel within 30 days of arrival and annually thereafter. The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH. (93 people took the AEM training.) 733 CED/EE also provided environmental awareness training, including stormwater pollution prevention training, for the US Army Transportation School, Advanced Marine Warrant Officers Advanced Course (WOAC). 733 CED/EE participated in the Fun Fitness Fair on 25 April 2019 and utilized the interactive model to demonstrate how different activities, including illegal dumping affect stormwater runoff (Part I E.1.d Table 1 - Speaking engagements). (150 people attended the Fun Fitness Fair.) 	<ul style="list-style-type: none"> Publish articles in the Warrior newspaper related to illegal dumping (e.g., privately owned vehicle car washing in undesignated areas, littering, and disposal of household chemicals) on a semi-annual basis during the PY. Develop and post information to the JBLE–Eustis and MFH Facebook pages at least semi-annually during the PY. Send a mass email to MFH residents regarding illegal dumping at least semi-annually during the PY. Continue to conduct EMAC, AEM, and WOAC training. Continue to distribute the informational brochures relevant to curbing illegal dumping within MFH and the dormitories.

MCM 1: Public Education and Outreach		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
<p>Address TA erosion and sediment control</p> <p>Target Audience: JBLE-Eustis senior leadership, 733 CED/EE, Range Control personnel, and the Force Support Squadron (FSS)</p> <p>Goal: Provide information regarding reducing erosion and providing sediment control procedures to target audience.</p>	<ul style="list-style-type: none"> • 733 CED/EE 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). • 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). 	<ul style="list-style-type: none"> • Meet with Range Control personnel to discuss erosion and sediment control issues at the TA. • Discuss at WG and CFT meetings, as well as at ESOH Council briefings. • Distribute TA Erosion and Sediment Control (E&SC) outreach materials to Range Control, FSS, and other users. • Develop an outreach plan for the TAs.

MCM 2: Public Involvement/Participation

The installation 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 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
JBLE-Eustis Environmental Website	The 733 CED/EE maintains a website that provides information to the public, including the MS4 Program Plan and the MS4 Annual Reports. The website is located here: https://www.jble.af.mil/Units/Army/Eustis-Enviromental/	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"> Public involvement and participation activities include: <ul style="list-style-type: none"> Community Block Party (back-to-school block party) - The 733 CED/EE participated in the Community Block Party on 9 August 2018. They distributed brochures with stormwater information (see Attachment 2) with approximately 464 staff and JBLE–Eustis residents attending the event (Part I.E.2 c. Table 2 – Educational events). Worked with Army Community Service (ACS) and Morale, Welfare, and Recreation (MWR) for Trunk or Treat (26 October 2018) and provided candy collection bags (Part I.E.2 c. Table 2 – Educational event). There were approximately 1500 participants in Trunk or Treat. America Recycles Day (15 November 2018) - The 733d AirBase Wing Public Affairs Office participated in the recycling event by collecting plastic bags from 1 November 2018 through 30 April 2019 (Part I.E.2 c. Table 2 – Restoration). 	<ul style="list-style-type: none"> Continue to host events during Earth Week to engage base personnel and residents. Continue to participate in World Water Day. Continue participating in Clean the Bay Day and other Earth Week events hosted by MFH and FSS.

MCM 2: Public Involvement/Participation		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Public Involvement/ Participation (<i>Continued</i>)	<ul style="list-style-type: none"> Public involvement and participation activities include (continued): <ul style="list-style-type: none"> Earth Week (22 - 26 April 2019) - The 633d AirBase Wing Public Affairs Office provided newspaper, Command TV Channel, and social media notification of events, as well as photography support. They also provided electronic marquee support at the base gates to advertise Earth Week and asked for volunteers. The 733 CED/EE posted information on Facebook to promote volunteers for Earth Week. (Part I.E.2 c. Table 2 – Educational Events, Restoration and Monitoring). <ul style="list-style-type: none"> BMP cleanup - 7 volunteers Nature Trail cleanup - 9 volunteers Wildlife Boat Tours - 54 participants Box Turtle Survey - 22 volunteers Fun Fitness Fair - Stormwater interactive display demonstrations at the Stanford Elementary School on 25 April 2019 with approximately 150 attendees (Part I.E.2 c. Table 2 – Educational Events) Earth Day Community Fun Fair - Joint event hosted by 733 CED/EE and JBLE-Eustis Family Housing with approximately 280 attendees (Part I.E.2 c. Table 2 – Educational Events) Headquarters (HQ) U.S. Army Training and Doctrine Command (TRADOC) Solid Waste and Recycling Center Tour on 24 April 2019 included stormwater pollution prevention aspects. (Part I.E.2 c. Table 2 – Educational Events). Five people participated in the tour. 	<ul style="list-style-type: none"> 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.

MCM 2: Public Involvement/Participation		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Public Involvement/ Participation (<i>Continued</i>)	<ul style="list-style-type: none"> Public involvement and participation activities include (continued): <ul style="list-style-type: none"> Earth Week (continued): <ul style="list-style-type: none"> HQ TRADOC also held a trash cleanup event on 24 April 2019 (Part I.E.2 c. Table 2 – Educational Events and Restoration). Eight people participated in the trash cleanup. Clean the Bay Day (1 June 2019) - Teamed with local volunteers to pick up trash along the shores of the James River, approximately 31 volunteers collected 231 pounds of trash and recyclables (Part I.E.2 c. Table 2 – Educational Events and Restoration). A local Boy Scout troop adopted an SCM by the Warrior Café, WR_BB_053, to clean up. Sediment and brush was removed. (Part I.E.2 c. Table 2 – Pollution Prevention) 733 CED/EE participated in the Job Fair at General Stafford Elementary School on 28 March 2019, including a presentation on stormwater with approximately 87 attendees (Part I.E.2 c. Table 2 – Educational Event). Environmental Partnership - JBLE–Eustis participates in the Secretary of the Air Force Program to partner with our local public and private neighbors. The Public-Public; 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. 	<ul style="list-style-type: none"> Continue to look for P4 partnerships to share resources and increase program effectiveness. Continue partnering with the Boy Scout Troop to adopt SCMs.

MCM 2: Public Involvement/Participation		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Public Involvement/ Participation (<i>Continued</i>)	<ul style="list-style-type: none"> Public involvement and participation activities include (continued): <ul style="list-style-type: none"> Communicated with installation personnel and residents on a regular basis through internal and external websites, the installation community cable channel, the Peninsula 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. 	

MCM 3: Illicit Discharge Detection and Elimination

The installation 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 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Develop and maintain an accurate MS4 map and information table	No updates were made to the MS4 map during the PY. A PDF map was provided to VDEQ by 1 July 2019.	Update the MS4 map and information table as needed, by 1 October.
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/EE will continue to monitor the MS4 area to ensure there are no interconnections with other MS4s.
Outfall screenings	<ul style="list-style-type: none"> Fifty (50) of the 83 non-industrial outfalls were inspected during PY1. Details regarding the inspection findings are included on the outfall inspection records. Copies of the outfall inspection records are maintained by 733 CED/EE and will be made available upon request. 	Inspect non-industrial outfalls as required by the IDDE Procedure, and document the inspection utilizing the outfall inspection forms.
Investigations of suspected illicit discharges	<ul style="list-style-type: none"> JBLE–Eustis personnel utilized the IDDE procedures to investigate potential illicit discharges. Investigated potential illicit discharges: <ul style="list-style-type: none"> There were no illicit discharges requiring investigation during PY1. 	<ul style="list-style-type: none"> Continue to utilize IDDE procedures to investigate potential illicit discharges. Continue to report all spills or unauthorized releases, whether it enters the MS4 or not, in accordance with JBLE–Eustis EMP 4.7.7, Spill Prevention and Response, and log the incident in the spill database maintained by the 733 CED/EE Spill Program Manager.

MCM 4: Construction Site Stormwater Runoff Control

The installation 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.

MCM 4: Construction Site Stormwater Control		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Track regulated land-disturbing activities	<p>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.</p> <ul style="list-style-type: none"> Continued to track all regulated land disturbing activities <ul style="list-style-type: none"> Inspections performed – Weekly and after every major storm event Total number of land disturbing activities – 2 <ul style="list-style-type: none"> Battalion Complex Aviation Maintenance Instruction Building Total number of acres disturbed – 54 acres <ul style="list-style-type: none"> Battalion Complex – 42 acres Aviation Maintenance Instruction Building – 12 acres 	<ul style="list-style-type: none"> Continue to track regulated land-disturbing activities, including: <ul style="list-style-type: none"> Number of on-going land disturbing activities Number of acres disturbed Number of inspections conducted
Land-disturbing activity enforcement actions	No enforcement actions during PY1.	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.

MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Maintain an updated electronic database of all known operator-owned and privately-owned SWM facilities that discharge into the MS4	<ul style="list-style-type: none"> JBLE–Eustis utilized an excel spreadsheet to track SWM facilities. The spreadsheet is included electronically as Attachment 4. A similar CBAT data call inventory spreadsheet is updated by JBLE–Eustis and provided to the Chesapeake Bay Action Team (CBAT), Naval Base Norfolk for entry into the BMP clearinghouse database. The Navy is the Department of Defense (DoD) lead for the Bay Program and will work with the VDEQ, EPA, and Chesapeake Bay Organization to ensure SWM facilities are reported for JBLE–Eustis. 	<ul style="list-style-type: none"> Continue to maintain a SWM facilities inventory via an Excel spreadsheet. Continue to update the CBAT data call inventory spreadsheet and provide information to the CBAT for inclusion in the BMP clearinghouse database.
Identify new SWM facilities brought online during the PY	No SWM facilities were brought online during PY1.	<ul style="list-style-type: none"> Track construction projects and planned SWM facilities and include in the inventory as they are brought online. Work closely with 733 CED/EE planning and engineering departments to review plans and specifications associated with upcoming construction projects.

MCM 5: Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
SWM facility O&M management	<ul style="list-style-type: none"> Used the SWM facility inventory assessment to develop a SWM facility rehab plan for use in obtaining funding for repairs and improvements of SWM facilities. Completed an annual inspection of the SWM facilities (dry weather inspections performed in November 2018, January 2019, and February 2019; wet weather inspections performed in June 2019). 	Continue to use the SWM facility inventory assessment to develop a SWM facility rehab plan for use in obtaining funding for repairs and improvements of SWM facilities.
Maintain contact with the VDEQ BMP Warehouse	The electronically reported BMPs was submitted to the VDEQ BMP Warehouse via the CBAT in accordance with Part I.E.5.g in August 2018.	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 installation 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 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Develop and implement daily operational procedures	<ul style="list-style-type: none"> JBLE–Eustis utilizes an environmental management system (EMS) that conforms to International Organization of Standardization (ISO) 14001:2004, to manage environmental program requirements. All base environmental and management requirements are codified in JBLE Instruction 32-101, <i>Environmental Management</i>. <ul style="list-style-type: none"> EMP's have been developed and are used to implement the environmental program. These EMP's are reviewed and updated (as required) on an annual basis. EMP's that are related to the Stormwater Management Program include: <ul style="list-style-type: none"> EMP 4.4.2, Environmental Awareness & Competency Training EMP 4.4.2 Tab 2, Environmental Management Training Programs of Instructions EMP 4.4.6.2, Wastewater-Stormwater Management EMP 4.4.6.2.2, Stormwater Management EMP 4.4.6.2.2.3, MCM 3 Illicit Discharge Detection Elimination – IDDE Program EMP 4.4.6.5, Pollution Prevention EMP 4.4.6.6, Hazardous Materials Management EMP 4.4.6.7, Solid Waste and Recycling Management EMP 4.4.6.8, Hazardous Waste Management 	<ul style="list-style-type: none"> Continue to implement an EMS that conforms to ISO 14001:2004. Post EMP's on the JBLE–Eustis Environmental website and advertise them on the JBLE–Eustis Facebook pages.

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Develop and implement daily operational procedures (continued)	<ul style="list-style-type: none"> ○ EMPs that are related to the Stormwater Management Program (continued): <ul style="list-style-type: none"> ▪ EMP 4.4.6.12, Integrated Pest Management ▪ EMP 4.4.6.14.1, Aboveground Storage Tanks Management ▪ EMP 4.4.6.14.2, Underground Storage Tanks Management ▪ EMP 4.4.6.16, Tab 1, Assessment Management Special Conditions and Affirmative Procurement ▪ EMP 4.4.7, Spill Prevention and Response ▪ EMP 4.5.2.1, Activity Assessments Conducted by 733 CED/EE ▪ EMP 4.5.2.2, Regulatory and Permit Inspections ▪ EMP 4.5.2.3, Internal Inspections Conducted by Activities <ul style="list-style-type: none"> ▪ EMP 4.5.2.3.1, Activity Corrective Action Plans ○ EMPs are posted on the JBLE–Eustis Environmental website (https://www.jble.af.mil/About-Us/Units/Army/Eustis-Environmental/EMPs/). 	<ul style="list-style-type: none"> • Review all EMPs related to stormwater and update as needed.
Develop and implement required Stormwater Pollution Prevention Plans (SWPPP)	<ul style="list-style-type: none"> • 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. • 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). • The annual CSCE was completed and no new SWPPPs are currently required. 	<ul style="list-style-type: none"> • Conduct the annual CSCE of the high-priority non-industrial areas. • Continue to review and update the list of municipal/non-industrial high priority facilities and determine if they require a SWPPP in PY2. • Create additional SWPPPs based on the developed schedule in PY2.

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Develop and implement turf and landscape nutrient management plans (NMP)	<ul style="list-style-type: none"> 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. 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. 	<ul style="list-style-type: none"> Continue to implement the NMPs at each of the four locations. Review previously developed training materials and conduct follow-up training with each of the locations subject to an NMP.
Develop training material	<p>Developed training material for the following pollution prevention/good housekeeping procedures:</p> <ul style="list-style-type: none"> Equipment maintenance Application, storage, transport and disposal of pesticides and fertilizers Road/street parking lot maintenance 	Review the training material and update based on changes to the applicable EMPs covering the pollution prevention/good housekeeping procedures.
Required training	<ul style="list-style-type: none"> 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"> The EMAC course is provided in an online format through the TEACH website (https://usaf.learningbuilder.com) and is required for all base personnel within 30 days of arrival and annually thereafter. The AEM training is conducted in a classroom setting for initial training with annual refresher training provided via TEACH. The Environmental Element also provided environmental awareness training, including stormwater pollution prevention training, for the US Army Transportation School, Advanced Marine WOAC. 733 CED/EE Participated in the Fun Fitness Fair on 25 April 2019 and utilized the interactive model to demonstrate how different activities affect stormwater runoff. 	<ul style="list-style-type: none"> Continue to conduct stormwater pollution prevention training and continue to track base personnel that have received training. Continue to track training events, including date of event, number of attendees, and objective of the training.

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations		
Management Practices & Techniques	Program Achievements (1 July 2018 – 30 June 2019)	Initiatives Planned for Coming Year (1 July 2019 – 30 June 2020)
Required training (<i>continued</i>)	<ul style="list-style-type: none"> • Newcomer's Orientation included stormwater pollution prevention • Target Audience Reached: <ul style="list-style-type: none"> ○ EMAC –2,219 ○ AEM – 93 ○ WOAC – 12 ○ Fun Fitness Fair – 150 • Newcomer's Orientation – 1,086 	

Section 5: Special Conditions

SC1: TMDL Special Conditions Compliance for the Chesapeake Bay TMDL

The JBLE–Eustis Draft Phase II Chesapeake Bay TMDL Action Plan was developed and submitted with the MS4 Permit Registration Statement. 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 PY1 and is included as Attachment 5. Implementation will continue in PY2.

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

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

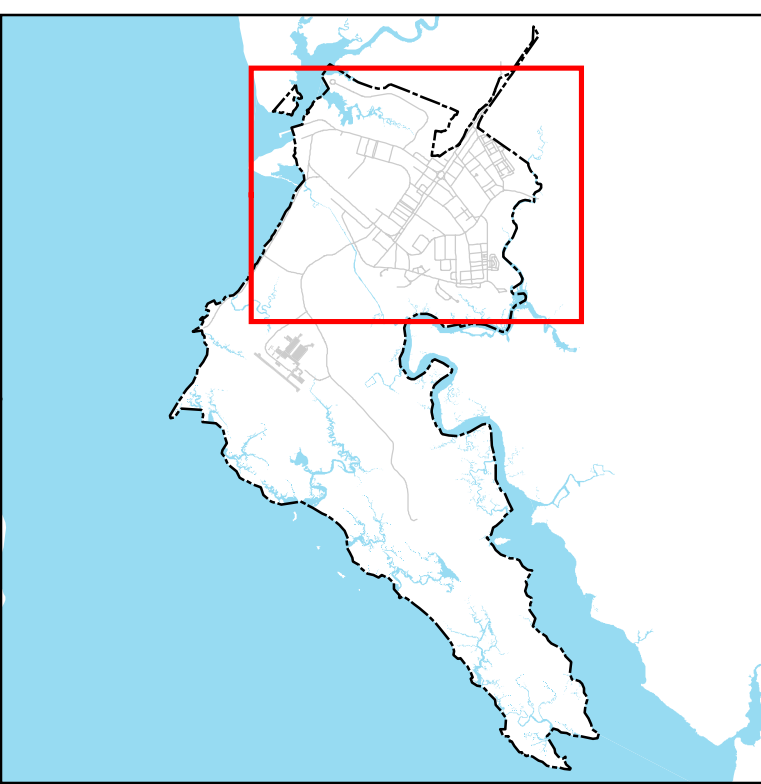

As part of maintaining its MS4 Program Plan, JBLE–Eustis has developed the Bacteria TMDL Action Plan to address bacteria impairment in those water bodies. Implementation continued in PY1 and will continue in PY2. The Bacteria TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY1 and is included as Attachment 6.

Attachment 1: Illicit Discharge Detection Elimination Map



Notes:
1. Areas not located in a delineated drainage basin sheet flow to nearby storm sewer system appurtenances or surface waters. Additional non-industrial areas that do not have a distinct outfall are called out on the map.
2. A GIS mapping update was completed in 2018 for portions of the JBLE-Eustis stormwater drainage system. Updates to stormwater drainage system infrastructure are shown on this map.

Figure B-1 - MS4 Area Overview Map
JBLE-Eustis, VA (1 of 2)



★ Industrial Outfall

★ Non-Industrial Outfall

— Stormwater Line

— Industrial Drainage Basin*

— Non-Industrial Drainage Basin*

■ Building

■ Golf Course Fairway

— Installation Boundary

■ Water

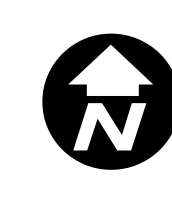
■ Wetland

*Drainage basins with hash marks indicate basins that have yet to be specifically delineated.

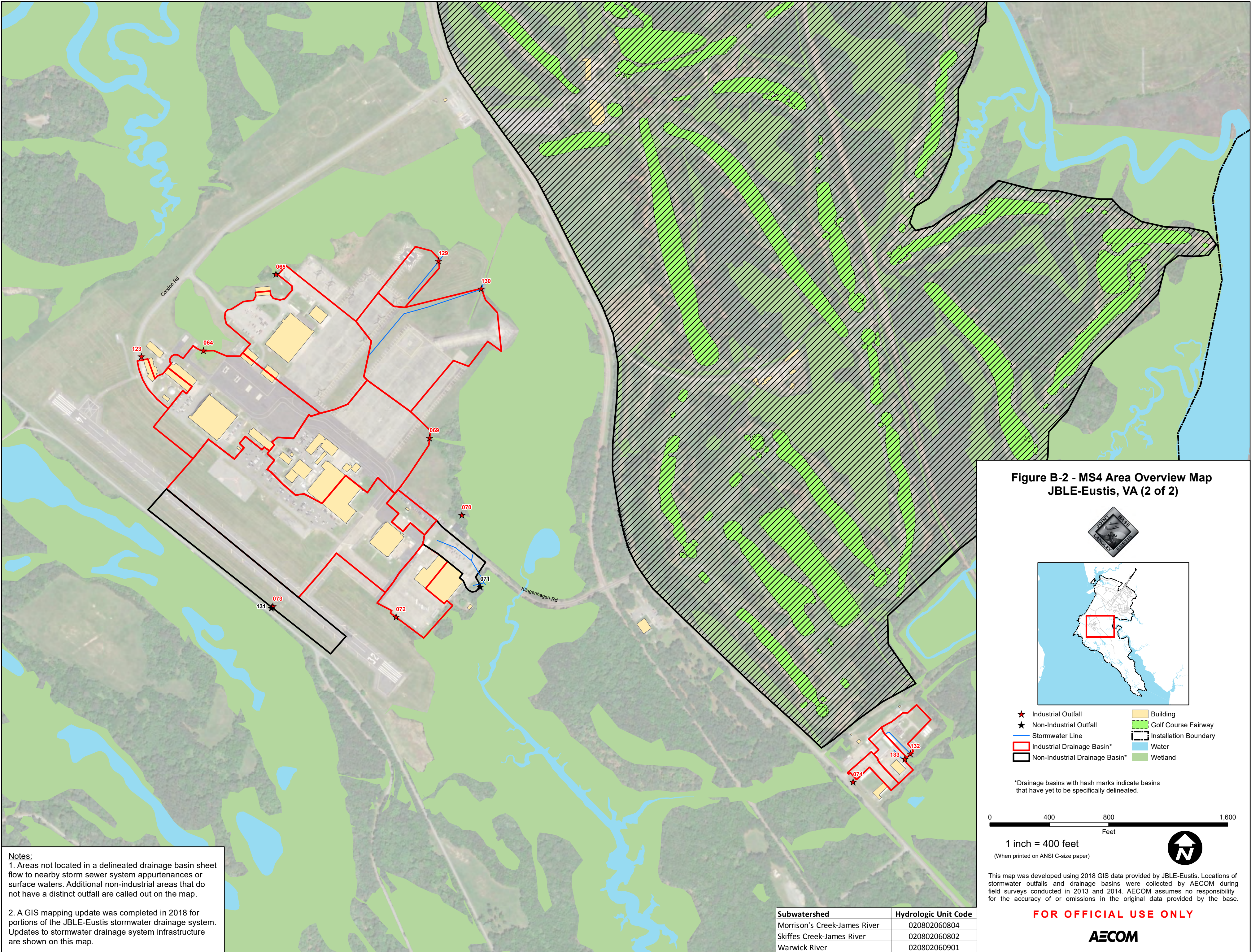
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Feet

1 inch = 400 feet
(When printed on ANSI E-size paper)



Subwatershed	Hydrologic Unit Code
Morrison's Creek-James River	020802060804
Skiffes Creek-James River	020802060802
Warwick River	020802060901



Notes:
1. Areas not located in a delineated drainage basin sheet flow to nearby storm sewer system appurtenances or surface waters. Additional non-industrial areas that do not have a distinct outfall are called out on the map.
2. A GIS mapping update was completed in 2018 for portions of the JBLE-Eustis stormwater drainage system. Updates to stormwater drainage system infrastructure are shown on this map.

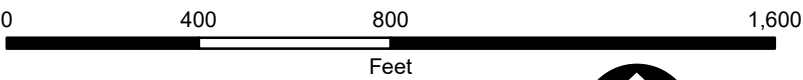
Subwatershed	Hydrologic Unit Code
Morrison's Creek-James River	020802060804
Skiffes Creek-James River	020802060802
Warwick River	020802060901

Figure B-2 - MS4 Area Overview Map
JBLE-Eustis, VA (2 of 2)



- Industrial Outfall
- Non-Industrial Outfall
- Stormwater Line
- Industrial Drainage Basin*
- Non-Industrial Drainage Basin*
- Building
- Golf Course Fairway
- Installation Boundary
- Water
- Wetland

*Drainage basins with hash marks indicate basins that have yet to be specifically delineated.



1 inch = 400 feet

(When printed on ANSI C-size paper)



This map was developed using 2018 GIS data provided by JBLE-Eustis. Locations of stormwater outfalls and drainage basins were collected by AECOM during field surveys conducted in 2013 and 2014. AECOM assumes no responsibility for the accuracy of or omissions in the original data provided by the base.

FOR OFFICIAL USE ONLY

AECOM

Attachment 2: Stormwater Management Educational Brochures



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



25

Box Turtle
Survey
(TAs 1&2)

26

Balfour Beatty
Community
Event



Call Donna Haynes at 757-878-4123 for information.

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 757-764-1141 (Langley AFB).

Additional information is available at:

EPA Pet Waste Management:

<https://cfpub.epa.gov/npstbx/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://askhrgreen.org/scoop-the-poop/>

Water Environment Federation

www.wef.org/AVK/pages_cs.aspx?id=6392

www.wef.org/blogs/blog.aspx?id=8780&blogid=17296

Pet waste is a health risk to people, other pets, and the environment. Bacteria in pet waste can make people sick. When not disposed of properly, pet waste is washed into storm drains and ends up in local waterways.

Always bag pet waste and dispose of it properly.



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.

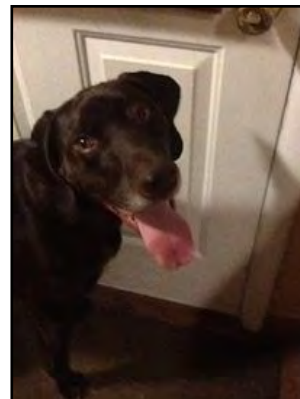
The Facts

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...



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.

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**

Joint Base Langley—Eustis Fort Eustis

733d CED/CEIE



Stormwater Pollution Prevention

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

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.

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.

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



5. Use drip pans beneath parked vehicles
6. Use designated wash racks to clean vehicles and equipment
7. Do NOT wash where soapy water will flow into a storm drain



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.



...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.

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/npstbx/files/KSMO_CarWashing.pdf

Florida DEP's Best Practices for Mobile Vehicle Washing:

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



Outdoor Vehicle Washing



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



Registration Form for Earth Day 2019

Events April 22 - 25

Make Every Day Earth Day!

Come out and help Eustis celebrate Earth Day!!!

Each year, Earth Day, April 22 marks the anniversary of the birth of the modern environmental movement in 1970. Earth Day is a time to celebrate gains we have made and create new visions to accelerate environmental progress. It's a time to unite around new actions. Earth Day and every day is a time to act to protect our planet. Take action and join us in some of the events happening here on Joint Base Langley-Eustis.

1. Date of Registration:

2. Please provide the following information:

Name:

Work Ph#:

Bde:

BN/Dir:

Co/Div:

eMail:

Shirt Size – Adult S-4XL _____

3. Please select all events that you would like to register for:

22 April

☐

Ft Eustis Clean-up of Dry Retention Ponds - Behind AAFES Gas Station, 0900-1130hrs

23 April

☐

Ft Eustis Nature Trail area Maintenance/clean-up (Entrance at the RV Park): 0900-1130hrs

☐

Tick Awareness Presentation, Bldg 1407 Main Conference Room - 1000 Hrs _____ or 1300 Hrs _____

There are limited seats for each presentation.

24 April

☐

Wildlife Boat Tours: 0900, 1145 & 1300hrs (Take a ride along the Eustis James River Coastline and chance possible sightings of wildlife) *Notes: No children under the age of 16 allowed. You must sign a waiver. Please select your preferred time on your registration form. There are limited numbers for each tour.*

Time: _____

25 April

☐

Eastern Box Turtle Survey: 0900-1100hrs (Come out and search for individual turtles on the forest floor in Training Areas 1 & 2. Turtles will be weighed, measured, and sexed by the Environmental Staff)

HAPPY EARTH DAY!

4. DISCLOSURE STATEMENT. **BY SUBMITTING THIS FORM (ELECTRONICALLY OR BY FAX) TO THE ENVIRONMENTAL ELEMENT OF THE CIVIL ENGINEER DIVISION HERE ON JOINT BASE LANGLEY-EUSTIS, YOU AGREE TO ACCEPTANCE OF THE DISCLOSURE STATEMENT:**

☐ Earth Week 2019 Events Disclosure Statement: I understand that all Earth Week events will consist of either walking (on/off trails or wooded areas), boat rides, carrying materials, using tools on many types of surfaces to include rough terrain, steep slopes, which can possibly be potentially hazardous activities. I should not participate in any of these events unless I am medically able. I agree to abide by the safety briefing provided by the Environmental Staff relative to my ability to safely participate in these Earth Week events. I grant permission to the U.S. Government, to include the DOD and the Air Force, and its officers, volunteers, and all sponsors, their representative and successors to use my photographs, motion pictures, recordings, or any other record of this event for any legitimate purpose.

I UNDERSTAND THAT THESE EVENTS ARE NOT FOR INDIVIDUALS WITH HEADPHONES, BABY JOGGERS, BABY STROLLERS, PETS, SKATEBOARDS, OR ROLLER BLADES. All events are conducted under the rules of the Environmental Element of the 733d Civil Engineer Division.

Did you remember to accept the disclosure statement by selecting the check box? Your form is not valid without it.

Fill out the automated form and print and fax this form to 757-878-4589 or scan and e-mail it to donna.c.haynes.civ@mail.mil. For more information, please call 757-878-4123.



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Community Awareness Fun Fair

April 26, 2019, 3-6 pm

The Reserve Center, Bldg. 1034 Schultz Place

For more information call 757-328-0691 or 757-878-3638

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FEATURING 30+ INSTALLATION AND COMMUNITY
RESOURCES: ACS, MWR, Outdoor Rec, JBLE Fire
Dept., Child + Youth Services, Air and Space
Museum, Fort Eustis Environmental and many
more.....

FREE Food, Games, Prizes, Music, Dancing, Bounce
House, and more!

Come check out the **Cool Critters**, live snakes, and
local wildlife info from Environmental Element





APR
26

Earth Week Celebration

Public · Hosted by Joint Base Langley-Eustis

★ Interested

...



Daily, Apr 22 - Apr 26 · EDT

Event ended about 1 month ago



Fort Eustis Blvd, Fort Eustis, VA 23604, United States

[Show Map](#)

About

Discussion

Details

In observance of Earth Day 2019, Fort Eustis will host various events from April 22 - 26, culminating into a Community Awareness Fun Fair on April 26 with lots of fun activities for all. For additional information, contact Ms. Donna Haynes at 757-878-4123.

April 22 - Clean-up of Dry Retention Ponds
April 23 - Nature Trail Maintenance and Plantings
April 24 - Wildlife Boat Tours
April 25 - Box Turtle Survey
April 26 - Community Awareness Fun Fair

Kid Friendly

Earth Week 2019 - Nature Trail RV Park Entrance Clean-up - 23 Apr 19. Today we cleaned up the entrance to the Nature Trail over the the Outdoor Rec RV Park. See the before and after pictures. Great job by everyone who came out.











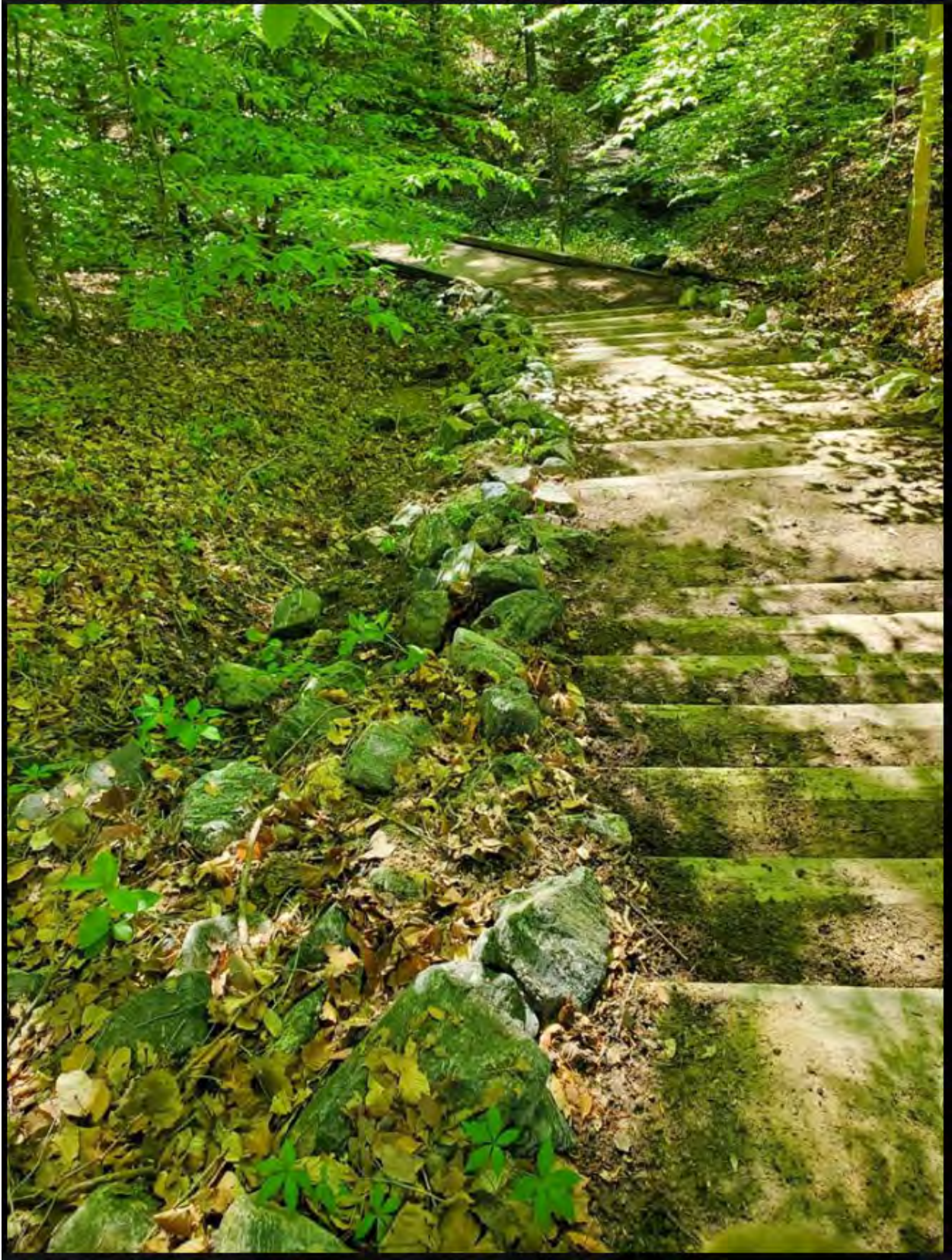










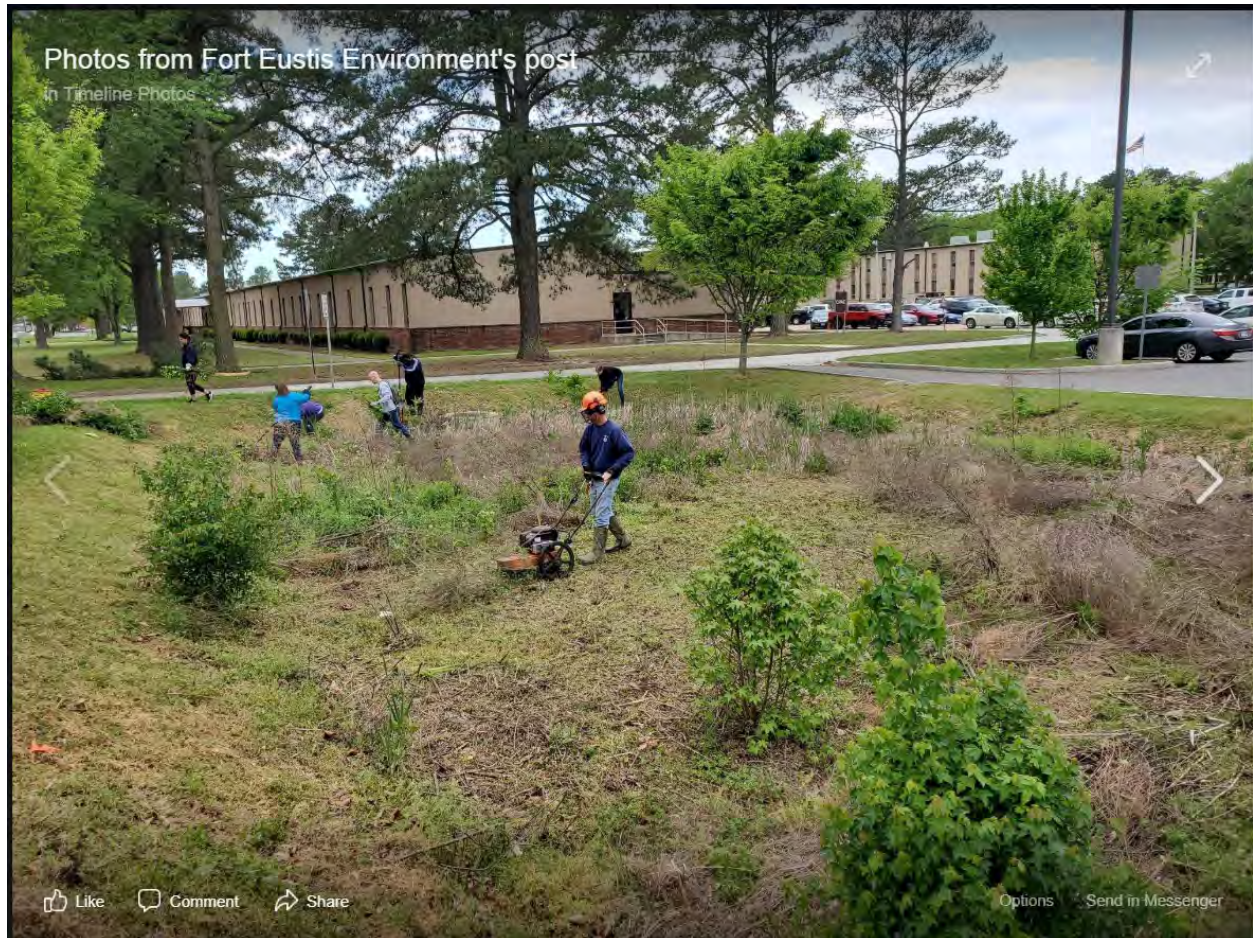








Retention Pond Clean-up - AAFES Gas Station - Monday, 22 Apr 19. You can see all the fun and hard work that everyone put in.

















Earth Week 2019 - Wildlife Boat Tours (Skiffes Creek) - 24 Apr 19. We had 3 boat tours on this beautiful Wednesday. Boat riders were able to see eagles, hawks, snakes and few other critters.





Photos from Fort Eustis Environment's post

In Timeline Photos



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JBLE celebrates Earth Week

By Senior Airman Delaney Gonzales, 633rd Air Base Wing Public Affairs / Published May 1, 2019



Brian Kelly, Air Combat Command, deputy director of staff, examines a spout on a rain barrel at Joint Base Langley-Eustis, Virginia, April 23, 2019. Kelly attended the course to make a rain barrel for his home. (U.S. Air Force photo by Airman 1st Class Sarah Dowe)



Sherry Johnson (left), 633rd Civil Engineer Squadron pollution prevention program manager, assists Gary Nault (right), 633rd CES environmental engineer, with drilling a hole into a barrel while Ronnie Best (middle), 633rd CES environmental engineer, looks on at Joint Base Langley-Eustis, Virginia, April 23, 2019. Besides teaching how to make a rain barrel, the class taught water conservation and preventing pollution. (U.S. Air Force photo by Airman 1st Class Sarah Dowe)



U.S. Army Col. Jennifer S. Walkawicz, 733rd Mission Support Group commander, participates in a box turtle survey at Joint Base Langley-Eustis, Virginia, April 25, 2019. Volunteers searched Fort Eustis' woodland and successfully documented eight box turtles for the survey.



A box turtle is measured during a survey at Joint Base Langley-Eustis, Virginia, April 25, 2019. Volunteers searched Fort Eustis' woodland and successfully documented eight box turtles for the survey. (U.S. Air Force photo by Senior Airman Delaney Gonzales)



Members of Joint Base Langley-Eustis participate in a wildlife boat tour commemorating Earth Week at JBLE, Virginia, April 24, 2019. JBLE celebrated the occasion from April 22 to April 26 with nature trail maintenance projects, recycling programs, box turtle surveys and more. (U.S. Air Force photo by Senior Airman Delaney Gonzales)



Volunteers participate in a nature trail improvement project during Earth Week at Joint Base Langley-Eustis, Virginia, April 24, 2019. The week-long observance encouraged community support for participation in activities such as nature trail maintenance projects, recycling programs, box turtle surveys, and more. (U.S. Air Force photo by Airman 1st Class Marcus Bullock)

Earth Day is an international holiday celebrated around the world April 22nd to demonstrate support for environmental protection and the significance of preserving natural resources. JBLE recognized the occasion by sponsoring numerous conservation themed events on the installations from April 22 to April 26.

The week-long observance encouraged community support for participation in activities such as nature trail maintenance projects, recycling programs, Box Turtle surveys, and more.

"It's a refresher course--everyone needs to be reminded about the importance and ways of protecting our planet," said Joanna Bateman, 733rd Civil Engineer Division pollution prevention branch chief.

The week kicked off with a dry retention pond clean-up, preventing harmful substances from reaching the base's streams, lakes, rivers and ponds.

"Waste collects in dry retention ponds and the ground filters it before it seeps into underground waterways or into bodies of water such as the James or Warwick River," added Donna Haynes, 733rd CED environmental protection specialist.

With the help of volunteers, nature trails were spruced up to present a spotless appearance, thus eliminating waste products that propose a potential threat to the base's wildlife.

Not only did the activity serve to protect the ecosystems on base, but also promoted awareness of the installation's hidden gems.

"A lot of people are not aware that we have a nature trail," noted Haynes. These environmental conservation activities help to get the information out to the public about the resources available on base."

The alluring landscape of the base's precious ecosystems can help bring a personal touch to the significance of its preservation.

"On Wednesday we offered a boat tour to community members to showcase the installation's nature and the wildlife that inhabits it, specifically the Ospreys and Bald Eagles," Haynes stated. "We have close to 11 active Bald Eagle's nests on Fort Eustis. They mate for life and come back to the same nest every year."

Box Turtles are another organism residing within our gates. They are closely monitored, specifically through data collection detailing their proliferation as a species.

Volunteers searched forested training areas on the base and successfully documented eight Box Turtles for the survey.

"It is important to know that the population is growing in a normal fashion," said Haynes. "They are marked to see how well they are growing and thriving in the area."

Education about recycling programs was also featured during the Earth Week festivities.

“We educated the installation staff about recycling to divert waste from the landfill,” Bateman said. “We have a lot of construction that takes place on the installation. Building supplies that are used by our contractors are often shrink wrapped with plastic. Those plastics would have been disposed of in the trash, but are now being set aside to be recycled, thus preventing them from going into a landfill.”

“During our six-month long America’s Recycle Day Initiative, we collected 1,470 pounds of plastic,” Haynes added.

Through partnership, shared ideas can create innovative ways to carry out a common goal.

“In events like The BBC Community Fun Fair, you get the opportunity to partner with other people and to see what initiative steps they have taken so good ideas can be implemented at other locations on the installation,” Bateman said. “So it’s good to get that interaction and partnership.”

Each year, Earth Week helps to generate new tactics to protect the planet. The growing numbers of volunteers help spread awareness of the installations’ ever changing ecosystems, which in turn promotes environmental health beyond our local community to the world at large.



PHYSICAL

FAMILY

SOCIAL

Community Awareness Fun Fair

April 26, 2019, 4-6 pm

The Reserve Center, Bldg. 1034 Schultz Place

For more information call 757-328-0691 or 757-878-3638

SPIRITUAL

EMOTIONAL

FEATURING 30+ INSTALLATION AND COMMUNITY
RESOURCES: ACS, MWR, Outdoor Rec, JBLE Fire
Dept., Child & Youth Services, Air and Space
Museum, Fort Eustis Environmental and many
more.....

FREE Food, Games, Prizes, Music, Dancing, Bounce
House, and more!

Come check out the **Cool critters**, live snakes, and
local wildlife info from Environmental Element



JBLE ceremony recognizes volunteers

By Senior Airman Delaney Gonzales, 633d Air Base Wing Public Affairs / Published April 24, 2019







Service members, families, civilians, retirees and youths were recognized for their commitment to service in a Volunteer Recognition and Award Ceremony April 12 at JBLE-Eustis and April 19 at JBLE-Langley.

Volunteerism is a tool for Airmen and Soldiers to bridge the gap between the local community and the installation it supports.

“It’s an honor to celebrate our incredible volunteers,” said Shannon George, Fort Eustis Volunteer Recognition and Award Ceremony guest speaker. “Time is a precious gift, it is the best gift you can give.”

Volunteers identify a problem, evaluate the circumstance at hand and work toward a solution, said Xavi Slocum, Langley Volunteer Recognition and Award Ceremony guest speaker. When an individual decides to help those in need, they are choosing to give up their time to benefit the community.

Volunteerism is key for the betterment of installations and their surrounding communities.

“All you have to do is be available, willing and have a heart to serve,” George noted. “Little things make a difference because they build on each other.”

The combined total volunteer hours performed by members of JBLE equated to approximately \$2,917,482.50.

“I look into the crowd and see the large amount of volunteers here and the money saved is amazing,” George said with a smile.

Ceremonies such as these are used to showcase the impact volunteering contributes to the mission.

“You don’t have to be superhero to make a difference, you don’t have to have accolades to make a difference, you don’t have to be perfect to serve people,” George concluded. “You have to be yourself and have a heart and a passion to serve.”

Below is a list of the award winners.

Award winners for JBLE-Langley:

Commander’s Gold Award for Community Service: Air Combat Command, Inspector General, Logistics Readiness Section

Youth Volunteer of the Year: Madison Bennett

Family Member Volunteer of the Year: Taryn Huse

Single Airman Volunteer of the Year: Airman 1st Class Shayekh Rana

Service Member Volunteer of the Year: Staff Sgt. Patrick Sims

Civilian Volunteer of the Year: Terence Spann

Retiree Volunteer of the Year: Rodney Venables

Volunteer Family of the Year: The Rehak Family

Volunteer Excellence Award: Donna Craft, Christopher Watkins, Lynne Mills

Award winners for JBLE-Eustis:

Commander’s Gold Award for Community Service: Noncommissioned Officer’s Academy (NCOA)

Youth Volunteer of the Year: Brooke Mastel

Family Member Volunteer of the Year: Mary Ward

Single Soldier Volunteer of the Year: Spc. Tommy Ngo

Service Member Volunteer of the Year: Sgt. 1st Class Roberto Flores

Civilian Volunteer of the Year: Daniel Mendez

Retiree Volunteer of the Year: Chief Master Sgt. (Ret) Gary Robie

Volunteer Family of the Year: The Burney Family

Baylon Community Link Volunteer of the Year: Capt. Kiara Reed

David E. Minor Volunteer of the Year: Danielle Wyatt

Attachment 4: Stormwater Management Facility Inventory Tracking Spreadsheet

PY1 SWM Facility Inventory
JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC_12	State_FIPS	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
B27512 / 27513 / 27514 2013	ExtDryPonds	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. SCM ID: Not assigned yet	4.01	1.67	0.134	Systems		37.150706	-76.579022	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
Installation wide 2015	StreetSweepLbs25x	Street sweeping measured by the weight of street residue collected. Street sweeping and storm drain cleanout practices rank among the oldest practices used by communities for a variety of purposes to provide a clean and healthy environment, and more recently to comply with their National Pollutant Discharge Elimination System stormwater permits. The ability for these practices to achieve pollutant reductions is uncertain given current research findings. Only a few street sweeping studies provide sufficient data to statistically determine the impact of street sweeping and storm drain cleanouts on water quality and to quantify their improvements. The ability to quantify pollutant loading reductions from street sweeping is challenging given the range and variability of factors that impact its performance, such as the street sweeping technology, frequency and conditions of operation in addition to catchment characteristics. Fewer studies are available to evaluate the pollutant reduction capabilities due to storm drain inlet or catch basin cleanouts.	N/A	N/A	N/A	EA	In a months' timeframe there are 33 weekly, 17 bi-weekly, and 9 monthly sweeps. In a years' timeframe there are 3 quarterly sweeps	N/A	N/A	2080206		JBLE-Eustis	6/30/16		Jonathon Colmer	Dept of Defense		
B704 2012	ExtDryPonds	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. SCM ID: BC_DE_017	1.43	0.63	0.05	Systems	1	37.16247747	-76.57636255	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2011	
B704 2012	BioRetUDCD	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. SCM ID: BC_BB_018, BC_BB_019, BC_BB_020, BC_BB_021	0.6	0.4	0.03	Systems	4	37.1625387	-76.57673816	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	2011	
B 886 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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: BC_WB_104	3.3	3.28	0.39	Systems	1	37.16838644	-76.58041798	20802060802		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2010	
B211 ~2010-2011	VegOpChanNoUDCD	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. SCM ID: BC_VS_110	3.5	1.3	0.104	Systems	1	37.16307091	-76.58355011	20802060901		JBLE-Eustis	6/7/19		Jonathon Colmer	Dept of Defense	2008	
B211 ~2010-2012	ExtDryPonds	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. SCM ID: BC_DE_100	9.9	5.6	0.47	Systems	1	37.163908	-76.583277	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	
B211 2010	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. SCM ID: BC_IB_099	0.79	1.02	0.081	Systems	1	37.16313465	-76.58303111	020802060802		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	

PY1 SWM Facility Inventory
JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC_12	State_FIPS	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
B868,869,870,871 2010	ExtDryPonds	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. SCM ID: BC_DE_101	0.81	0.8	0.07	Systems	1	37.16630006	-76.5879641	20802060802		JBLE-Eustis	1/18/19		Jonathon Colmer	Dept of Defense	2008	
B461 ~2010	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	0.8	0.7		Systems		37.16944265	-76.60088699	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B699 ~2012	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	1.6	1	0.080	Systems		37.16476225	-76.5887918	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B648/652 2011	PermPavSVUDCD	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 surface to a washed gravel subsurface 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. SCM IDs: EL_PP_082, EL_PP_083	0.1	0.1	0.008	Systems	2	37.15842434	-76.58348306	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2009	
B807 ~2008	BioRetUDCD	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. SCM ID: Not assigned yet	3.6	3.6	0.288	Systems		37.165154	-76.589143	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B884 2008	ExtDryPonds	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. SCM ID: EL_DE_089	0.7	0.2	0.016	Systems	1	37.160288	-76.595257	20802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2010	
B1204 2006	DryPonds	Dry Detention Ponds are 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. SCM ID: EL_DB_080	1.7	0.6	0.05	Systems	1	37.15585534	-76.59453709	20802060802		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2004	
B1204 2006	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	1	0.4	0.032	Systems		37.15628619	-76.59532542	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
2012 Dredge spoils	EandS	Erosion and sediment control practices applied to construction land. Acres in excess of available construction land rolls to other urban land uses. Protects water resources from sediment pollution and increases in runoff associated with land development activities. By retaining soil on-site, sediment and attached nutrients are prevented from leaving disturbed areas and polluting streams.	74	N/A	N/A			37.151593	-76.601442	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B2608 2012	SepticPump	Septic systems achieve nutrient reductions through several types of management practices, including frequent maintenance and pumping. On average, septic tanks need to be pumped once every three to five years to maintain effectiveness. The pumping of septic tanks is one of several measures that can be implemented to protect soil absorption systems from failure. When septic tanks are pumped and sewage removed, the septic system's capacity to remove settleable and floatable solids from wastewater is increased.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2080206		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B3915 2011	DryPonds	Dry Detention Ponds are 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. SCM ID: JR_DE_108	0.9	0.08	0.007	Systems	1	37.1088944	-76.58598208	20802060901		JBLE-Eustis	6/7/19		Jonathon Colmer	Dept of Defense		

PY1 SWM Facility Inventory
JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC_12	State_FIPS	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
B1620 ~2010-2011	ExtDryPonds	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. SCM ID: IC_DE_081	2.9	2.5	0.200	Systems	1	37.15942524	-76.60214326	20802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2008	
B1620 ~2010-2011	UrbanTreePlant	Land Use Change Urban tree planting is planting trees on urban pervious areas at a rate that would produce a forest-like condition over time. The intent of the planting is to eventually convert the urban area to forest. If the trees are planted as part of the urban landscape, with no intention to covert the area to forest, then this would not count as urban tree planting	2.9	N/A	N/A			37.15952424	-76.60328655	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B2432 2010-2011	BioRetUDAB	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. SCM ID: MC_BB_107	0.6	0.5	0.042	Systems	1	37.13101626	-76.59854855	20802060804		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	
B3941/3942 2012	SepticPump	Septic systems achieve nutrient reductions through several types of management practices, including frequent maintenance and pumping. On average, septic tanks need to be pumped once every three to five years to maintain effectiveness. The pumping of septic tanks is one of several measures that can be implemented to protect soil absorption systems from failure. When septic tanks are pumped and sewage removed, the septic system's capacity to remove settleable and floatable solids from wastewater is increased.	N/A	N/A	N/A			37.112223	-76.575413	2080206		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B500 2012	PermPavSVUDCD	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 surface to a washed gravel subsurface 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. SCM IDs: WR_PP_003, WR_PP_004, WR_PP_005	0.7	0.1	0.008	Systems	3	37.16164836	-76.57167113	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2011	
B500 2012	DryPonds	Dry Detention Ponds are 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. SCM IDs: WR_DE_002, WR_DE_009	0.3	0.3	0.024	Systems	2	37.16212832	-76.57108258	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense		
B500 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 where it 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. SCM ID: WR_RH_006	0.3	0.28	0.022	Systems	1	37.16168375	-76.57156983	020802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2011	
B500/502 2012	ExtDryPonds	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. SCM ID: WR_DE_007	1.8	1.2	0.096	Systems	1	37.16116322	-76.57113706	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2011	
B502 2012	ExtDryPonds	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. SCM ID: WR_DE_008	1.5	0.8	0.064	Systems	1	37.161222	-76.571035	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2010	
B501 2012	ImpSurRed	Land Use Change Reducing impervious surfaces to promote infiltration and percolation of runoff storm water.	0.2	0.2	0.016			37.162141	-76.570692	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		

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B2300 2012	BioRetUDCD	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. SCM ID: WR_BB_062	2.5	1.5	0.120	Systems	1	37.15290834	-76.57640809	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense	2011	
B2301 2012	ExtDryPonds	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. SCM ID: WR_DE_045	0.9	0.5	0.040	Systems	1	37.15416285	-76.58016977	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense	2011	
B2301 2012	ExtDryPonds	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. SCM ID: WR_DE_044	2	0.8	0.064	Systems	1	37.15336595	-76.58036248	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense	2011	
B2303 2014	ExtDryPonds	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. SCM ID: WR_DE_043	2.6	1.34	0.107	Systems	1	37.15424786	-76.58194895	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2012	
B2304 2014	ExtDryPonds	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. SCM ID: WR_DE_042	3.0	1.62	0.130	Systems	1	37.15506163	-76.58347728	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2012	
B950 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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: WR_WB_028	26.1	14.2	1.2	Systems	1	37.157229	-76.572275	20802060901		JBLE-Eustis	11/28/18		Jonathon Colmer	Dept of Defense	2010	
B950 2011	VegOpChanNoUDCD	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. SCM IDs: WR_VS_023, WR_VS_024, WR_VS_025, WR_VS_026, WR_VS_027	25	10	0.800	Systems	5	37.15718882	-76.57532343	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2010	
B950 2011	PermPavSVUDCD	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 surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This SCM has an underdrain, no sand or vegetation and is in C or D soil. SCM ID: Not assigned yet	0.3	0.3	0.024	Systems		37.15750531	-76.57341672	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		

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B700 2011	PermPavSVUDCD	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 surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This SCM has an underdrain, no sand or vegetation and is in C or D soil. SCM ID: Not assigned yet	0.1	0.1	0.008	Systems		37.15835728	-76.57567248	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B700 2011	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. SCM ID: WR_IB_022	1.0	0.00	0.000	Systems	1	37.15891904	-76.57610997	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2009	
BBC 2011	VegOpChanNoUDCD	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. SCM IDs: WR_BB_010, WR_BB_011	1.9	0.4	0.032	Systems	2	37.16045219	-76.56636009	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	2010	
B2900 2011	ExtDryPonds	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. SCM ID: Not assigned yet	0.7	0.6	0.048	Systems		37.145377	-76.580471	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B2956 2011	ExtDryPonds	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. SCM ID: WR_DE_077	0.7	0.6	0.05	Systems	1	37.14342861	-76.57688944	20802060901		JBLE-Eustis	1/18/19		Jonathon Colmer	Dept of Defense	2009	
Big Oaks 2011	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_074	11	4.6	0.368	Systems	1	37.14796217	-76.56908072	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2011	
B1190 2011	VegOpChanNoUDCD	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. SCM ID: WR_DB_074	2.9	0.6	0.048	Systems	1	37.14842019	-76.56909838	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2011	
B1189 2011	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	8.1	4	0.320	Systems		37.14849771	-76.57036195	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B1504 2010	BioRetUDCD	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. SCM ID: WR_BB_054, WR_BB_055	5.4	3.8	0.32	Systems	2	37.15410615	-76.57647674	20802060901		JBLE-Eustis	11/29/18	SO # 397326	Jonathon Colmer	Dept of Defense	2007	
B1140 2010	PermPavSVUDCD	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 surface to a washed gravel subsurface 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. SCM ID: WR_PP_059	0.03	0.03	0.08	Systems	1	37.15303377	-76.57126523	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2008	

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B1140 2010	ExtDryPonds	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. SCM ID: WR_IB_058	0.8	0.3	0.03	Systems	1	37.15331695	-76.57092023	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2008	
B1140 2010	ExtDryPonds	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. SCM ID: WR_IB_060	3	1.6	0.13	Systems	1	37.15211142	-76.57083934	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2008	
B1140 2010	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_IB_057	0.7	0.4	0.03	Systems	1	37.15368231	-76.57129056	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2008	
B576 2011	BioRetUDAB	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. SCM ID: Not assigned yet	0.2	0.2	0.016	Systems		37.160847	-76.573889	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B126 2009	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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: WR_WB_001	30.5	15.8	1.3	Systems	1	37.1641811	-76.56998674	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	2008	
B1900 2009	BioRetUDCD	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. SCM IDs: WR_WB_069, WR_WB_070, WR_WB_071, WR_WB_072, WR_WB_073	6.1	3	0.25	Systems	5	37.14938	-76.574394	20802060901		JBLE-Eustis	11/28/18		Jonathon Colmer	Dept of Defense	2008	
Sternberg Street 300 ~2008-2009	vegOpChanNoUDCD	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. SCM ID: WR_VS_012	7.8	2.4	0.2	Systems	1	37.15871527	-76.57010633	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2007	
B857/858 2003	ExtDryPonds	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. SCM IDs: EL_BB_087, EL_DE_086	4.3	3.2	0.256	Systems	2	37.162446	-76.592045	20802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2000	\$13,398
B885 2002-2003	ExtDryPonds	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. SCM ID: Not assigned yet	1.1	1	0.080	Systems		37.159598	-76.595728	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		

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B854/855 2002-2003	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	3.3	2.8	0.224	Systems		37.1663447	-76.595564	20802060802		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B854/855 2002-2003	ExtDryPonds	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. SCM IDs: EL_DE_090, EL_DE_091	1.6	1.1	0.088	Systems	2	37.162769	-76.596199	20802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2001	
B695 2010	ExtDryPonds	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. SCM ID: EL_DE_097	1.4	0.3	0.024	Systems	1	37.162035	-76.585186	20802060802		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	
B1700 2004	VegOpChanNoUDCD	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. SCM ID: Not assigned yet	1.2	0.8	0.064	Systems		37.15140425	-76.57345255	20802060901		JBLE-Eustis	3/1/13		Jonathon Colmer	Dept of Defense		
B1700 2004	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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: WR_WB_061	14.4	6.1	0.488	Systems	1	37.15146927	-76.57435328	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2000	
B929 2003	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_029	4.6	4.2	0.336	Systems	1	37.15670279	-76.56992497	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2000	
Golf Course 1994-2002	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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: IC_WB_105	28.3	2.9	0.232	Systems	1	37.14195589	-76.59927237	20802060901		JBLE-Eustis	11/26/18		Jonathon Colmer	Dept of Defense	1993	
Golf Course 1994-2003	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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: IC_WB_106	20.0	6.4	0.512	Systems	1	37.13785338	-76.58847912	20802060901		JBLE-Eustis	11/26/18		Jonathon Colmer	Dept of Defense	1993	
-B2037/B2308 AIT Barracks Phase 2 2013	BioRetUDCD	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. SCM IDs: WR_BB_038, WR_BB_039, WR_BB_040, WR_BB_041	14.3	5.9	0.472	Systems	4	37.156021	-76.580602	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense	2010	

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PRATT Street/Cole & Wilson 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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: WR_WB_076	13.8	7.8	0.624	Systems	1	37.147294	-76.578224	20802060901		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	2010	
B369 2011	DryPonds	Dry Detention Ponds are 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, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_DB_013	3.5	2.3	0.184	Systems	1	37.16035547	-76.57059497	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2009	
B577	vegOpChanNoUDCD	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. SCM ID: WR_VS_014	0.8	1.04	0.083	Systems	1	37.16014704	-76.57172546	20802060901		JBLE-Eustis	1/14/19		Jonathon Colmer	Dept of Defense		\$4,836.37
B580 2011	vegOpChanNoUDCD	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. SCM ID: WR_VS_015	0.9	1.04	0.083	Systems	1	37.15962943	-76.57254684	20802060901		JBLE-Eustis	1/14/19		Jonathon Colmer	Dept of Defense	2010	
B576 2011	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: WR_FT_016	0.2	0.2	0.016	Systems	1	37.16121717	-76.57435761	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	2009	
B1382 2012	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM IDs: WR_FT_030, WR_FT_031, WR_FT_032, WR_FT_033, WR_FT_034, WR_FT_035	1.1	2.64	0.211	Systems	6	37.15679428	-76.57675184	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense	2011	
B2307	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM IDs: WR_FT_036, WR_FT_037	0.46	0.46	0.037	Systems	2	37.15695097	-76.58070634	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense		
B2300 2017	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM IDs: WR_FT_046, WR_FT_047, WR_FT_048, WR_FT_049, WR_FT_050, WR_FT_051, WR_FT_052	1.68	1.42	0.114	Systems	7	37.15339303	-76.57884448	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	2011	\$18,310.00
B2300 2013	BioRetUDCD	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. SCM ID: WR_WB_053	1.6	0.7	0.06	Systems	1	37.1529143	-76.57639403	20802060901		JBLE-Eustis	11/28/18		Jonathon Colmer	Dept of Defense	2011	
B926 1997	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_056	3.6	1.8	0.060	Systems	1	37.15342362	-76.57227005	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	1995	
B27501	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_SC_063				Systems	1	37.15188527	-76.57773367	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense		
B27502	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_FT_064	0.2	0.20	0.016	Systems	1	37.1515045	-76.57777151	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense		

PY1 SWM Facility Inventory
JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC_12	State_FIPS	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
B27504	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_SC_065	0.4	0.36	0.029	Systems	1	37.15089401	-76.57772901	20802060901		JBLE-Eustis	1/17/19		Jonathon Colmer	Dept of Defense		
B27506	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_FT_066	0.1	0.11	0.009	Systems	1	37.15056701	-76.57770096	20802060901		JBLE-Eustis	1/18/19		Jonathon Colmer	Dept of Defense		
B27609	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM IDs: WR_SC_067, WR_SC_068	0.05	0.05	0.004	Systems	2	37.14983317	-76.57951653	20802060901		JBLE-Eustis	1/18/19		Jonathon Colmer	Dept of Defense		
B2536 2011	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_075	7.3	2.78	0.222	Systems	1	37.14585257	-76.57671666	20802060901		JBLE-Eustis	11/29/18		Jonathon Colmer	Dept of Defense	2009	
B3306 1992	vegOpChanNoUDCD	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. SCM ID: WR_VS_078, WR_VS_079	3	1.2	0.096	Systems	2	37.14659103	-76.58971134	20802060901		JBLE-Eustis	1/15/19		Jonathon Colmer	Dept of Defense	1991	
B647 2012	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_084	0.6	0.37	0.030	Systems	1	37.16055746	-76.58746179	020802060802		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2011	
B673 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 retention 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, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal. SCM ID: IC_WB_085	1.1	0.7	0.056	Systems	1	37.16136013	-76.58908388	020802060802		JBLE-Eustis	11/27/18		Jonathon Colmer	Dept of Defense	1998	
B827 2003	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_088	4.3	3.2	0.256	Systems	1	37.1620232	-76.59413631	020802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2001	
B807 2010	BioRetUDCD	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. SCM ID: EL_BB_092, EL_BB_093, EL_BB_094, EL_BB_095	2.9	2.0	0.16	Systems	4	37.16405791	-76.59130331	020802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2008	
B672 2008	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_096	11.64	3.6	0.288	Systems	1	37.16369786	-76.58898553	020802060802		JBLE-Eustis	1/18/19		Jonathon Colmer	Dept of Defense	2007	
B671 2010	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. SCM ID: WR_IB_098	0.6	0.42	0.034	Systems	1	37.1629225	-76.58453062	020802060802		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	
B869 2010	DryPonds	Dry Detention Ponds are 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. SCM ID: WR_DB_102	5.6	4.55	0.364	Systems	1	37.16703755	-76.58988719	20802060901		JBLE-Eustis	2/4/19		Jonathon Colmer	Dept of Defense	2008	
B861 2006	InfiltrationBasin	Infiltration basins are practices that use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. SCM ID: WR_IB_103	5.9	4.87	0.390	Systems	1	37.16727322	-76.59357377	020802060802		JBLE-Eustis	1/16/19		Jonathon Colmer	Dept of Defense	2004	

PY1 SWM Facility Inventory
JBLE-Eustis, VA

Year_Installed	Practice_Name	Practice_Description	Total_Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC_12	State_FIPS	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
B2750	HydroDynStruc	Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff. SCM ID: WR_VT_109				Systems	1	37.147804	-76.58701	20802060901		JBLE-Eustis			Jonathon Colmer	Dept of Defense		

Attachment 5: Chesapeake Bay TMDL Action Plan Implementation Status Memo

Date: 27 September 2019

To: Jonathon Colmer, JBLE–Eustis
Emily Durham, AFCEC
Ronnie Stephens, AFCEC

From: CTI-URS Environmental Services, LLC
Shannon Clunn, PE, Project Manager
Brian Jacobson, PH, CFM, Task Leader

Subject: **Chesapeake Bay Action Plan Implementation Progress for JBLE–Eustis
Provide NPDES Reports in Support of the Chesapeake Bay Restoration Initiative at
Joint Base Langley Eustis, VA
Contract FA8903-16-D-0053, Task Order No. FA890-18-F-0266**

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 1 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 contracted CTI-URS Environmental Services, LLC (CUES) to develop a Chesapeake Bay TMDL Action Plan for the installation’s MS4 area (CUES, 2019). 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 **Error! Reference source not found..**

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 progress report was completed as part of the *Provide NPDES Reports in Support of the Chesapeake Bay Restoration Initiative at Joint Base Langley Eustis, VA project at JBLE–Eustis*, under Contract FA8903-16-D-0053, Task Order No. FA8903-18-F-0266.

This memorandum is organized into the following sections:

- Section 1.0 presents the background, purpose and objectives.
- Section **Error! Reference source not found.** describes the pollutant load reduction requirements.
- Section 3.0 describes the pollutant credits achieved by the base.
- Section **Error! Reference source not found.** describes future best management practices (BMP).
- Section 5.0 presents the progress summary.
- Section 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 1 July 2009 and 30 June 2019) 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 2019 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 2019 (lbs/yr)	Estimated Total Load as of 30 June 2009 (lbs/yr)	Total Load Change (lbs/yr)	
Regulated Urban Impervious	Nitrogen	5,522.1	5,251.3	270.9	1,037.7
Regulated Urban Pervious		9,168.0	8,401.2	766.8	
Regulated Urban Impervious	Phosphorus	1,035.0	984.3	50.8	105.6
Regulated Urban Pervious		655.8	600.9	54.8	
Regulated Urban Impervious	Total Suspended Solids	398,100.4	378,571.0	19,529.5	30,617.8
Regulated Urban Pervious		132,574.9	121,486.5	11,088.4	

Note and Acronym:

¹ 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 2009–2018 timeframe to arrive at the Net Load Change. BMPs installed after 1 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)¹	Reductions from BMPs Installed between 1 July 2009 and 30 June 2018 (lbs/yr)¹	Net Load Change (lbs/yr)¹	Required Reduction by End of Second Permit Cycle	Additional Reductions Required between 1 July 2018 and 30 June 2023 (lbs/yr)¹
Nitrogen	1,037.7	131.0	906.7	40%	362.7
Phosphorus	105.6	33.0	72.6	40%	29.1
Total Suspended Solids	30,617.8	19,242.6	11,375.3	40%	4,550.1

Note and Acronym:

¹ 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 previously developed by AECOM Technical Services, Inc. in 2018, was used to help calculate existing credits for the Chesapeake Bay TMDL Action Plan. BMPs installed between 1 January 2006 and 30 June 2009 were included in this analysis. BMPs installed prior to 1 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		
	1 Jan 2006 to 30 June 2009	1 July 2009 to 30 June 2018	Total
Bioretention	3	10	13
Dry Detention Pond	1	14	15
Dry Extended Detention Pond	1	11	12
Permeable Pavement	0	4	4
Rainwater Harvesting	0	1	1
Swale	2	10	12
Wet Pond or Wetland	1	2	3
Total	8	52	60

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
2009–2018	52	131.0	33.0	19,242.6

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	1,677.0	427.0	152.9	205,747.6

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) ¹	Credit (lbs/yr)
Nitrogen	40	0.012	0.5
Phosphorus	40	0.0086	0.3
Total Suspended Solids	40	42.0	1,680.0

Note and Acronyms:

¹ 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 **Error! Reference source not found.**, and the second permit cycle pollutant credits are presented in Table 5-1.

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	94.2	753.3	1,883.4
Phosphorus	13.7	109.5	273.7
Total Suspended Solids	4,886.0	39,087.8	97,719.5

Acronym:

lbs/yr – Pounds per year

Table 5-1. 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)¹	Second Permit Cycle Target Met?
Nitrogen	40%	753.3	510.6	No
Phosphorus	40%	109.5	174.4	Yes
Total Suspended Solids	40%	39,087.8	218,517.6	Yes

Note and Acronym:

¹ 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 242.7s 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 Tribo, 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.
- EPA. 2010. *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment*. 29 December 2010.
- JBLE–Eustis. 2019. *Chesapeake Bay Phase II Total Maximum Daily Load Action Plan for Joint Base Langley Eustis - Eustis*. Prepared by CUES. May 2019.
- 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
CUES	CTI-URS Environmental Services, LLC
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

Statement of Limitations

This memorandum report was prepared in accordance with the customary thoroughness and competence of environmental science and engineering consulting professionals and in accordance with the standard for professional services for a consulting firm at the time these services were provided. The analysis, conclusions and recommendations expressed in this report were developed based upon a limited scope of services and the information made available to CUES at the time this work was conducted.

Attachment 6: Bacteria TMDL Action Plan Implementation Status Memo

Date: 10 September 2019

To: Jonathon Colmer, JBLE–Eustis
Emily Durham, AFCEC
Ronnie Stephens, AFCEC

From: CTI-URS Environmental Services, LLC
Shannon Clunn, PE, Project Manager
Brian Jacobson, PH, CFM, Task Leader

Subject: **Warwick River and Skiffes Creek Bacteria TMDL Action Plan Implementation
Progress for Joint Base Langley Eustis – Eustis
Provide NPDES Reports in Support of the Chesapeake Bay Restoration Initiative at
Joint Base Langley Eustis, VA
Contract FA8903-16-D-0053, Task Order No. FA890-18-F-0266**

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 contracted CTI-URS Environmental Services, LLC (CUES) to update 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, 2019).

The purpose of this memorandum is to document progress toward implementing the Warwick River and Skiffes Creek Bacteria TMDL Action Plan (JBLE–Eustis, 2019). 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 progress report was completed as part of the *Provide NPDES Reports in Support of the Chesapeake Bay Restoration Initiative at Joint Base Langley Eustis, VA* project at JBLE–Eustis, under Contract FA8903-16-D-0053, Task Order No. FA8903-18-F-0266.

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, 2019b). 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 March 2019 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, CUES conducted a bacteria source investigation field visit at JBLE–Eustis. CUES staff completed a windshield survey at the JBLE–Eustis installation to locate bacteria sources described in Table 3-1 and to identify other potential sources that might be present. CUES staff also met with multiple JBLE–Eustis personnel involved with activities that may be affecting fecal bacteria loading from the base and discussed actions that JBLE–Eustis was 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.

5.0 BACTERIA-REDUCING ACTIVITIES IN PROGRESS (2019-2020)

JBLE–Eustis has initiated 2019-2020 actions that are identified in Section 2.0 of this memorandum. In addition, JBLE–Eustis conducted a local fecal bacteria source assessment in March 2019. 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.

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 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 a pet waste educational brochure.
- Illicit discharges and sewer line leaks into the MS4 are being monitored through the IDDE program.

7.0 REFERENCES

- JBLE–Eustis. 2019a. *Final MS4 Program Plan for Joint Base Langley Eustis – Eustis*. Prepared by AECOM Technical Services, Inc. January 2019.
- JBLE–Eustis. 2019b. *Warwick River and Skiffes Creek Bacteria Total Maximum Daily Load Action Plan for Joint Base Langley Eustis – Eustis*. Prepared by CTI-URS Environmental Services, LLC. May 2019.
- 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.

8.0 ACRONYMS

AFCEC	Air Force Civil Engineer Center
BASH	Bird/Animal Aircraft Strike Hazard
BMP	Best Management Practice
CUES	CTI-URS Environmental Services, LLC
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

Statement of Limitations

This memorandum report was prepared in accordance with the customary thoroughness and competence of environmental science and engineering consulting professionals and in accordance with the standard for professional services for a consulting firm at the time these services were provided. The analysis, conclusions and recommendations expressed in this report were developed based upon a limited scope of services and the information made available to CUES at the time this work was conducted.