Municipal Separate Storm Sewer System (MS4) Annual Report

JBLE–Langley Virginia

Permit Year 4: 01 July 2021 - 30 June 2022

JBLE–Langley
633 CES/CEIE
37 Sweeney Blvd
JBLE–Langley VA 23665

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List of Acronyms and Abbreviations

633 CES/CEIE	633d Civil Engineer Squadron/Environmental Element
BMP	Best Management Practice
GEM	Group Environmental Manager
GIS	Geographic Information System
IDDE	Illicit Discharge Detection and Elimination
JBLE–Langley	Joint Base Langley Eustis–Langley
LFH	Langley Family Housing
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plan
O&M	Operation and Maintenance
PY	Permit Year
SMF	Stormwater Management Facility
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UEC	Unit Environmental Coordinator
VDEQ	Virginia Department of Environmental Quality
VESCP	Virginia Erosion and Sediment Control Program
VSMP	Virginia Stormwater Management Program
WLA	Wasteload Allocation

Municipal Separate Storm Sewer System Program Plan Certification

As required by Part III.K.2. of General Permit No. VAR040140, all reports required by commonwealth 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: Ms. Brenda W. Cook

Area Code and Telephone No.: (757) 764-2025

Official Title: Deputy Base Civil Engineer

Signature:

Date Signed: 22 Sep 22

Permit Number: VAR040140

MS4 Name: JBLE–Langley

Section 1: Introduction and MS4 Conveyance System Description

Joint Base Langley Eustis–Langley (JBLE–Langley) Virginia, holds a General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), General Permit No. VAR040140, issued by the Commonwealth of Virginia Department of Environmental Quality (VDEQ) on 01 November 2018. In accordance with provisions outlined in this permit, JBLE–Langley has developed and implemented a comprehensive stormwater management program designed to prevent or reduce the discharge of sediment and other pollutants into the base's stormwater conveyance system. General Permit No. VAR040140 Part I.D.2.e. requires JBLE–Langley 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.

The JBLE–Langley MS4 Program implementation has been determined to be effective in ensuring permit compliance. The remaining sections of this report describe the progress and status of the individual program components, including an assessment of the program component effectiveness. This report describes the progress and status of JBLE–Langley's MS4 Program during Permit Year (PY) 4 from 01 July 2021 to 30 June 2022.

MS4 Conveyance System

The subsection below provides information about JBLE–Langley MS4 conveyance system, including the permit holder, facility information, mailing address, a short description of the stormwater drainage system and total maximum daily load (TMDL) allocations for the Chesapeake Bay and surrounding watersheds.

Permit Holder

Commander, 633d Air Base Wing
125 Mabry Ave
JBLE–Langley VA 23665

Facility Information

JBLE–Langley
Hampton VA
MS4 General Permit No. VAR040140

Mailing Address

Deputy Base Civil Engineer
37 Sweeney Boulevard
JBLE–Langley VA 23665

It should be noted that the base does not rely on another government entity to satisfy MS4 permit obligations. In addition, no program approvals are required as specified in Part I.C.5 of the MS4 permit.

System Description

JBLE–Langley's stormwater conveyance system consists of sheet flow areas, swales, ditches and pipes in two geographically disjunct areas covered under the MS4 permit: the main JBLE–Langley installation and the Bethel Reservoir site which includes portions of Langley Family Housing (LFH). Maps include the stormwater system and structural stormwater management facilities (SMF) and are maintained using Geographic Information System (GIS).

JBLE–Langley has interconnections with three (3) MS4s: the NASA Langley Research Center MS4, Newport News, and Yorktown.

Section 2: Water Quality Programs and Guidance

This section discusses the local and commonwealth water quality programs implemented by JBLE–Langley or the commonwealth within the base boundaries.

Local Programs and Guidance

JBLE–Langley developed and implements local plans, programs and guidance to comply with the MS4 permit. These documents are listed below.

- JBLE–Langley Environmental Policy Statement (07 February 2022)
- JBLE–Langley MS4 Program Plan (January 2019)
    - Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan
    - Bacterial (Local Back River) TMDL Action Plan
    - Construction Erosion and Sediment Control and Stormwater Inspection and Compliance Procedures
    - Stormwater Management Facility (SMF) Inspection and Maintenance Procedures
    - Illicit Discharge Detection and Elimination (IDDE) Written Procedures
    - Good Housekeeping Procedures
    - Employee Training Plan
    - High-Priority Facility Stormwater Pollution Prevention Plan(s) (SWPPP)
    - Nutrient Management Plans
        - Eaglewood Golf Course (June 2017) *(Updates in progress – Final plan expected in September 2022)*
        - Langley Family Housing/Hunt Companies (March 2019) *(Updates in progress – Final plan expected in September 2022)*
        - Force Support Squadron – Athletic Fields (June 2022)
- VPDES Permit VAG750278 for Eagle Golf Course Cart Barn (November 2021)
    - Operations and Maintenance (O&M) Manual

Commonwealth Programs

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

- **Erosion and Sediment Control Program** – The Virginia Erosion and Sediment Control Law delegates the authority to administer a Virginia Erosion and Sediment Control Program (VESCP) to local municipalities. This is an optional requirement and JBLE–Langley has not developed VESCP standards and specifications, so all

land disturbing activities 10,000 square feet or greater are inspected as defined in § 62.1-44.15:51 of the Code of Virginia.

- **Post Construction Stormwater Management** – The Virginia Stormwater Management Act delegates the authority to administer a Virginia Stormwater Management Program (VSMP) to local municipalities. This is an optional requirement and JBLE–Langley has not developed VSMP standards and specifications, so instead implement a post-construction stormwater runoff control program through compliance with 9VAC25-870 and implementation of a maintenance and inspection program consistent with MS4 Permit Part I E 5 b.
- **Stormwater Permitting Program** – The VDEQ Water Division implements the stormwater permitting program to develop, plan and implement commonwealth-wide stormwater control policies, strategies and rules designed to protect the surface waters from the impacts of stormwater pollutants and runoff.

Section 3: Minimum Control Measures Evaluation

An evaluation of MS4 program effectiveness is assessed within each Minimum Control Measure **(**MCM) review in the subsequent sections.

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

MCM 1: Public Education and Outreach

Part I.E.1 of MS4 Permit No. VAR040140 requires JBLE–Langley to develop and implement a public education and outreach program with the objective to (1) increase the public's knowledge of how to reduce stormwater pollution, placing priority on reducing impacts to impaired water and other local water pollution concerns; (2) increase the public's knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications and (3) implement a diverse program with strategies that are targeted toward individuals or groups most likely to have significant stormwater impacts.

The Public Education and Outreach Program effectively achieved permit compliance with Part I.E.1. in PY4. A summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.1.g.

- Part I.E.1.g.(1) – High priority issues for public outreach and education were changed for PY4. They are:
  - 1. Awareness of our receiving water and their impairments
  - 2. Clean Recreation
  - 3. Spill and illicit discharge reduction
- Part I.E.1.g.(2) – High priority issues were addressed using a minimum of two strategies (examples provided in Part I.E.1, Table 1 of the permit) and four activities for outreach (examples provided in Part I.E.1, Table 2 of the permit). These strategies and activities are described in the table below.

MCM 1: Public Education and Outreach		
Permit Ref.	**Part I.E.1 Public Education and Outreach**	
Strategy	**PY4 Action**	**High Priority Issue Addressed**
Traditional Written Material	Brochure: “Household Stormwater Pollution”	1, 3
	Brochure: “Nature Walk”	1, 2
Signage	Storm drain medallions installed throughout the installation on stormwater inlets	1, 3
	Marina Shoreline Educational Sign at Living Shoreline	1, 2
Alternate Materials	Pet waste bags/holders, reusable bags, water bottles, pens, notebooks, etc. given out during outreach events	1, 3
Media Materials	Facebook posts about local waters, recreation, and illicit discharges/potential stormwater pollution concerns as well as the methods for reporting these observations (https://www.facebook.com/jblelangleyenvironmental)	1, 2, 3
	633 CES/CEIE maintains a website that provides information to the public, including volunteer events, brochures, the MS4 Program Plan and the MS4 Annual Reports. https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental/	1,2, 3
	Four articles and videos were published through Public Affairs for outreach activities including world water day, earth week, and arbor day. https://www.jble.af.mil/News/Article-Display/Article/3013560/jble-earth-week-2022/ https://www.jble.af.mil/News/Article-Display/Article/3014088/the-pumpkin-ash-battlefield/ https://ms-my.facebook.com/JointBaseLangleyEustis/videos/633d-ces-hosts-earth-week-volunteerevents/	1, 3
Training Materials	Marina Boater Environmental Education: all new Marina Slip Agreements include a 2-page document covering local regulations, boat spill procedures, and boater environmental training	1, 2, 3
	Stormwater training is provided to all base personnel (active duty, civilian and contractors). Training includes SWPPP and Illicit Discharge training through online and in-person events. More details are available in the MS4 Training Plan.	1, 2, 3

MCM 2: Public Involvement/Participation

Part I.E.2. of MS4 Permit No. VAR040140 requires JBLE–Langley to cultivate a public involvement and participation program and comply with Commonwealth and local public notice requirements.

The Public Involvement and Participation Program effectively achieved permit compliance with Part I.E.2. in PY4. A summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.2.f.

- Part I.E.2.f.(1) – No public input directly related to the MS4 program plan or documents was received in PY4. General public response to outreach events were positive, with 15 individuals interested in becoming reoccurring volunteers. No stormwater complaints were received.
- Part I.E.2.f (2) –
  - JBLE-Langley operates an environmental website for our MS4 program: https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental/
  - JBLE operates a social media page for information and outreach: https://www.facebook.com/jblelangleyenvironmental
- Part I.E.1.f.(3-4) – Public involvement and outreach was conducted using a minimum of four activities from Part I.E.2, Table 2 of the permit. These activities and their metrics are described in the table below.
- Part I.E.f.(5) –The base does not rely on another government entity to satisfy MS4 permit obligations.

MCM 2: Public Involvement / Participation			
Permit Reference	**Part I.E.2 Public Involvement / Participation**		
Required Permit Activity	**Permit Reference**	**PY4 Activity**	**Activity Metrics and Evaluation**
Summarize a response of public input on the MS4 Program.	Part I.E.2.f. (1-2)	JBLE–Langley posted the PY3 MS4 Annual Report on the JBLE–Langley Environmental website for public review and comment. Contact information for 633 CES/CEIE is also posted to the website if there are further comments.	There were no comments received on the MS4 Program.

MCM 2: Public Involvement / Participation			
Permit Reference	**Part I.E.2 Public Involvement / Participation**		
Required Permit Activity	**Permit Reference**	**PY4 Activity**	**Activity Metrics and Evaluation**
Maintain a website with the MS4 Program and stormwater information.	Part I.E.2.f. (1-2)	633 CES/CEIE maintains a website that provides information to the public, including the MS4 Program Plan and the MS4 Annual Reports.	The website is active and located here: (https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental/)
Describe the volunteer opportunities designed to promote ongoing public participation.	Part I.E.2.f (3-4)	1. World Water Day- Safe drains installed in storm drains across base were cleaned out with the help of volunteer personnel. 2. Earth Week events increased awareness and connection with environmental around JBLE–Langley. Volunteer events included nature trail preservation, building and installing frog ladders, shoreline litter cleanup, and arbor day planting with a local school. 3. International Coastal Cleanup – JBLE-Langley hosted two days of trash cleanup around the base. Fliers were distributed and posted around the base and on Facebook for volunteers to sign up. 4. Clean the Bay Week – Daily volunteer events were removing trash from the waterfront areas around the installation. All volunteers participated in discussions about how stormwater pollution on the installation affects the watersheds.	1. Six volunteers removed 300lbs of sediment from 10 safe drains across base. 2. 23 total volunteers and 100 elementary students participated in events. 150lbs of trash was directly removed from shorelines across base. 3. A total of 36 volunteers covered 2.8 miles of coastline and removed 204 lbs. of trash from the environment. 4. A total of 85 volunteers participated in Clean the Bay Week, collected over 3,220 lbs. of trash, and cleaned approximately 18 miles of shoreline.

MCM 2: Public Involvement / Participation			
Permit Reference	**Part I.E.2 Public Involvement / Participation**		
Required Permit Activity	**Permit Reference**	**PY4 Activity**	**Activity Metrics and Evaluation**
Describe the volunteer opportunities designed to promote ongoing public participation. (Continued)	Part I.E.2.f (3-4)	5. STEM Day – Different shops and sections on base set up displays and demonstrations for DoD families to attend. The 633d Civil Engineer Squadron Environmental Element (CEIE) booth simulated the water cycle and pollution runoff, along with natural history representations of native animals. 6. JBLE–Langley CEIE used its Environmental Facebook page to encourage anyone who documented flooding on the base during the 03 January 2022 rain event to send them to CEIE. This exercise was intended to engage the community and help inform CES infrastructure planning, reduce the impacts of flooding, and improve the base's flooding models.	5. A total of 28 children, 17 adults, and 16 volunteers attended the event. 6. Four volunteers sent 15 photos of flooding around the installation.

MCM 3: Illicit Discharge Detection and Elimination

Part I.E.3 of MS4 Permit No. VAR040140 requires JBLE–Langley to develop, implement and enforce a program to detect and eliminate illicit discharges into the MS4.

The Illicit Discharge Detection and Elimination Program was effectively implemented to achieved permit compliance with Part I.E.3. in PY 4. A short summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.3.e. The table below further summarizes how the base achieved compliance with an evaluation of each activity performed during PY4.

- Part I.E.3.e.(1) – The MS4 map and inventory for JBLE–Langley has been updated to reflect all changes from PY4 prior to 01 October 2022.
    - In PY2, VDEQ approved the reclassification of three industrial outfalls (024, 050 and 083) to MS4 outfalls. These outfalls have been added to the MS4 outfall inventory and were inspected in PY2, PY3, and PY4. The MS4 map is included as Attachment 1.
- Part I.E.3.e.(2) – Fifty (50) of the 98 non-industrial outfalls were inspected during PY4. Details regarding the inspection findings are included on the outfall inspection forms and in the PY4 Dry Weather Outfall Monitoring Report. Copies of the outfall inspection forms are maintained by 633 CES/CEIE and will be made available upon request.
- Part I.E.3.e.(3) – A list of illicit discharges to the MS4, including spills reaching the MS4, are included in Attachment 2.

MCM 4: Construction Site Stormwater Runoff Control

Part I.E.4 of MS4 Permit No. VAR040140 requires JBLE–Langley to comply with the Virginia Stormwater Management Program in order to maintain compliance with the Construction Site Runoff Controls.

JBLE–Langley has taken steps to implement the program BMPs and has effectively achieved permit compliance with Part I.E.4. in PY 4, under the base's Construction Site Stormwater Runoff Control Program. A short summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.4.d.

- Part I.E.4.d(1) – JBLE-Langley is not a VESCP authority.
- Part I.E.4.d(2) – A summary of the on-going and completed land-disturbing activities, inspections conducted and enforcement actions implemented for the projects are provided in the table below.
- Part I.E.4.d(3) – One major enforcement action related to the land disturbing activities occurred during PY4. Minor corrective actions issued by VDEQ and MS4 ESC inspections conducted by 633d CES/CEIE are maintained by the Water Program Manager and available upon request.

MCM 4: Construction Site Stormwater Runoff Control			
Permit Reference	**Part I.E.4 Construction Site Stormwater Runoff Control**		
Required Permit Activity	**Permit Reference**	**PY4 Construction Project**	**Inspections and Major Enforcement Actions**
Provide information on land-disturbing activities including, the total number of inspections conducted; and the total number and type of enforcement actions implemented and the type of enforcement actions.	Part I.E.4.d(2)-(3)	Hospital CAP (VAR10M314)	• MS4 ESC inspections: 28 • VDEQ inspections: 2 Enforcement Actions: None
	Part I.E.4.d(2)-(3)	Cyber Ops Facility (VAR10P168)	• MS4 ESC inspections: 25 • VDEQ inspections: 2 Enforcement Actions: None

MCM 4: Construction Site Stormwater Runoff Control			
Permit Reference	**Part I.E.4 Construction Site Stormwater Runoff Control**		
Required Permit Activity	**Permit Reference**	**PY4 Construction Project**	**Inspections and Major Enforcement Actions**
	Part I.E.4.d(2)-(3)	Targeting Center (VAR10P929)	• MS4 ESC inspections: 15 • VDEQ inspections: 2 Enforcement Actions: None
	Part I.E.4.d(2)-(3)	JBLE Sweeney Roundabout (VAR10R390) Project began in June 2022	• MS4 ESC inspections: 1 • VDEQ inspections: 1 Enforcement Actions: 1 Cease Work Order – contractor began land disturbance prior to permit issuance
	Part I.E.4.d(2)-(3	Security Forces Storage (VAR10P168) Awaiting termination	• MS4 ESC inspections: 11 • VDEQ inspections: 1 Enforcement Actions: None
	Part I.E.4.d(2)-(3)	Clear Zone (VAR10L932) Awaiting termination	• MS4 ESC inspections: 6 • VDEQ inspections: 0 Enforcement Actions: None
	Part I.E.4.d(2)-(3)	Secondary Containment Refueler Parking Area (VAR10O918) Awaiting termination	• MS4 ESC inspections: 11 • VDEQ inspections: 1 Enforcement Actions: None

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

Part I.E.5 of MS4 Permit No. VAR040140 requires JBLE–Langley to implement a Post-Construction Stormwater Management Program. The program addresses stormwater runoff related to new development and redevelopment projects throughout the service area, including a combination of structural and non-structural BMPs.

The Post-Construction Stormwater Program was effectively implemented to achieved permit compliance with Part I.E.5. in PY 4. A short summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.5.i.

- Part I.E.5.i(1)-(5) – See the table below for how the base achieved compliance with Part I.E.5.i(1)-(5). The Inventory, Annual Inspection and Management Plan for the privately owned SMFs provides a summary of the methods used to perform field assessments and provide operation and maintenance recommendations for the SMFs. The Stormwater Management Facility Inventory Tracking Spreadsheet is available in Attachment 3.

MCM 5: Post-Construction Stormwater Management		
Permit Reference	**Part I.E.5. Post-Construction Stormwater Management**	
Required Permit Activity	**Permit Reference**	**PY4 Activity**
Provide the number of privately owned stormwater management facility (SMF) inspections conducted and the total number of and type enforcement actions taken to ensure long-term maintenance of the SMFs.	Part I.E.5.i(1)(a)-(b)	JBLE-Langley is not a VSMP authority
Provide the total number of inspections conducted on SMFs owned or operated by the permittee.	Part I.E.5.i(2)	Completed the annual inspections of the 84 SMFs on base.

MCM 5: Post-Construction Stormwater Management		
Permit Reference	**Part I.E.5. Post-Construction Stormwater Management**	
Required Permit Activity	**Permit Reference**	**PY4 Activity**
Provide a description of the significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the permittee.	Part I.E.5.i(3)	1. Performed maintenance on nine (9) SMFs by extensive removal of invasive and undesirable vegetation. 2. Submitted scope of work to study options to rehab or retrofit deficient SMFs.
Provide confirmation of VCSGP database submission	Part I.E.5.i(4)	No SMFs were reported during PY4 to the Virginia Construction Stormwater General Permit Database for any land disturbing activities for which the permittee was required to obtain coverage under the VAR10 CGP.
Provide confirmation of VDEQ BMP Warehouse Submission.	Part I.E.5.i(5)	The electronically reported BMPs were submitted to the VDEQ for inclusion in the BMP Warehouse in accordance with Part I.E.5.g in September 2021.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations

Part I.E.6 of MS4 Permit No. VAR040140 requires JBLE–Langley to implement a Pollution Prevention / Good Housekeeping Program, including a training program for base personnel and the community.

The Pollution Prevention / Good Housekeeping Program was effectively implemented to achieved permit compliance with Part I.E.6. in PY 4. A short summary of how JBLE–Langley achieved compliance is reported herein as required by Part I.E.6.q. The table below further summarizes how the base achieved compliance with an evaluation of each activity performed during PY4.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations		
Permit Reference	**Part I.E.6 Pollution Prevention / Good Housekeeping for Municipal Operations**	
Required Permit Activity	**Permit Reference**	**PY4 Action**
Summarize any operational procedures developed or modified in accordance with Part I.E.6.a during the reporting period	Part I.E.6.q(1)	Existing written procedures have not been modified. Procedures were developed for Golf Cart washing O&M for new VPDES Permit VAG750278 for Eaglewood Golf Course on November 2021.
Summarize any new SWPPPs developed in accordance with Part I.E.6. during the reporting period	Part I.E.6.q(2)	One new MS4 SWPPP was developed for facility 328, Civil Engineering Squadron, due to exposure of equipment to stormwater. In PY3, one new SWPPP was developed for facilities 28/30 Vehicle Management and Wash Rack
Summarize any SWPPPs modified in accordance with Part I.E.6.f or the rationale of any high priority facilities delisted in accordance with Part I.E.6.h during the reporting period	Part I.E.6.q(3)	The SWPPP was modified for the Eaglewood Golf Course due to outdoor golf cart washing that required a separate permit, VAG750278, and addition of procedures described above. Other existing SWPPPs are routinely updated to reflect minor changes in in procedure and potential pollutant exposures.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations		
Permit Reference	**Part I.E.6 Pollution Prevention / Good Housekeeping for Municipal Operations**	
Required Permit Activity	**Permit Reference**	**PY4 Action**
Summarize any new turf and landscape nutrient management plans (NMP) developed	Part I.E.6.q(4)	Eaglewood Golf Course NMP: • 119.2 acres • Valid through 12 June 2022 – *Update in Progress (expected in September 2022)* Athletic Fields NMP: • 11.9 acres • Valid through 22 June 2022 – *Update in Progress (expected in September 2022)* LFH NMP: • 21.2 acres • Valid through June 2025
Provide a list of training events conducted in accordance with Part I.E.6.m	Part I.E.6.q(5)	JBLE–Langley training event times and objectives are described in the MS4 Training Plan Written Procedures Maintained by the Water Program Manager and are available upon request. Many trainings are self-driven online, and the following numbers represent number of people trained: SWPP Training: 288 GEM/UEC Training: 15 Site-Specific IDDE /Housekeeping Training: 22

Section 4: TMDL Action Plans

SC1: TMDL Special Conditions Compliance for the Chesapeake Bay TMDL

JBLE–Langley's 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–Langley.

The Action Plan presents the JBLE–Langley 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 PY4 and is included as Attachment 4. Implementation will continue in PY5.

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

Part II.B. of MS4 Permit No. VAR040140 requires the base to maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4 in an approved TMDL.

As part of maintaining its MS4 Program Plan, JBLE–Langley has developed the Bacteria TMDL Action Plan to address bacteria impairment in those waterbodies. The MS4 Program Plan currently has incorporated the TMDL Action Plans that identify the BMPs and other interim milestone activities. The 2017 TMDLs, which became final on 09 February 2018, include updated information on the listing status of assessment units according to the 2014 305(b)/303(d) Water Quality Assessment Integration Report and assign a waste load allocation (WLA) for bacteria to JBLE–Langley. The WLA is a portion of the TMDL and represents the allowable load a permittee may discharge to the waterbody and still meet water quality standards.

JBLE–Langley is required to implement an approved TMDL Action Plan for bacteria impairment. Implementation continued in PY4 and will continue in PY5. The Bacteria TMDL Action Plan Implementation Status Memo summarizes the actions taken during PY4 and is included as Attachment 5.

Attachment 1:
MS4 Maps

Attachment 2:
Illicit Discharge Investigation Details

Attachment 3:
Stormwater Management Facility Inventory Tracking Spreadsheet

Attachment 4:
Chesapeake Bay TMDL Action Plan Implementation Status Memo

Attachment 5:
Bacteria TMDL Action Plan Implementation Status Memo

Illicit Discharge Tracking Record, JBLE - Langley

	Section 1. Detection					Section 2. Investigation				Section 3. Elimination		Section 4. Follow-Up	
Discharge ID No.	Date Reported or Identified	Reported / Identified by:	Location of Discharge	Description of Discharge	Additional Investigation Required?	Date(s) of Investigation	Results of Investigation	Corrective Action to be Taken	Scheduled Date of Corrective Action	Description of Corrective Action Taken	Date Corrected	Date of Verification	Additional Notes
	Enter date discharge was reported or identified	Provide name and contact number of reporting personnel	Provide address, Outfall ID, nearby landmark, etc.	Provide description of the potential illicit discharge (e.g. dumping, wash water, suds, oil, etc.). Include characterization from Section 6 of the outfall inspection form if applicable.	(Yes/No)	Enter date of investigation	Describe investigation results. Was the source found? Was this an illicit discharge? What is the source? What is the frequency of the discharge (continuous, intermittent, or transitory)?	Specify what will be done to eliminate the illicit discharge and by whom	Enter the estimated date for completion of corrective actions	How was the illicit discharge resolved?	Enter date of resolution	Enter date of follow-up investigation to verify illicit discharge has been eliminated	
N/A	1/11/2022	Amn Stevenson 7204758578	Outfall 025, Shoppette	Approximately 1 gallon of unleaded gasoline discharged onto the concrete at a filling station. Spill pads were applied and mitigated the spill. Clean up completed by fire department personnel.	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	4/21/2022	Terrell Brown 813 753-5469	Langley Marina	A boat sank at the Langley Marina, resulting in a spill of gasoline. Approximately 100 feet of oil boom was deployed. Clean up was completed by fire department personnel.	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
2007	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: 1	7.92	2.08	0.166	Systems	1	37.098044	-76.355630	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 2	0.38	0.36	0.029	Systems	1	37.095267	-76.358796	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 3	0.26	0.25	0.020	Systems	1	37.095243	-76.358593	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 4	0.26	0.24	0.019	Systems	1	37.095218	-76.358388	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 5	0.26	0.23	0.018	Systems	1	37.095197	-76.358187	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 6	0.23	0.21	0.017	Systems	1	37.095174	-76.357982	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 7	0.23	0.20	0.016	Systems	1	37.095154	-76.357777	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 8	0.19	0.11	0.009	Systems	1	37.095134	-76.357578	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2007	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: 9	3.48	0.64	0.051	Systems	1	37.095992	-76.359729	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
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: 10	0.45	0.27	0.022	Systems	1	37.094149	-76.361885	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 11	0.41	0.22	0.018	Systems	1	37.094116	-76.361686	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 12	0.17	0.14	0.011	Systems	1	37.093990	-76.361925	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 13	0.15	0.14	0.011	Systems	1	37.093955	-76.361728	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 14	0.23	0.16	0.013	Systems	1	37.093831	-76.361970	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 15	0.16	0.10	0.008	Systems	1	37.093797	-76.361769	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 16	0.21	0.18	0.015	Systems	1	37.096668	-76.361608	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 17	0.19	0.17	0.014	Systems	1	37.096578	-76.361971	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 18	0.30	0.27	0.022	Systems	1	37.096465	-76.362363	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
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: 19	0.24	0.23	0.018	Systems	1	37.096342	-76.362799	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 20	0.99	0.72	0.058	Systems	1	37.096375	-76.361974	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 21	0.45	0.36	0.029	Systems	1	37.096008	-76.362506	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
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: 22	0.60	0.49	0.039	Systems	1	37.096216	-76.361782	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$337.87
2008	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: 23	2.51	1.39	0.111	Systems	1	37.095545	-76.362447	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$364.45
2008	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: 24	4.38	1.78	0.142	Systems	1	37.094784	-76.362808	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2008	$364.45
2008	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: 25	1.57	0.70	0.056	Systems	1	37.100139	-76.378244	020801 '020801080102	JBLE-Langley	3/1/2021	-	Jeff Saunders	Dept of Defense	2008	$502.48
1977	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: 26	9.27	0.13	0.010	Systems	1	37.094030	-76.367133	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	1977	$45.55
1977	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: 27	17.65	0.90	0.072	Systems	1	37.093374	-76.368813	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	1977	$318.89

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
1977	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: 28	14.31	0.87	0.070	Systems	1	37.090823	-76.369517	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	1977	$318.89
1977	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: 29	13.11	1.40	0.112	Systems	1	37.088444	-76.368606	020801 '020801080102	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	1977	$510.23
1977	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: 30	8.26	0.10	0.008	Systems	1	37.086498	-76.365593	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	1977	$45.55
1977	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: 31	7.24	0.05	0.004	Systems	1	37.086428	-76.363477	020801 '020801080102	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	1977	$18.22
2016	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: 32	2.42	0.20	0.016	Systems	1	37.075067	-76.381627	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2016	$502.48
2016	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: 33	5.95	0.62	0.049	Systems	1	37.074495	-76.380903	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2016	$848.00
2016	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: 34	1.24	0.44	0.035	Systems	1	37.075376	-76.381025	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2016	$502.48
2016	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: 35	0.64	0.19	0.016	Systems	1	37.074460	-76.378894	020801 '020801080103	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2016	$502.48
2016	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: 36	5.16	0.22	0.017	Systems	1	37.075170	-76.380560	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2016	$502.48
2016	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: 37	3.54	0.73	0.059	Systems	1	37.077942	-76.382171	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2016	$502.48
2000	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: 38	3.14	1.05	0.084	Systems	1	37.082615	-76.374694	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2000	$565.29
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: 39	2.71	2.16	0.173	Systems	1	37.074474	-76.366869	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2012	$848.00
2005	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: 40	1.12	0.68	0.054	Systems	1	37.068056	-76.360048	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2005	$337.87

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
2005	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: 41	0.37	0.11	0.009	Systems	1	37.067781	-76.359545	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2005	$502.48
2005	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: 42	0.19	0.06	0.005	Systems	1	37.067830	-76.360984	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2005	$848.00
2005	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: 43	1.13	0.44	0.035	Systems	1	37.067149	-76.359943	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2005	$502.48
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: 44	31.51	22.40	1.792	Systems	1	37.071135	-76.358055	020801 '020801080103	JBLE-Langley	3/1/2021	-	Jeff Saunders	Dept of Defense	2011	$502.18
2007	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: 45	2.16	1.45	0.116	Systems	1	37.070600	-76.360535	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
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: 46	3.70	1.54	0.123	Systems	1	37.066793	-76.366190	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2013	$337.87
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: 47	3.30	1.40	0.112	Systems	1	37.067739	-76.365255	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2013	$464.57
2013	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: 48	3.48	1.14	0.091	Systems	1	37.068257	-76.364621	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2013	$848.00
2000	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: 49	1.26	0.72	0.058	Systems	1	37.072550	-76.363403	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2000	$337.87
2000	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: 50	1.35	0.68	0.054	Systems	1	37.072432	-76.364202	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2000	$337.87
2015	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: 51	1.56	0.07	0.006	Systems	1	37.074457	-76.375603	020801 '020801080103	JBLE-Langley	12/7/2020	-	Jeff Saunders	Dept of Defense	2015	$62.81
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: 52	0.95	0.09	0.008	Systems	1	37.099548	-76.355627	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2009	$45.55

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
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: 53	0.67	0.27	0.022	Systems	1	37.097720	-76.356485	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2010	$848.00
2013	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: 55	1.92	1.43	0.114	Systems	1	37.075794	-76.357982	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2013	$690.91
2013	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: 56	0.51	0.23	0.018	Systems	1	37.065987	-76.366677	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2013	$212.00
2006	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: 57	1.76	1.16	0.093	Systems	1	37.094402	-76.424570	020801 '020801080103	JBLE-Langley	1/12/2021	-	Jeff Saunders	Dept of Defense	2006	$410.00
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: 58	8.64	4.35	0.348	Systems	1	37.097141	-76.422678	020801 '020801080103	JBLE-Langley	1/12/2021	-	Jeff Saunders	Dept of Defense	2010	$3,710.00
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: 59	7.51	2.67	0.213	Systems	1	37.099519	-76.423363	020801 '020801080103	JBLE-Langley	1/12/2021	-	Jeff Saunders	Dept of Defense	2010	$2,226.00
2009	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: 60	2.00	0.07	0.006	Systems	1	37.073553	-76.384703	020801 '020801080103	JBLE-Langley	1/12/2021	-	Jeff Saunders	Dept of Defense	2007	$800.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 61	0.25	0.11	0.008	Systems	1	37.065989	-76.366401	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
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: 62	0.17	0.02	0.002	Systems	1	37.065807	-76.366288	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 63	0.36	0.13	0.010	Systems	1	37.065539	-76.366573	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 64	0.36	0.10	0.008	Systems	1	37.065280	-76.366189	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
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: 65	0.18	0.14	0.011	Systems	1	37.065169	-76.366164	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$600.00
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: 66	0.18	0.14	0.011	Systems	1	37.064939	-76.366112	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$600.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 67	0.32	0.09	0.007	Systems	1	37.064781	-76.366055	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 68	0.30	0.07	0.005	Systems	1	37.064861	-76.366419	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$500.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 69	0.16	0.002	0.000	Systems	1	37.064842	-76.366405	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$400.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 70	0.15	0.004	0.000	Systems	1	37.064530	-76.366520	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$300.00
2010	FilteringDevice	Filtering devices are pre-manufactured devices that provide treatment through detention and infiltration of stormwater through engineered media. SCM ID: 71	0.06	0.01	0.000	Systems	1	37.064504	-76.366493	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$200.00
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: 72	0.56	0.16	0.013	Systems	1	37.064860	-76.366344	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$800.00
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: 73	0.36	0.10	0.008	Systems	1	37.065333	-76.366227	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$600.00

Stormwater Management Facility Inventory, JBLE-Langley

Year_Installed	Practice_Name	Practice_Description	Total Acres	IMP_Acres	Runoff_Treated	Measurement_Unit	Report_Applied_Amount	Latitude	Longitude	HUC6/HUC12	Facility_Name	Inspect_Date	Maint_Date	Contact_Name	Agency_Name	Year_Funded	SCM_Cost
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: 74	0.32	0.09	0.007	Systems	1	37.064723	-76.366030	020801 '020801080103	JBLE-Langley	12/11/2020	-	Jeff Saunders	Dept of Defense	2013	$650.00
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: 75	2.30	0.61	0.049	Systems	1	37.076005	-76.356640	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2007	$500.00
2005	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: 76	1.09	0.57	0.046	Systems	1	37.068155	-76.361436	020801 '020801080103	JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense	2007	$800.00
2004	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: 77	0.19	0.15	0.012	Systems	1	37.074325	-76.367334	020801 '020801080103	JBLE-Langley	1/11/2021	-	Jeff Saunders	Dept of Defense	2001	$400.00
2007	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: 78	2.79	1.81	0.145	Systems	1	37.094874	-76.358337	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
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: 79	1.84	0.68	0.054	Systems	1	37.074284	-76.377328	020801 '020801080103	JBLE-Langley	12/8/2020	-	Jeff Saunders	Dept of Defense	2007	$337.87
2002	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: 80	2.31	0.72	0.058	Systems	1	37.070457	-76.367073	020801 '020801080103	JBLE-Langley	12/10/2020	-	Jeff Saunders	Dept of Defense	2002	$500.00
2009	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: 81	0.08	0.01	0.001	Systems	1	37.073480	-76.383011	020801 '020801080103	JBLE-Langley	1/12/2021	-	Jeff Saunders	Dept of Defense	2007	$400.00
2020	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 an underdrain and filter media. SCM ID: 82				Systems	1	37.076031	-76.365776		JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense		
2020	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 an underdrain and filter media. SCM ID: 83				Systems	1	37.076500	-76.365866		JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense		
2020	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 an underdrain and filter media. SCM ID: 84				Systems	1	37.076333	-76.365262		JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense		
2020	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 an underdrain and filter media. SCM ID: 85				Systems	1	37.084900	-76.340362		JBLE-Langley	12/9/2020	-	Jeff Saunders	Dept of Defense		

FINAL
Chesapeake Bay Phase II
Total Maximum Daily Load Action Plan

JBLE-Langley Virginia

Permit Year 4: 1 July 2021 - 30 June 2022

JBLE-Langley
633 CES/CEIE
37 Sweeney Blvd
JBLE-Langley VA 23665

August 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

ABW	Air Base Wing
ACC	Air Combat Command
BMP	Best management practice
DBH	Diameter at breast height
EOS	Edge of Stream
EPA	Environmental Protection Agency
GIS	Geographic information system
JBLE–Langley	Joint Base Langley-Eustis – Langley
L2	Level 2
lbs/ac/yr	Pounds per acre per year
lbs/yr	Pounds per year
lbs/ft/yr	Pounds per foot per year
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
POC	Pollutant of concern
TMDL	Total Maximum Daily Load
TN	Total nitrogen
TP	Total phosphorous
TSS	Total suspended solids
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VGIN	Virginia Geographic Information Network
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WIP	Watershed Implementation Plan

Chesapeake Bay TMDL Action Plan Requirements Cross-Reference Table			
Guidance Memo 20-2003 Chesapeake Bay TMDL Special Condition Guidance Part V – Chesapeake Bay TMDL Action Plan Elements		**MS4 Permit Part II.A.**	**JBLE–Langley TMDL Action Plan Section**
1	Existing, new or modified legal authority	11.a	2.0
2	Load and cumulative reduction calculations for each river basin	11.b	4.0
2a	The total pollutant load reductions necessary to reduce the annual POC loads from existing sources	3	4.1
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6	Public comments on draft Chesapeake Bay TMDL Action Plan	11.f	7.0

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 bay (EPA, 2010). A TMDL is the maximum amount of a pollutant that a water body 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 – Langley Air Force Base (JBLE–Langley) MS4 permit (Permit No. VAR040140, effective 01 November 2018) requires the base to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans to meet the required nutrient and suspended solids reductions. The plan must be submitted to the Virginia Department of Environmental Quality (VDEQ) for review and approval.

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, 2021a). The L2 reductions are to be met in phases corresponding to the permit cycles, as outlined in Table 1-1.

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

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

This Action Plan presents the JBLE–Langley estimated load contribution, required load reductions, and pollutant reduction credits. The plan also reports current exceedance of the 35% pollutant reduction requirement (cumulative 40% pollutant reduction) for the second permit cycle. The methodology used to calculate the pollutant loads and credits is based on VDEQ Guidance Memo No. 20-2003 (Guidance Document) (VDEQ, 2021a).

2.0 LEGAL AUTHORITY

JBLE–Langley is authorized to discharge stormwater from the installation in accordance with two permits issued by the VPDES: the Industrial Stormwater VPDES permit (Permit No. VAR052285, effective 01 July 2014) and the MS4 Permit (Permit No. VAR040140). The MS4 permit became effective on 03 August 2017 and expired on 30 June 2018 (VDEQ, 2017). It was administratively continued until the reissuance of the permit for the second permitting cycle, which became effective on 01 November 2018 and expires on 31 October 2023.

The Industrial stormwater VPDES permit includes specific stormwater management requirements for the following sectors: 1) air transportation 2) scrap and waste recycling facilities, material recovery facilities and 3) transportation and warehousing. The areas of the base covered by the Industrial Stormwater Permit are excluded from the MS4 permit area, as permitted by the Guidance Document.

The MS4 permit requires JBLE–Langley to develop, implement, and enforce an MS4 Program designed to reduce the discharge of pollutants from the MS4 (excluding the area covered by the Industrial Permit) to the maximum extent practicable to protect water quality. Part II of the MS4 Permit requires JBLE–Langley to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans to meet the required nutrient and suspended solids reductions.

All construction and maintenance work performed at JBLE–Langley must comply with the JBLE–Langley Environmental Special Conditions document, which identifies Federal, State, and local environmental regulations and procedures pertaining to common construction, renovation, repair and demolition activity on the base (JBLE–Langley, 2021).

3.0 MS4 SERVICE AREA

A determination of the base pollutant load requires an estimate of the permittee's MS4 service area as of 30 June 2009. The MS4 service area was delineated based on land coverage derived from 2009 aerial imagery obtained from the Virginia GIS Clearinghouse (Virginia Geographic Information Network [VGIN], 2009). A summary of land cover types delineated across the entire base is provided in Table 3-1.

Table 3-1. Description of Land Cover Types within JBLE-Langley

Land Cover Type	Description
Impervious	Buildings, roads, parking lots, sidewalks, railroads, and airfield runways.
Pervious	Turf and landscaped areas.
Forest	Wooded areas with a minimum contiguous area of 30 meters x 30 meters.[1]
Agriculture	Six-acre horse pasture.
Natural Areas	Tidal wetlands and marshes.
Open Water	Lakes and streams.

Note:
[1] Forest classification is also subject to a minimum diameter at breast height (varying by tree population density) as described in Appendix V.H of the Guidance Document.

The MS4 service area consists of all impervious (regulated urban impervious) and pervious (regulated urban pervious) areas within the MS4 boundary that are not already covered under the industrial permit VAR052285. No additional adjustments to the MS4 service area were necessary given that there are no non-overlapping areas from the 2010 U.S. Census urban area, and a desktop review of the base topography revealed no receiving/exporting sheet flow runoff from/to adjacent permittees. The final MS4 service area boundary was used to calculate existing source loads and load reduction requirements, as detailed in Section 4.1.

The land cover delineation process outlined above was repeated using the 2021 base map imagery available from ArcGIS (ESRI, 2021), the most recent data available. The final 2021 land cover layer was used to calculate loads due to New Sources (see Section 4.2) and BMP credits (see Section 5.0). A summary of the base's land cover for 2009 and 2021 is presented in Table 3-2.

Table 3-2. Land Cover Summary for the 2009 and 2021 Timeframes

Land Use[1]	Acres (2009)	Acres (2021)
Regulated Urban Impervious	566.7	594.5
Regulated Urban Pervious	1,214.6	1,189.3
Regulated Forest	317.8	292.9
Regulated Pasture	12.5	12.9
Regulated Natural Area	542.9	565.0
Regulated Water	247.5	247.4
Unregulated Impervious	313.0	298.3
Unregulated Pervious	406.2	420.9
Unregulated Forest	0.0	0.0
Unregulated Pasture	0.0	0.0
Unregulated Natural Area	19.4	19.4
Unregulated Water	0.0	0.0
Total[2]	3,640.6	3,640.6

Note:
[1] *Regulated* refers to areas within the MS4 Permit area and *unregulated* refers to areas covered by the Industrial Permit.
[2] Minor calculation discrepancies are accounted for in rounding

Maps of the industrial permitted areas, 2009 land cover, MS4 service area, and 2021 land cover are presented as Figures 3-1 through 3-4, respectively.

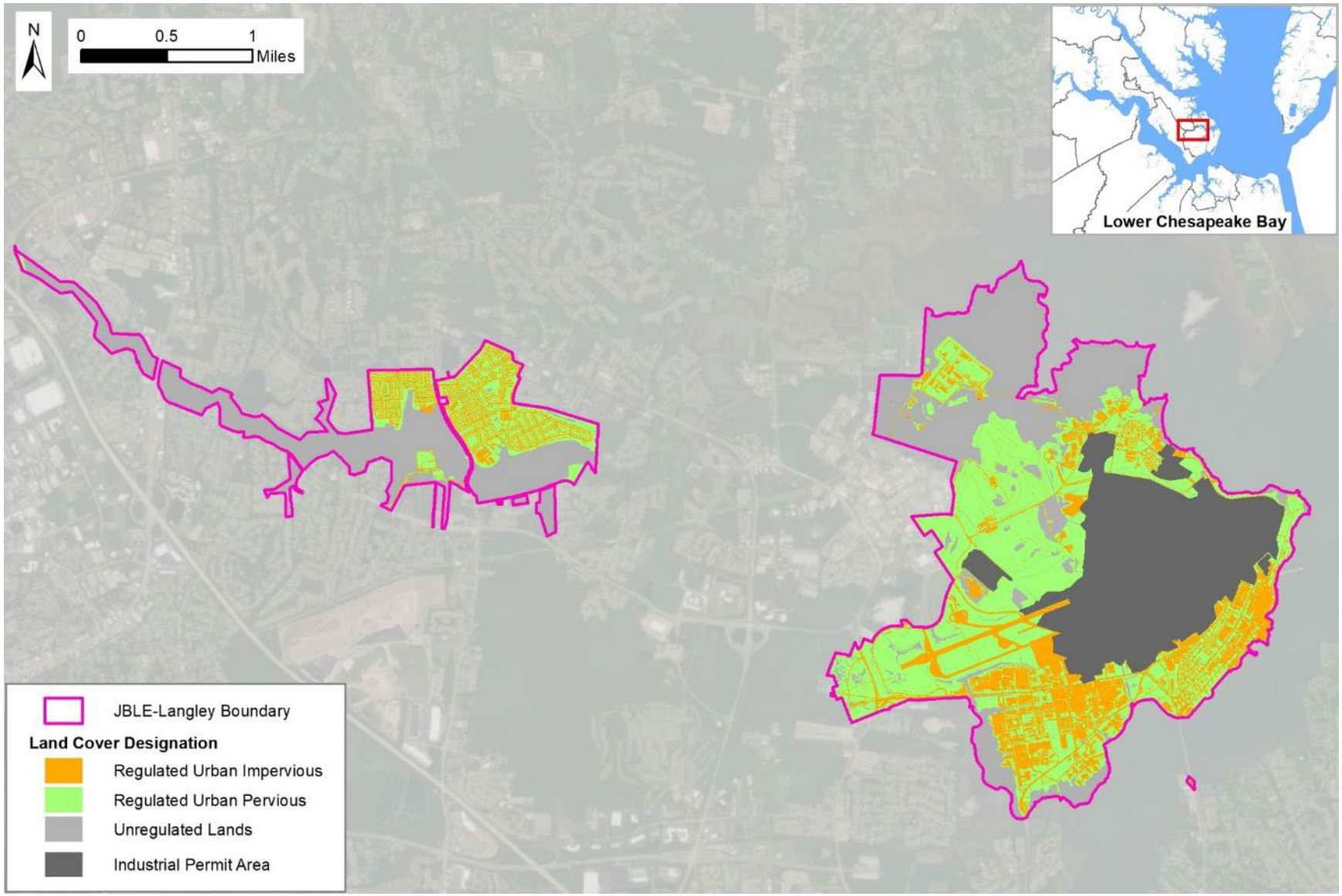

Figure 3-1. JBLE–Langley MS4 Service Area

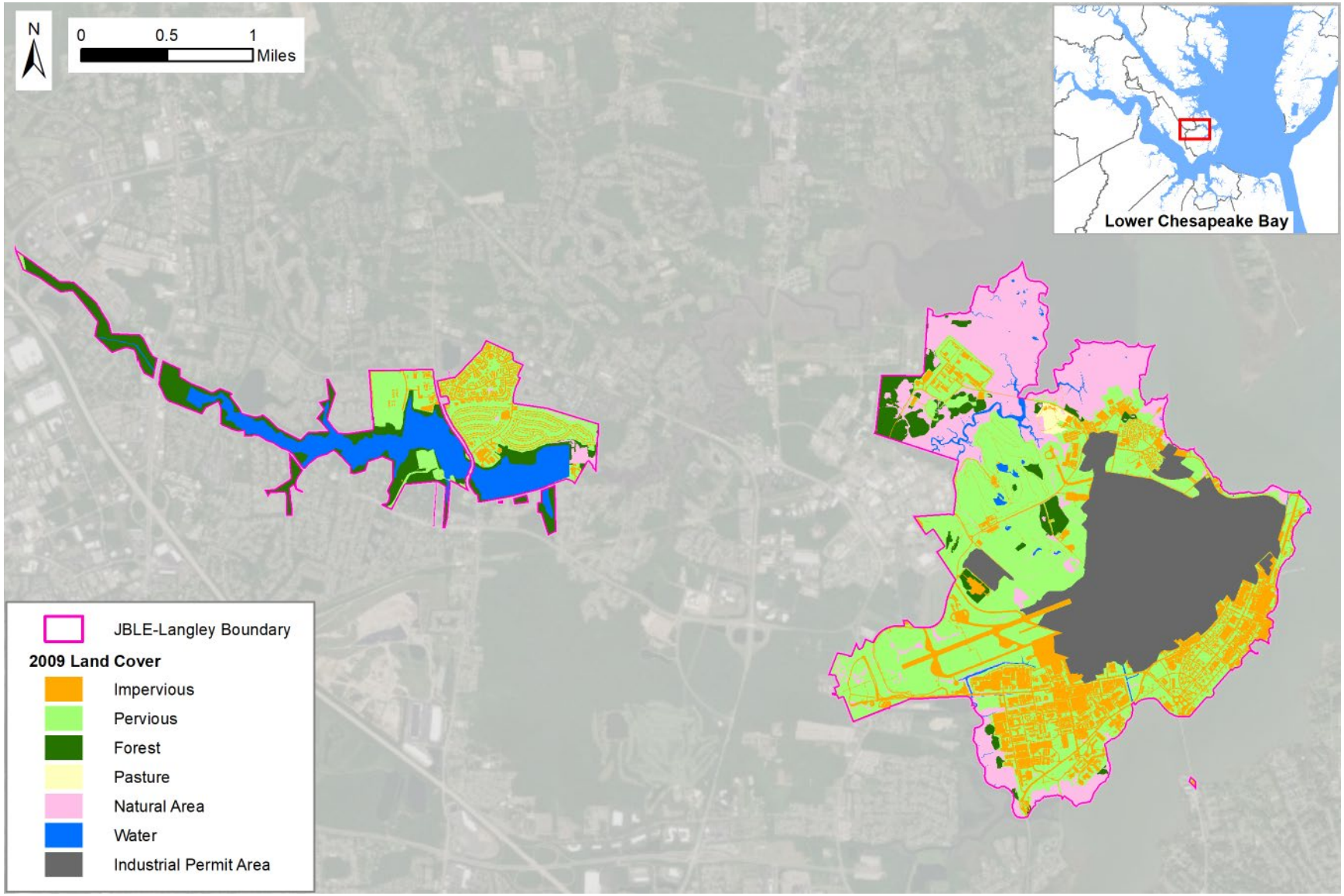

Figure 3-2. JBLE–Langley 2009 Land Cover

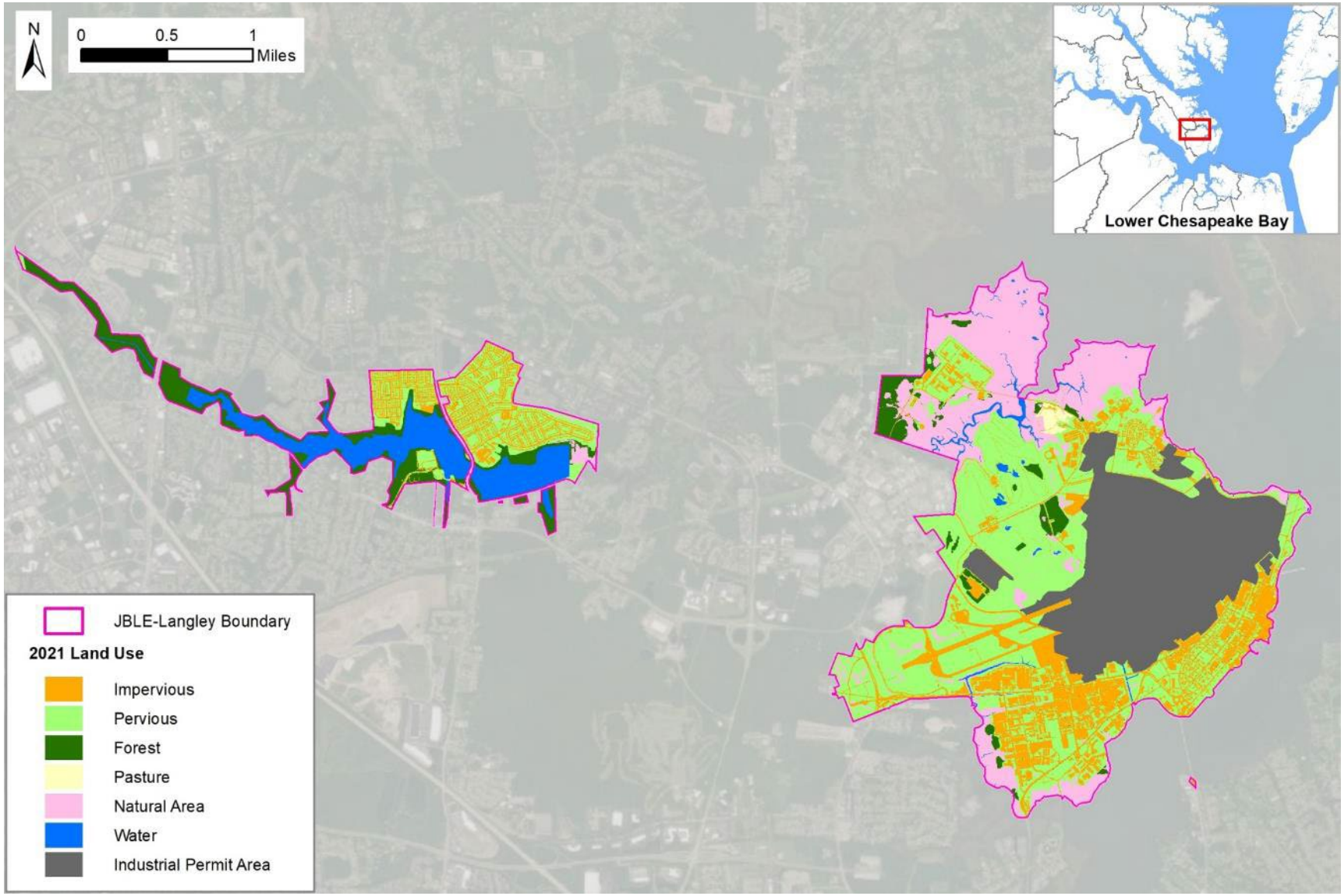

Figure 3-3. JBLE–Langley 2021 Land Cover

4.0 LOAD AND REDUCTION CALCULATIONS

The source load and reduction values for total nitrogen, total phosphorus, and total suspended solids from existing developed lands (served by the MS4 as of June 30, 2009) and newly developed or redeveloped lands (contributed by the base after 01 July 2009) were calculated using the means and methods described in the Guidance Document (VDEQ, 2021).

The base is required to reduce 40% of the existing and new source loads by the end of this second permit cycle (June 30, 2023). New source loads have been offset by eligible BMPs to entirely meet the current reduction requirement. Remaining reductions from existing source loads are discussed in Section 5.

4.1 Existing Source Loads

The Existing Source Loads and required reductions were calculated using the Table 3a (York River Basin) template of the Guidance Document (VDEQ, 2021), as presented in Table 4-1.

4.2 New Source Loads

New Source Loads and offsets were calculated using the aggregate accounting method described in the Guidance Document (VDEQ, 2021a). Total load changes since 01 July 2009 were calculated based on changes in land cover, as shown in Table 4-2.

Net changes in source loads were calculated by adjusting the total load change since 2009 with offset credits earned from eligible BMPs, as shown in Table 4-3.

Table 4-1. Existing Source Loads and Reduction Requirements [Table 3d]

Pollutant	Land Cover (Subsource)	A	B	C	D	E	F	G
		Loading Rate (lbs/ac/yr)[1]	Existing Regulated Lands as of 30 June 2009 (acres)	Estimated Loads (lbs/yr)[2]	Total L2 Loading Reduction	100% Cumulative Reduction Required by 30 June 2028 (lbs/yr)[3]	Sum of 100% Cumulative Reduction Required by 30 June 2028 (lbs/yr)[4]	Sum of 40% Cumulative Reduction Required by 30 June 2023 (lbs/yr)[5]
Nitrogen	Regulated Urban Impervious	7.31	566.7	4,143	9%	373	930	372
	Regulated Urban Pervious	7.65	1,214.6	9,292	6%	558		
Phosphorus	Regulated Urban Impervious	1.51	566.7	856	16%	137	182	73
	Regulated Urban Pervious	0.51	1,214.6	619	7.25%	45		
Total Suspended Solids	Regulated Urban Impervious	456.68	566.7	258,801	20%	51,760	59,495	23,798
	Regulated Urban Pervious	72.78	1,214.6	88,395	8.75%	7,735		

Notes and Acronyms:

[1] Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2.

[2] Column C = Column A x Column B.

[3] Column E = Column C x Column D.

[4] Column F = The sum of the subsource cumulative reduction required by 6/30/2028 (lbs/yr) as calculated in Column E.

[5] Column G = The sum of the subsource cumulative reduction required by 6/30/2023 (lbs/yr) calculated as 40% of Column F

Minor calculation discrepancies are accounted for in rounding.

lbs/ac/yr – Pounds per acre per year

lbs/yr – Pounds per year

Table 4-2. New Source Load

Pollutant	Regulated Urban Land Cover	A Loading Rate (lbs/ac/yr)[1]	B Regulated Lands as of 30 June 2022 (acres)	C Estimated Loads as of 30 June 2022 (lbs/yr)[2]	D Estimated Loads as of 30 June 2009 (lbs/yr)[3]	E Total Load Change (lbs/yr)[4]	F Sum of Total Load Change (lbs/yr)[5]
Nitrogen	Impervious	7.31	594.5	4,346	4,143	203	10
	Pervious	7.65	1,189.3	9,098	9,292	-194	
Phosphorus	Impervious	1.51	594.5	898	856	42	29
	Pervious	0.51	1,189.3	607	619	-13	
Total Suspended Solids	Impervious	456.68	594.5	271,496	258,801	12,696	10,854
	Pervious	72.78	1,189.3	86,557	88,399	-1,841	

Notes and Acronyms:
[1] Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2.
[2] Column C = Column A x Column B.
[3] Estimated Loads as of 30 June 2009 are calculated in Table 4-1.
[4] Column E = Column C - Column D.
[5] Column F = The sum of the subsource total load change as calculated in Column E.
Minor calculation discrepancies are accounted for in rounding.
lbs/ac/yr – Pounds per acre per year
lbs/yr – Pounds per year

Table 4-3. Net New Source Loads and Reduction Requirements [Table II.5]

Pollutant	Total Load Change (lbs/yr)	BMP Offset since 01 July 2009 (lbs/yr)[1]	Net Load Change (lbs/yr)	Sum of 40% Cumulative Reduction Required by 30 June 2023 (lbs/yr)[2]	Sum of 100% Cumulative Reduction Required by 30 June 2028 (lbs/yr)[2]
Nitrogen	10	194	-184	0	0
Phosphorus	29	30	-0.6	0	0
Total Suspended Solids	10,854	11,964	-1,110	0	0

Notes and Acronym:
[1] Reductions from BMPs installed between 2009 and 2021 are calculated in Section 5.0 below.
[2] A zero value indicates reductions from BMPs installed after 01 July 2009 are higher than the Total Load Change and no additional reductions are required to offset the Net Load Change.
Minor calculation discrepancies are accounted for in rounding.
lbs/yr – Pounds per year

4.3 Grandfathered Project Loads

Grandfathered projects are those in accordance with 9VAC25-870-48 (previously numbered 4VAC50-60-48) with an approved site plan prior to 01 July 2012, a state permit issued after 01 July 2014, land disturbance activities commencing after 01 July 2014 that disturb one acre or greater, and where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities and results in an increased pollutant load (VAC, 2014). The base is required to offset any additional pollutant loads due to grandfathered projects. No grandfathered projects were identified.

4.4 Summary of Load Reduction Requirements

A summary of the JBLE–Langley required load reductions is presented in Table 4-4. The values presented in this table represent the 40% reduction requirements to be achieved by 30 June 2023.

Table 4-4. Summary of the Second Permit Cycle Required Load Reductions

Pollutant	Second Permit Cycle Required Reductions (lbs/yr)			
	Existing Sources	New Sources[1]	Grandfathered Projects	Total
Nitrogen	372	-74	0.0	298
Phosphorus	73	-0.2	0.0	73
Total Suspended Solids	23,798	-444	0.0	23,354

Notes and Acronym:
[1] Credits from BMPs installed during the New Sources timeframe have already been accounted for in this column.
Minor calculation discrepancies are accounted for in rounding.
lbs/yr – Pounds per year

5.0 BMP CREDIT CALCULATIONS (MEANS AND METHODS)

Individual BMP calculations follow means and methods as described in Part III of the Guidance Document (VDEQ, 2021a) using either the Virginia Stormwater BMP Clearinghouse (Guidance Document Appendix V.A) or approved by the Chesapeake Bay Program ("Bay Program") (Guidance Document Appendices V.B-V.K). Calculations are based on the most up-to-date efficiencies and baseline requirements when first submitted in the Action Plan.

BMP drainage areas were delineated using a 1-meter elevation layer from the United States Geological Survey's National Elevation Dataset (USGS, 2018). Pollutant loads within the BMP drainage areas were calculated using the 2021 land cover layer and the land cover loading rates provided in Table 3d (for impervious and pervious lands) and Table III.1 (for forested lands) of the Guidance Document (VDEQ, 2021).

5.1 Structural BMPs

Structural BMPs installed since 01 January 2006 and implemented under conditions of redevelopment, stricter development requirements, or oversizing were eligible for credits as described in Appendix V.E of the Guidance Document (VDEQ, 2021a). BMPs implemented to meet the minimum VSMP technical criteria phosphorous removal requirement for new development or other minimum regulatory requirements are not eligible for credit. Reductions from BMPs implemented after 01 July 2009 are accounted for as offsets to New Source Loads (Table 4-3) and are not claimed as BMP credits. A summary of the existing Post-Construction BMPs included in this Action Plan is presented in Table 5-1. A more detailed list of the BMPs and their associated reductions is provided in Appendix A. Figure 5-1 shows the location of post-construction BMPs.

Table 5-1. Summary of Existing Post-Construction BMP Types

BMP Type	Timeframe Implemented			Total
	01 Jan 2006 to 30 June 2009	01 Jan 2009 to 30 June 2018	01 July 2018 to 30 June 2021	
Dry Detention Pond	0	13	0	13
Dry Extended Detention Pond	3	1	0	4
Swale	2	14	4	20
Wet Pond or Wetland	1	0	0	1
Filterra Bioretention Systems	0	8	0	8
Total	**6**	**36**	**4**	**46**

The pollutant reduction credits for all POCs were determined using the BMP efficiencies provided in Table V.C.1 of the Guidance Document (VDEQ, 2021a), with the exception of the Filterra Bioretention Systems, whose TP removal efficiency was derived from the Virginia Stormwater BMP Clearinghouse (VDEQ, 2021b). A summary of credits from existing post-construction BMPs is presented in Table 5-2.

Table 5-2. Summary of Credits from Existing Post-Construction BMPs

BMP Timeframe	Number of BMPs	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
2006–2009	6	22	2.8	1,303
2009–2018[1]	36	185	29	11,549
2018–2021[1]	4	9.4	1.1	416

Notes and Acronym:

[1] Reductions from BMPs installed after 01 July 2009 are accounted for as offsets to New Source Loads (Table 4-3) rather than BMP credits.

lbs/yr – Pounds per year

Figure 5-1. JBLE–Langley Existing Post-Construction BMPs

5.2 Street Sweeping

The base performs vacuum powered street sweeping on the airfield, 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 roads swept was provided by the base and used to calculate load reduction credits. A summary of annual street sweeping miles swept during 01 July 2020 through 30 June 2021, along with associated credits, is presented in Table 5-3. A map of the streets serviced as part of the base's street sweeping program is presented in Figure 5-2.

Table 5-3. Summary of Annual Street Sweeping Credits

Lane-Miles Swept	Acres Swept	Credits (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids
2,325.5	2,818.8	833.4	304.0	404,851.4

Note and Acronym:
lbs/yr – Pounds per year
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)

Figure 5-2. MS4 Area Serviced by Street Sweeping During 01 July 2020 through 30 June 2021

5.3 Land Use Change

Two land use change BMP opportunities were identified on the base at Eaglewood Golf Course as illustrated in Figure 5-3. At both locations, brush and trees are growing in place of managed turf. The land use change credited at these locations is thus based on the turf to mixed-open land use, and the credit reductions were calculated per Appendix V.H of the Guidance Document. A summary of land use change credits is presented in Table 5-4.

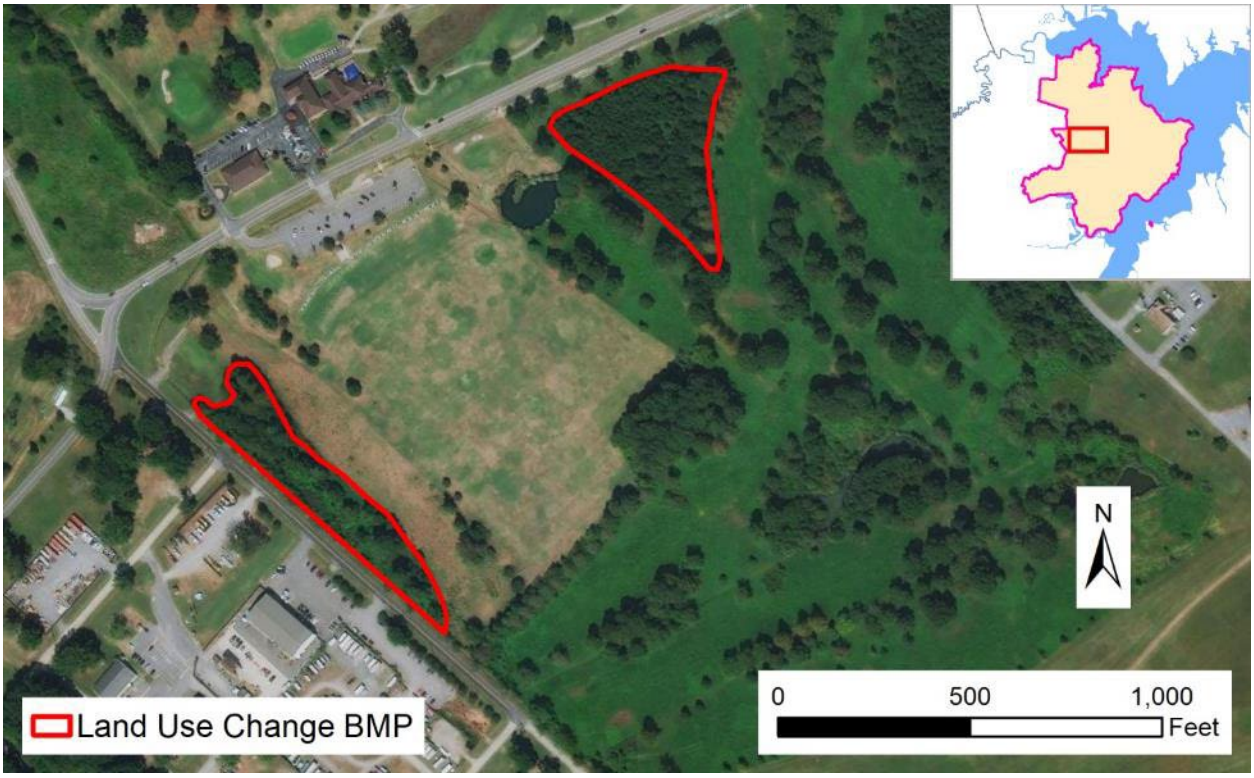

Figure 5-3. Land Use Change BMPs

Table 5-4. Summary of Land Use Change Credits

Pollutant	Turf to Mixed Open (acres)	Credit (lbs/yr)
Nitrogen	5.22	32.4
Phosphorus	5.22	5.9
Total Suspended Solids	5.22	0

Acronym:
lbs/yr – Pounds per year

5.4 Shoreline Management

Pollutant load reductions from shoreline restoration activities were calculated using the procedure outlined in *Recommendations of the Expert Panel to Define Removal Rates for Shoreline Management Projects* (Forand et al., 2017). A total of four shoreline management projects were implemented prior to 01 July 2021; two of which included marsh grass plantings (Figure 5-4). Shoreline erosion rates were estimated by calculating the average distance between historic shoreline GIS data ranging from 1980 to 2009, obtained from the Virginia Institute of Marine Science (VIMS, 2021). A summary of shoreline management credits assigned to restoration projects completed prior to 01 July 2021 is presented in Table 5-5.

Figure 5-4. Areas of Shoreline Management

Table 5-5. Summary of Shoreline Management Credits

Shoreline Restoration (ft)	Average Bank Height (ft)	Marsh Plantings (acres)	Erosion Rate[1] (ft/year)	Credits (lbs/yr)										
				Protocol 1			Protocol 2	Protocol 3		Protocol 4		Total		
				TN	TP	TSS	TN	TP	TSS	TN	TP	TN	TP	TSS
5,400	4	0.000	0.6	118.6	83.8	408,800	0.0	0.0	0.0	0.0	0.0	118.6	83.8	408,800
3,150	4	0.000	0.3	34.6	24.4	119,233	0.0	0.0	0.0	0.0	0.0	34.6	24.4	119,233
725	5	0.015	0.015	0.5	0.4	1,715	1.3	0.1	105	0.1	0.0	1.9	0.4	1,821
1,566	10	0.622	0.3	43.0	30.4	148,190	52.9	3.3	4,331	4.3	0.2	100.1	33.9	152,521
Total				**196.6**	**139.0**	**677,938**	**54.2**	**3.4**	**4,436**	**4.4**	**0.2**	**255.1**	**142.5**	**682,374**

Note and Acronyms:
[1] Source: Virginia Institute of Marine Science (personal communication, 21 May 2021).
ft – Feet
TN – Total Nitrogen
TP – Total Phosphorus
TSS – Total Suspended Solids
lbs/yr – Pounds per year

5.5 Future BMPs

JBLE–Langley plans on building seawalls at various locations around the base to prevent shoreline erosion. The base is also planning on expanding the area converted from turf into native species grass lands. Because all of these projects were or will be implemented after 30 June 2021 no credit is being claimed. Future BMPs with their associated reductions are listed in Appendix B.

The base 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.

5.6 BMP Costs

The current JBLE–Langley pollutant credit portfolio includes post-construction BMPs, street sweeping, and shoreline restoration. The base uses a third-party contractor to sweep identified streets and parking lots on a regular basis. A summary of BMP implementation costs for projects completed between 01 July 2009 and 30 June 2021 is presented in Table 5-6.

Table 5-6. Summary of BMP Implementation Costs for Projects Completed Between 01 July 2009 and 30 June 2021

BMP Strategy	Implementation Costs
Post-construction BMPs	Not available
Street Sweeping	$17,490 per year
Land Use Change BMPs	Not available
Shoreline Management	$400,000

5.7 Summary of Load Reduction Credits

A summary of pollutant credits by BMP strategy, implemented prior to 01 July 2021, is presented in Table 5-7. BMPs implemented prior to 01 July 2018 provided 683 pounds/year of credit for TN, 261 pounds/year of credit for TP, and 626,086 pounds/year of credit for Total Suspended Solids. Between 2018 and 2021, changes in crediting from land cover modification, new structural BMPs, changes in street sweeping schedules, land use changes and additional shoreline management projects are reflected in the 2021 credits given in Table 5-7.

Table 5-7. Summary of Load Reduction Credits by BMP Strategy

Pollutant	Credits (lbs/yr)					
	Post-construction BMPs		Street Sweeping	Land Use Change	Shoreline Management	Credits from Existing BMPs[1]
	Completed between 01 Jan 2006 and 30 June 2009	Completed after 01 July 2009				
Nitrogen	22	185	833	32	255	1,143
Phosphorus	2.8	29	304	5.9	143	455
Total Suspended Solids	1,303	11,548	404,851	0.0	682,374	1,088,529

Note and Acronym:
[1] Does not include credits related to New Sources that were previously accounted for in Table 4-3 [Table II.5]
lbs/yr – Pounds per year

6.0 PROGRESS SUMMARY

Part II (TMDL Special Conditions) of the MS4 Permit requires the base to meet the Chesapeake Bay TMDL requirements by reducing total nitrogen, total phosphorus, and total suspended solids loads by 40% of the Chesapeake Bay L2 scoping reductions by 30 June 2023. The base's load contribution, required load reductions, and pollutant credits outlined in this Action Plan were calculated using the methodology described in VDEQ's Guidance Document (VDEQ, 2021a). A summary of the required load reductions is presented in Table 6-1 and the second permit cycle pollutant credits are presented in Table 6-2.

Table 6-1. 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	37	298	746
Phosphorus	9.1	72	181
Total Suspended Solids	2,919	23,354	58,385

Acronym:
lbs/yr – Pounds per year

Table 6-2. Summary of Second Permit Cycle Reduction Requirements and Credits

Pollutant	Second Permit Cycle Cumulative Percent Reduction Requirement	Required Load Reduction by 2023 (lbs/yr)	Credits from Existing BMPs (lbs/yr)[1]	Second Permit Cycle Target Met?
Nitrogen	40%	298	1,143	Yes
Phosphorus	40%	72	455	Yes
Total Suspended Solids	40%	23,354	1,088,529	Yes

Note and Acronym:
[1] Does not include credits related to New Sources that were previously accounted for in Table 4-3 [Table II.5]
lbs/yr – Pounds per year

7.0 PUBLIC COMMENTS

The base encourages the public's participation in the development and implementation of this Chesapeake Bay TMDL Action Plan. In keeping with this objective, the base has uploaded this Action Plan to its website, https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental/ which is also linked to on the base's Facebook page, /https://www.facebook.com/jblelangleyenvironmental. Comments received will be taken into consideration when finalizing the Action Plan with VDEQ.

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Appendix A
BMPs Implemented Prior to 01 July 2021

Appendix A
BMPs Implemented Prior to 01 July 2021

BMP ID	BMP Type	Date Installed	Area Treated (ac)		Removal Efficiency			Reductions within MS4 Service Area (lbs/yr)		
			Pervious	Impervious	TN	TP	TSS	TN	TP	TSS
7	Dry Extended Detention Pond	2009	0.00	0.00	20%	20%	60%	0.00	0.00	0.00
8	Dry Extended Detention Pond	2009	0.00	0.00	20%	20%	60%	0.00	0.00	0.03
32	Swale	2012	2.17	0.20	45%	45%	70%	8.14	0.63	174.20
33	Dry Detention Pond	2012	5.12	0.61	5%	10%	10%	2.18	0.35	65.24
34	Swale	2012	0.78	0.45	45%	45%	70%	4.19	0.49	185.12
35	Swale	2012	0.52	0.12	45%	45%	70%	2.18	0.20	63.75
36	Swale	2012	4.28	0.19	45%	45%	70%	15.35	1.11	279.09
37	Swale	2006	2.58	0.69	45%	45%	70%	11.17	1.06	353.21
40	Dry Extended Detention Pond	2012	0.40	0.66	20%	20%	60%	1.58	0.24	197.15
41	Swale	2012	0.29	0.08	45%	45%	70%	1.28	0.12	41.41
42	Dry Detention Pond	2012	0.27	0.18	5%	10%	10%	0.17	0.04	10.15
43	Swale	2012	0.48	0.42	45%	45%	70%	3.03	0.39	157.85
44	Swale	2011	7.65	22.94	45%	45%	70%	101.82	17.35	7724.28
45	Dry Extended Detention Pond	2008	0.56	1.46	20%	20%	60%	2.99	0.50	424.85
51	Swale	2014	1.51	0.05	45%	45%	70%	5.36	0.38	93.66
52	Wet Pond or Wetland	2009	0.79	0.00	20%	45%	60%	1.21	0.18	34.92
53	Dry Detention Pond	2012	0.35	0.25	5%	10%	10%	0.22	0.06	14.06
55	Swale	2009	0.46	1.46	45%	45%	70%	6.40	1.10	490.42
56	Dry Detention Pond	2012	0.33	0.18	5%	10%	10%	0.19	0.04	10.72
58	Dry Detention Pond	2013	4.86	3.49	5%	10%	10%	3.14	0.78	194.94
59	Dry Detention Pond	2013	4.96	2.21	5%	10%	10%	2.70	0.59	137.02
60	Dry Detention Pond	2013	1.81	1.01	5%	10%	10%	1.06	0.24	59.18
61	Filterra Bioretention Systems	2013	0.11	0.15	70%	75%	80%	1.32	0.21	60.28
62	Swale	2013	0.15	0.02	45%	45%	70%	0.58	0.05	13.93
63	Filterra Bioretention Systems	2013	0.13	0.23	70%	75%	80%	1.86	0.31	91.35
64	Filterra Bioretention Systems	2013	0.10	0.26	70%	75%	80%	1.87	0.33	101.20
65	Swale	2013	0.04	0.13	45%	45%	70%	0.59	0.10	45.21
66	Swale	2013	0.04	0.14	45%	45%	70%	0.59	0.10	45.42

Appendix A
BMPs Implemented Prior to 01 July 2021 (continued)

BMP ID	BMP Type	Date Installed	Area Treated (ac)		Removal Efficiency			Reductions within MS4 Service Area (lbs/yr)		
			Pervious	Impervious	TN	TP	TSS	TN	TP	TSS
67	Filterra Bioretention Systems	2013	0.09	0.23	70%	75%	80%	1.68	0.30	89.80
68	Filterra Bioretention Systems	2013	0.07	0.24	70%	75%	80%	1.56	0.29	90.28
69	Filterra Bioretention Systems	2013	0.00	0.16	70%	75%	80%	0.81	0.18	57.55
70	Filterra Bioretention Systems	2013	0.00	0.15	70%	75%	80%	0.79	0.17	55.15
71	Filterra Bioretention Systems	2013	0.01	0.06	70%	75%	80%	0.33	0.07	21.42
72	Dry Detention Pond	2014	0.16	0.40	5%	10%	10%	0.21	0.07	19.41
73	Dry Detention Pond	2014	0.10	0.26	5%	10%	10%	0.13	0.04	12.65
74	Dry Detention Pond	2014	0.09	0.23	5%	10%	10%	0.12	0.04	11.23
75	Swale	2014	0.59	1.71	45%	45%	70%	7.66	1.30	577.79
76	Dry Detention Pond	2014	0.57	0.52	5%	10%	10%	0.41	0.11	28.04
78	Dry Detention Pond	2014	0.00	0.00	5%	10%	10%	0.00	0.00	0.01
79	Swale	2014	0.37	0.75	45%	45%	70%	3.72	0.59	258.39
80	Swale	2014	0.72	1.59	45%	45%	70%	7.72	1.25	546.32
81	Dry Detention Pond	2014	0.20	0.30	5%	10%	10%	0.19	0.06	15.20
82	Swale	2019	0.22	0.19	45%	45%	70%	1.40	0.18	72.27
83	Swale	2019	0.19	0.42	45%	45%	70%	2.05	0.33	145.52
84	Swale	2019	1.14	0.31	45%	45%	70%	4.94	0.47	155.93
85	Swale	2019	0.19	0.10	45%	45%	70%	1.00	0.11	41.99

Appendix B

BMPs to be Implemented Between 01 July 2021 and 31 October 2023

Appendix B

BMPs to be Implemented Between 01 July 2021 and 31 October 2023

BMP Type	Planned Installation Date	Project Name / Location	POC Removal Rate (lbs/ft/yr)			POC Reductions (lb/yr)		
			TN	TP	TSS	TN	TP	TSS
None								

FINAL

Back River

Bacteria Total Maximum Daily Load Action Plan

JBLE-Langley Virginia

Permit Year 4: 1 July 2021 - 30 June 2022

JBLE-Langley
633 CES/CEIE
37 Sweeney Blvd
JBLE-Langley VA 23665

August 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

BASH	Bird/Animal Aircraft Strike Hazard
BMP	Best Management Practice
cfu/yr	Colony Forming Units per Year
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
JBLE–Langley	Joint Base Langley Eustis–Langley
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plan
SABER	Simplified Acquisition of Base Engineer Requirements
SMF	Stormwater Management Facility
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VESCP	Virginia Erosion and Sediment Control Plan
WLA	Wasteload Allocation

1.0 INTRODUCTION

The Virginia Department of Environmental Quality (VDEQ) *2006 303(d) Total Maximum Daily Load Priority List and Report* listed Back River as not supporting its designated uses for shellfish harvesting and recreation due to fecal coliform bacteria standards violations (VDEQ, 2017a). Based on the 303(d) listings in the Back River, VDEQ prepared total maximum daily loads (TMDL) for eleven impaired shellfish harvesting sites and one impaired recreational site in the Back River watershed (VDEQ, 2017a). A TMDL is the maximum amount of a pollutant that a waterbody can assimilate and still support its designated use(s). VDEQ updated the 2006 TMDLs in 2014 and again in 2017 to account for additional bacteria impaired areas, define wasteload allocations (WLA) for Municipal Separate Storm Sewer System (MS4) permittees, and update water quality standards based on improved measuring methods (VDEQ, 2014; VDEQ, 2017a). The 2017 TMDL was approved by the EPA on 09 February 2018.

JBLE–Langley is authorized to discharge stormwater from the installation in accordance with two permits issued by the VPDES: The Industrial Stormwater VPDES permit (Permit No. VAR052285) and the MS4 Permit (Permit No. VAR040140) which expires on 31 October 2023. Part II of the MS4 Permit requires JBLE–Langley to annually update the MS4 Program Plan with a TMDL Action Plan that identifies methods used to address bacteria impairment in the Back River.

The purpose of this bacteria TMDL Action Plan is to reduce fecal bacteria sources and loadings at JBLE–Langley by planning and implementing objectives outlined in Part II B. of the MS4 Permit. This Action Plan will include:

1. An assessment of significant pollutant sources
2. Management practices and plans used to address the pollutant, and
3. A schedule of completed and anticipated actions during this MS4 permit term

2.0 TMDL WATERBODIES

The Back River is located along the western shore of the Chesapeake Bay about five (5) miles south of the Poquoson River mouth as illustrated in Figure 2-1. The impaired segments of the Back River are shown in Figure 2-1.

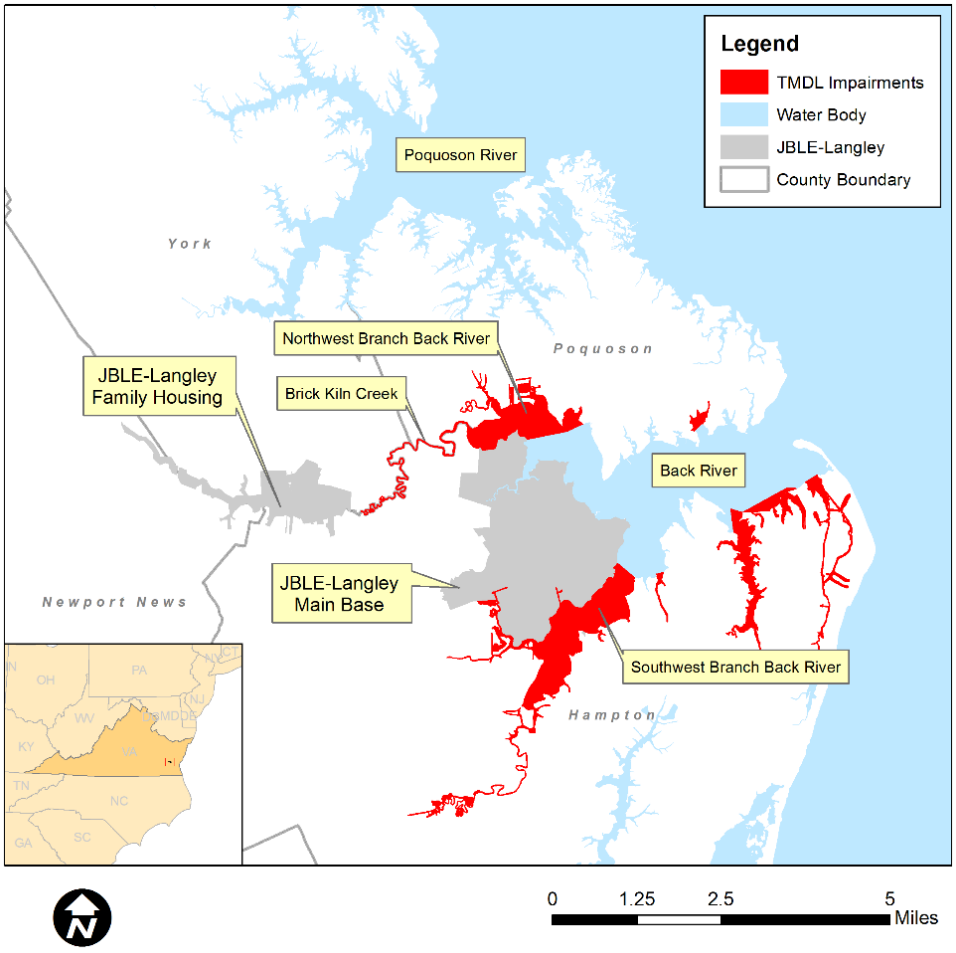

Figure 2-1. TMDL Watershed and JBLE–Langley Boundary

The 2017 TMDL report for Back River assigns an individual WLA to JBLE–Langley (VAR040140), presented in Table 2-1.

Table 2-1. JBLE–Langley Fecal Bacteria WLA and Assigned Percent Reduction for Back River

TMDL Year	TMDL Status	MS4 Entity Named in TMDL	Existing Load (cfu/yr)	Wasteload Allocation (cfu/yr)	Percent Reduction Assigned to Permitted Sources (%)
2017	Final	Langley Air Force Base	3.22E+13	3.02E+13	6.21%

Notes and Acronyms:
cfu/yr – Colony forming units per year.
WLA source: VDEQ, 2017a, Table 4.4.

3.0 POLLUTANT SOURCE ASSESSMENT

The 2017 TMDL report identifies both natural and anthropogenic sources of bacteria in the Back River (Table 5-1) that were used to inform TMDL reduction requirements based on land use (Table 5-2).

Table 3-1. Fecal Bacteria Source Allocations (%) in the Back River Watershed (Source: VDEQ 2017a, Table 3.7)

Source Category	Source	Percent
Wildlife	Deer	4.3
	Ducks/Birds	43.2
	Muskrats	0.6
	Nutria	1.3
	Racoons	0.3
Human	Human-SSO	6.1
	Human-Septic	0.0
	Marina (slips)	0.4
Livestock	Livestock	9.0
Pets	Dog	34.6

JBLE–Langley has identified likely significant sources of fecal bacteria sources where the expected pollutant loading is greater than the average pollutant loading for the land use identified in Table 5-2.

The site evaluation in 2022 included visual field assessments of these sources, which include base-wide wildlife, horse stables and pastures, the dog training center and associated dog kennels, and resident housing area.

4.0 STRATEGIES FOR BACTERIA REDUCTION

The MS4 permit outlines strategies for bacterial reduction in Table 5 of Part II B. 4 to address the identified significant pollutant sources. A summary of these practices and plans are described below.

4.1 Domestic Animals

The base has installed domestic pet waste disposal stations throughout housing area (Figure 4-1). Waste disposal stations are maintained by Langley Family Housing staff, the private real estate company that manages JBLE–Langley housing. As described in the base's MS4 Program Plan (JBLE–Langley, 2022a), residents with pets are briefed on the impact of pet waste on stormwater and water quality. To help educate dog owners on the importance of proper waste disposal, the Household Stormwater Pollution Brochure is distributed at newcomer orientations and various outreach events (Figure 4-2).

JBLE–Langley maintains a military dog training center with associated dog kennels and approximately 15 acres of horse stable and pasture. Dog training areas are covered with artificial turf and are surrounded by vegetated buffers that provides filtration of pollutants prior to entering surface waters. Horse stable bedding and manure are contained under cover and club members are informed of the importance of minimizing exposure to stormwater. Potential sources of bacteria in runoff from both the dog training center and horse stable are addressed through stormwater treatment practices and training as described here and in the MS4 Program Plan (JBLE–Langley, 2022a).

Figure 4-1. Pet Waste Sign at the JBLE–Langley Marina on Southwest Branch Back River

Figure 4-2. JBLE–Langley Household Stormwater Pollution Brochure

4.2 Wildlife

The base employs strategies to control the wildlife population through the Natural Resources Program as described in the Installation Natural Resources Management Plan (INRMP) to address bird/animal aircraft strike hazard (BASH) safety concerns, reduce disease burden on local wildlife, and lower predation pressure on nesting Diamondback Terrapins. JBLE–Langley works with the United States Department of Agriculture, Natural Resource Conservation Service to remove deer, coyotes, large birds, cats, and other animals.

Additionally, steps the base takes to prevent wildlife from being drawn to the flightline include maintaining low-cut grass around the airfield, removing wetlands in the airfield clear zone, restricting stormwater management basins that retain water for over 48 hours, and installing fencing around the airfield.

4.3 Illicit Connections or Illicit Discharges to the MS4

The JBLE–Langley Illicit Discharge Detection and Elimination (IDDE) program is designed to help detect, identify and address non-stormwater discharges to the stormwater network. Non-stormwater discharges include untreated sewage that contains fecal bacteria. To help detect and identify illicit discharges, the base regularly screens outfalls to determine if any non-runoff related discharges are occurring (Figure 4-3). Recent inflow and infiltration evaluations found no interconnections between the sanitary and storm sewer systems. Dry weather screening is conducted on non-industrial outfalls annually as outlined in the IDDE Procedure Manual. Any sanitary sewer overflows that occur will be immediately addressed.

Figure 4-3. Non-Stormwater Discharge Monitoring at JBLE–Langey

In 2017, JBLE–Langley replaced sanitary sewer piping and spent approximately $1.3 million dollars on sanitary sewer repairs to reduce infiltration and inflow. In addition, the primary force main that services most of the base has been redesigned and is planned for construction. These efforts assist in reducing the occurrence of sanitary sewer overflows. IDDE inspections were conducted during 2021-2022. Initiatives planned for 2022-2023 include continued inspections of non-industrial outfalls and investigation and reporting of potential illicit discharges. Details on the IDDE program and procedures used to identify illicit discharges are provided in the JBLE–Langley IDDE Procedures Manual (JBLE–Langley, 2017). Additional detail on IDDE initiatives is presented in the JBLE–Langley MS4 Program Plan (JBLE–Langley, 2022a).

Improperly discharged sewage from recreational boats is also a potential source of bacteria. The base maintains a recreation boat marina used by members of the JBLE–Langley community. To avoid illicit or accidental discharge of raw sewage at the marina, the base installed a new sewage pump-out station on 15 September 2017 and requires training on its proper usage for all boat-slip renters. When properly utilized by boat owners, this device will help to minimize sewage leaks and associated bacteria inputs to the Southwest Branch Back River and Back River.

4.4 Post-Construction Stormwater Management

The JBLE–Langley post-construction stormwater management program helps reduce pollutants in runoff from new development and redevelopment projects across the base through stormwater management facilities (SMF). Many stormwater SMFs, such as bioretention and dry extended detention ponds, can

reduce the level of pollution for multiple pollutants, including nutrients, sediment and fecal bacteria by filtering pollutants from runoff before they reach surface waters.

During 2021-2022, JBLE–Langley performed a comprehensive inventory and inspection of existing SMFs to assess and prioritize maintenance and retrofit opportunities. Field crews evaluated SCM retrofit opportunities using maps of existing SMFs, retrofit checklists and a list of removal efficiencies for each SCM type from the Chesapeake Bay TMDL Action Plan Guidance Document (VDEQ, 2021). General retrofit opportunities include removing trash and debris, removing undesired vegetation, maintaining desirable vegetation, and removing sediment from dry detention basins and vegetated swales that is causing improper drainage issues (JBLE-Langley, 2022c).

During 2021-2022 the base removed undesired vegetation from 10 SMFs and one drainage ditch. For the 2022 World Water Day event, the base also cleaned out 300 pounds of sediment and 100 pounds of water from and added new filters to 10 Safe Drain water filters on the base (Figure 4-4).

Figure 4-4. JBLE–Langley Staff Replacing a Safe Drain Water Filter

4.5 Construction Site Stormwater Runoff Controls

JBLE–Langley addresses Stormwater Management and Erosion and Sediment Control for design, construction, maintenance and management of the base's facilities through Section 01 12 00 Environmental Management Special Conditions and Simplified Acquisition of Base Engineer Requirements (SABER) General Provisions. All construction contractors must comply with Section 01 12

00 Special Conditions and SABER General Provisions. The JBLE–Langley construction site stormwater runoff program is designed to verify that a Virginia Erosion and Sediment Control Plan (VESCP) can meet the applicable erosion prevention criteria (see 9VAC25-840-40, renumbered from 4VAC50-30-40). Reducing sediment in runoff from construction sites can help reduce bacteria levels, since bacteria are often bound to sediment. Additional details on construction site stormwater runoff controls for JBLE–Langley are presented in the MS4 Program Plan (JBLE–Langley, 2022a).

4.6 Pollution Prevention and Good Housekeeping

The JBLE–Langley MS4 Program Plan outlines the requirements for MCM 6, Pollution Prevention/Good Housekeeping for Municipal Operations, in Section 3.6.1. Requirements include:

- Development and implementation of written procedures to prevent pollutant discharge from daily operations
- High priority MS4 facility stormwater pollution prevention plan (SWPPP) development
- Turf and Landscape Nutrient Management Plan (NMP) development and implementation
- The prohibition of deicing agents containing urea or other forms of nitrogen or phosphorus
- Provision of employee training

As part of the base's pollution prevention and good housekeeping program, JBLE–Langley develops and implements SWPPPs for high priority MS4 facilities and provides pollution prevention training for staff. This training is hosted online for personnel to take on an as-needed basis. The base also developed the Standard Operating Procedures and Good Housekeeping Procedures in July 2017 to minimize the use of pollutants that may enter the stormwater drainage system. High priority SWPPP training was developed for JBLE–Langley personnel in April 2021 and is provided once every two years. The next training will occur in 2023. Training on topics such as illicit discharges, good housekeeping and pollution prevention practices, pesticide application, sediment and erosion control regulations and spill response is also provided to JBLE–Langley personnel and contractors, as applicable. Training on proper handling and disposal of waste streams that may contain fecal bacteria can help reduce the levels of bacteria delivered to receiving streams. Strategies for public education and outreach are summarized in the JBLE–Langley MS4 Program Plan (JBLE–Langley, 2022a).

4.7 Additional Control Measures

JBLE–Langley has implemented a number of additional control measures to address fecal bacteria pollution from the base. Over the past seven years, JBLE–Langley has completed 9,295 linear feet of shoreline stabilization along the eastern and southeastern shorelines of the Back River and Southwest Branch Back River (Figure 4-5). JBLE–Langley constructed an additional 1,566 linear feet of stabilization in 2020 along portions of the Southwest Branch Back River near the marina. Additional shoreline restoration is planned for the near future. These areas of stabilization increase resilience to major storm events and flooding, provide habitat for native animals and plants and reduce erosion and suspension of sediment and associated bacteria in the Back River and Chesapeake Bay.

Figure 4-5. Shoreline Stabilization Along the Back River

5.0 PUBLIC EDUCATION AND PARTICIPATION

The base regularly distributes educational materials and coordinates events to help educate and involve the public in preventing bacteria pollution within the watershed. A summary of public education and public participation efforts conducted by the base is provided below.

5.1 Public Education

JBLE–Langley utilizes websites, email messages, newspaper articles, handouts and educational materials related to high-priority water quality conditions identified in the program plan including fecal bacteria and distributes them at locations where members of the target audience are anticipated to be (e.g., World Water Day events, Earth Week/Day events, car wash events and family housing). Handouts include pamphlets or other one-page informational sheets that present information and provide a means to contact the Stormwater Program Manager with any questions or comments. Educational materials include brochures on household pollution (Figure 4-2) that are distributed during events such as World Water Day and to residents of base housing upon moving in and at resident meetings. Education and outreach information is also conveyed through the base's website[1], Facebook page and the Langley Family Housing[2] Facebook page. Strategies for public education and outreach are summarized in the JBLE–Langley MS4 Program Plan (JBLE–Langley, 2022a).

[1] https://www.jble.af.mil/About-Us/Units/Air-Force/Langley-Environmental/
[2] http://www.langleyfamilyhousing.com/

5.2 Public Involvement/Participation

JBLE–Langley engages the public through its website and social media presence across Facebook and Twitter. The base has hosted several local events to raise awareness and facilitate public involvement on the topics of reducing pollutants in stormwater, improving water quality and supporting local restoration and clean-up projects.

Each year, the base holds a series of events, such as World Water Day, Clean the Bay Week, America Recycles Day, Earth Day/Week and annual Base Clean-Up Day, to help mobilize volunteers to participate in clean-up efforts across the base. For the 2022 Earth Day/Week the base distributed stormwater related material and conducted events including a nature trail cleanup, family housing cleanup, and a Langley litter pick up and shred event. For Clean the Bay Week, the base coordinated a volunteer effort to pick up litter along the base's shoreline (Figure 5-1). For International Coastal Cleanup Day, the base led 55 volunteers to also clean up the base's shoreline. The base also hosted World Water Day in 2022 where pet waste and other stormwater brochures were distributed at the Base Exchange and storm drain filters were cleaned and replaced.

In previous years, typical activities included volunteer cleanout of stormwater ditches and drains Earth Day Community Awareness Fun Fair with interactive stormwater displays, stormwater workshop at Booker Elementary school, and rain-barrel construction and maintenance workshop. Activities, such as storm drain marking and community involvement, can help reduce the levels of pollutants such as fecal bacteria before they enter the storm drains and flow to the receiving stream. Strategies for public involvement and participation are summarized in the JBLE–Langley MS4 Program Plan (JBLE–Langley, 2021a).

In June 2017, JBLE–Langley partnered with the Chesapeake Bay Foundation and Booker Elementary school to implement an oyster reef restoration project in the Back River near the base marina. Oyster reefs form a complex ecosystem for filter feeders that filter bacteria and other pollutants from the water column. Through this project, 75 bushels of oyster shells and 2,000 young oyster spat were used to begin building the reef habitat. This project also helped to educate children on the role oysters play in filtering pollutants, improving water quality and providing habitat within the Back River and Chesapeake Bay (Figure 5-2 and Figure 5-3). In August 2018, and again in June 2019, the base expanded the reef habitat through oyster reef building workshops, involving both elementary school students and base residents. These classes were led by instructors from the Chesapeake Bay Program (Figure 5-2).

In 2022, JBLE–Langley initiated a partnership with the United States Army Corps of Engineers Engineering With Nature (EWN) program to develop a plan for implementing natural infrastructure around the base. EWN is an ecosystem-based approach for planning, designing, constructing and operating projects where social, economic and environmental factors are equitably weighed in the decision-making process (EWN, 2022).

Figure 5-1. JBLE–Langley Clean the Bay Week

Figure 5-2. Oyster Reef Construction in the Southwest Branch Back River near the JBLE–Langley Marina with Students from Booker Elementary School (June 2019)

Figure 5-3. Oyster Reef at JBLE–Langley Filters Pollutants, Improves Water Quality and Provides Habitat within the Southwest Branch Back River

6.0 BMP IMPLEMENTATION SCHEDULE AND ASSESSMENT

6.1 Implementation Schedule

The base will implement the fecal bacteria load reducing components described in Sections 4.0 and 5.0 of this Action Plan. The base is currently in year 4 (01 November 2021 – 31 October 2022) of its second MS4 permit term. In subsequent years, the base plans to refine its initial assessments of potential sources and control measures, with the goal of improving resource allocation across the installation. Table 6-1 outlines the implementation plan for bacteria controls at JBLE–Langley as it moves forward into the second MS4 permit cycle.

Table 6-1. Implementation Schedule for Addressing Bacteria Impairments

Permit Year	Actions
First Permit Cycle (03 August 2017 – 31 October 2018)	• Reviewed the final Back River Bacteria TMDL report approved by United States Environmental Protection Agency (EPA) to identify actions to address sources of bacteria.
	• Developed the Bacteria TMDL Action Plan and implementation schedule (JBLE–Langley, 2018).
	• 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. Prepared a summary of potential controls and identified programs and activities to support their implementation.
	• Evaluated new bacteria-related datasets for the watersheds collected by other agencies (e.g., VDEQ) as available.
Second Permit Cycle (01 November 2018 – 31 October 2023)	• As funding permits, implement activities identified in the implementation schedule (from previous years) as appropriate.
	• Evaluate new bacteria-related datasets for the watersheds collected by other agencies (e.g., VDEQ) as available.
	• Identify any current or additional activities to be performed during the subsequent permit cycle.
	• Update the Bacteria TMDL Action Plan to reflect activities performed during the year. Adjust the implementation schedule as needed to reflect findings from field and desktop assessments. Report on progress annually.
	• Submit an estimated end date for achieving the bacteria WLAs.

6.2 BMP Effectiveness Assessment

The base will implement the fecal bacteria load reducing components described in Sections 4.0 and 5.0 of this Action Plan. As bacteria load reducing measures are implemented and evaluated, opportunities for improving or enhancing their effectiveness will be evaluated on an annual basis. An assessment of the bacteria control measures will be conducted through the MS4 Annual Report, which documents progress toward implementing the MCMs and the TMDL special conditions identified in the MS4 permit.

7.0 REFERENCES

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