ANNUAL REPORT UPDATE

Reporting Period
July 1, 2022 to June 30, 2023 (Due October 1, 2023)

Arlington National Cemetery

1 Memorial Drive
Arlington, VA 22211

VPDES Permit Number: VAR40139
Permit Effective Date: November 1, 2018
Permit Expiration Date: October 31, 2023

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FINAL – MS4 ANNUAL REPORT

Arlington National Cemetery
Arlington, Virginia

Prepared for:

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Bldg. 212, 2nd floor
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Arlington National Cemetery
1 Memorial Avenue
Arlington, VA 22211

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Submitted: September 2023

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General Information

Permittee: Arlington National Cemetery
System Name: Arlington National Cemetery
Permit Number: VPDES Permit VAR40139
Reporting Period: July 1, 2022 to June 30, 2023

Authorized Program Signature Certification

Certification, as required by Virginia Administrative Code (9VAC25-890-40):

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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: WIKER.ANDREW.JACOB.1059327182 Digitally signed by WIKER.ANDREW.JACOB.1059327182 Date: 2023.09.18 16:36:29 -04'00' Date: _____

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1.0 INTRODUCTION

Arlington National Cemetery (ANC) submits this Annual Report in accordance with the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) (9 Virginia Administrative Code [VAC] 25-890-1, et seq.) Part I D. The Annual Report contains an evaluation of ANC's MS4 program implementation, a review of each minimum control measure, and the status of the Total Maximum Daily Load (TMDL) Action Plan.

Each section below describes the effectiveness of ANC's MS4 program and a discussion of whether or not ANC must update the MS4 Program Plan.

2.0 MINIMUM CONTROL MEASURE REPORTING AND EVALUATION

2.1 Public Education and Outreach

(1) ANC addressed the following high-priority stormwater issues in the public education and outreach program:		
Illicit Discharge Detection and Elimination; Good Housekeeping; Minimizing Potential Pollutants		
(2) ANC used the following strategies to communicate each high-priority stormwater issue:		
Strategies	**Strategies used by ANC (check all used during permit year)**	**Issue addressed**
Traditional written materials	☒ Informational brochures and flyers (English and Spanish)	ANC prepared information brochures during previous reporting years. Brochures continue to be distributed each year to new employees as well as Joint Base Myers-Henderson Hall (an interconnected MS4). This information addresses illicit discharge detection and elimination and good housekeeping. **Appendix A** contains supporting documentation.
	☐ Flyers posted in employee common areas (e.g., break rooms, restrooms, information bulletin boards)	
	☒ Facility-wide emails or newsletters	ANC distributed the DoD Chesapeake Bay Program Journal, Spring 2023 Edition electronically to DoD employees. This edition included an article (p. 6) discussing ANC's stormwater management efforts and the repair of streambank erosion and an ineffective trash screen at the Millennium area stream restoration. This information supports ANC's goal of minimizing potential pollutants. **Appendix A** contains supporting documentation.
Alternative materials	☐ Printed water bottles for employees	
	☐ Stickers or magnets distributed at employee training events and/or tours for the visiting public	

Signage	☐ Mark storm drains with "Dump No Waste Drains to Chesapeake Bay"	**No new drains were marked this year**; however, ANC's road projects include a standard inlet style to include "Dump No Waste Drains to Chesapeake Bay." These markings support ANC's goals of eliminating illicit discharges and minimizing potential pollutants. **Appendix A** contains supporting documentation.
	☐ Signs posted in employee common areas (e.g., break rooms, restrooms, information bulletin boards)	
	☐ Temporary signs at construction sites highlighting new stormwater management facilities or strategies	

Media materials	☒ Information disseminated through electronic media, radio, televisions, movie theater, or newspaper	Beginning in 2019, ANC distributed informational videos about rain gardens and sustainable practices at ANC on its website and social media sites. These videos describe the importance of ANC's rain gardens for capturing and filtering pollutants in stormwater runoff. The videos support ANC's goal of minimizing potential pollutants. Link to rain garden video: https://www.youtube.com/watch?v=Z4I4Zdr6cC8 Link to sustainable practices video: https://www.youtube.com/watch?v=rd0ISNFPTyI ANC uses their official social media pages on Facebook and Instagram to promote general environmental awareness and ANC's initiatives. ANC shared posts promoting Clean the Bay Day litter pickup, Earth Day, Arbor Day, and Pollinator Week and announcing their Arboretum tours. Examples of social media posts are included in **Appendix A**. This information supports ANC's goals of minimizing potential pollutants. ANC shared a new video on social media about State Champion Trees that mentioned the role of trees in absorbing stormwater. Link to video: https://www.youtube.com/watch?v=p7yEd3DYqHs

Speaking engagements	☒ Host educational arboretum and rain garden tours and events for the visiting public and distribute brochures to attendees	ANC hosted two public walking tours focused on horticulture in the Arboretum. The Earth Day tour included information about ANC's rain gardens and supported ANC's goal of minimizing potential pollutants. ANC announced tour dates on social media and linked to a post on their website. Link to Spring Horticulture Tour announcement: https://www.arlingtoncemetery.mil/Media/News/Post/12978/Spring-Horticulture-Tours
Curriculum materials	☒ Host educational arboretum and rain garden tours and events geared toward visiting children and school groups	In 2022, ANC prepared "The Environment at ANC" educational module, with materials available for download from ANC's Education Program website. There are lesson plans for elementary, middle, and high school students related to landscape management and design, and seasonal guides to the Arboretum. The module includes a school group walking tour of the Memorial Arboretum for use in-person or virtually. Tours and educational modules address minimizing potential pollutants. ANC announced these materials on their website and through links posted on social media. Link to educational materials: https://education.arlingtoncemetery.mil/Themes/The-Environment-at-ANC
Training materials	☒ Employee training presentations focused on stormwater management, spill response, recognition and reporting of illicit discharges, good housekeeping, and pollution prevention	Section 2.6 discusses training. ANC maintains a stormwater training presentation. Training was conducted using existing training materials during this reporting period. Trainings addressed all three high-priority stormwater issues.

MCM 1 Review and Evaluation Public Education and Outreach				
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**	**High-priority Stormwater Issue Addressed**
Informational brochures or flyers	Number of brochures or flyers distributed	☒ Effective ☐ Not Effective	N/A	☒ Illicit Discharge Detection and Elimination ☒ Good Housekeeping ☐ Minimizing Potential Pollutants
Facility-wide emails or newsletters	Number of people reached via email	☒ Effective ☐ Not Effective	N/A	☐ Illicit Discharge Detection and Elimination ☐ Good Housekeeping ☒ Minimizing Potential Pollutants
Information disseminated through social media posts and ANC website	Number of people reached	☒ Effective ☐ Not Effective	N/A	☐ Illicit Discharge Detection and Elimination ☐ Good Housekeeping ☒ Minimizing Potential Pollutants
Host educational tours for the visiting public	Number of tours and attendees	☒ Effective ☐ Not Effective	N/A	☐ Illicit Discharge Detection and Elimination ☐ Good Housekeeping ☒ Minimizing Potential Pollutants
Host educational tours and events for school groups	Number of tours and attendees	☒ Effective ☐ Not Effective	N/A	☐ Illicit Discharge Detection and Elimination ☐ Good Housekeeping ☒ Minimizing Potential Pollutants
Training Materials	Number of people trained	☒ Effective ☐ Not Effective	N/A	☒ Illicit Discharge Detection and Elimination ☒ Good Housekeeping ☒ Minimizing Potential Pollutants

2.2 Public Involvement and Participation

(1) Summary of public input on ANC's MS4 program	
Public Input Comment	**ANC's Response**
Any public input or comments on MS4 program via email, phone, or in-person?	None

(2) Webpage link to the ANC's MS4 program and stormwater website:
ANC MS4 Program documents are available to the public in on its website: https://www.arlingtoncemetery.mil/About/Policies-and-Public-Notices/Public-Notices

(3) Public involvement activity implemented	(4) Metric to determine if beneficial to water quality	(4) Evaluation of metric as to whether or not the activity is beneficial to improving water quality	(5) Other MS4 permittees who participated with ANC in public involvement opportunities
Virginia Tech Virtual/In-Person Water Quality Class	Number of participants	On 20 February 2023, ANC held a virtual and in-person class for 35 participants discussing ANC's MS4 Program requirements in the Chesapeake Bay Watershed. The class included receiving input from the public on ANC's MS4 Program. This is beneficial to improving water quality because it teaches the public various means of improving water quality and solicits input on ways ANC can improve their stormwater runoff quality through open discussion.	N/A
Clean the Bay Day Event	Number of participants	On 6 June 2023, 12 participants from ANC and Joint Base Myer-Henderson Hall removed litter and debris that could enter ANC's MS4. This improves water quality by preventing pollutants and debris from entering the stormwater system. Approximately 100 pounds of trash and recyclables were collected and sorted.	Joint Base Myer-Henderson Hall

MCM 2 Review and Evaluation Public Involvement and Participation			
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**
Virginia Tech Water Quality Class	Number of participants	☒ Effective ☐ Not Effective	N/A
Voluntary Clean-up Days	Number of participants	☒ Effective ☐ Not Effective	N/A

2.3 Illicit Discharge Detection and Elimination

(1) ANC confirms that the MS4 map and information table are up-to-date as of June 30 of this reporting year.	☒ Confirm ☐ Not Confirmed, ANC will update the MS4 map

(2) ANC performed dry weather screening of outfalls during the reporting period, as part of the dry weather screening program.
 	
ANC performs dry weather field screening of all nine MS4 outfalls and interconnections annually. Several discharge points are underground or otherwise inaccessible, and screening occurs at the nearest upstream visible access point. Methods for completing the dry weather screenings include:
• Observing outfall or upstream location identified in the MS4 Program Plan and documenting results.
• If discharge observed:
  ○ Estimate flow rate
  ○ Test for chlorine
  ○ Look for visual characteristics (e.g., odor, color, clarity, floatables, deposits, stains, vegetation, structural condition, etc.)
 	
To investigate potential illicit discharges, ANC will:
• Work progressively up from the outfall or interconnection and observe intakes;
• Split the facility into equal drainage segments and investigate manholes at strategic points; and/or
• Work progressively down the trunk.
	Total Outfalls Screened
	__9__
	Appendix A contains supporting documentation.

(3) List of illicit discharges to ANC's MS4 including spills reaching ANC's MS4

Source of the illicit discharge	Date		Discovery method of discharge	Investigation resolution(s)	Follow-up activities	Date investigation closed
	Observed	Reported				
Dry weather screenings detected no illicit discharges. **Appendix A** contains spill reporting documentation.	2/14/2023	ANC Envi. Division	Observation	Spilled material and contaminated soil removed.	None required	2/14/2023

MCM 3 Review and Evaluation Illicit Discharge Detection and Elimination			
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**
Update MS4 storm sewer system map and informational table	Accuracy of ANC's storm sewer system map and information table	☒ Effective ☐ Not Effective	N/A
Perform dry weather screening of MS4 outfalls	Number of dry-weather inspections	☒ Effective ☐ Not Effective	N/A
Implement IDDE written procedures when illicit discharges or spills are reported	Number of illicit discharges reported, investigated, and corrected, if needed	☒ Effective ☐ Not Effective	N/A

2.4 Construction Site Stormwater Runoff Control

(1) ANC requires contractors to implement a construction site stormwater runoff program in accordance with the MS4 General Permit Part I E 4 a (3) and (4). ANC, as a federal entity, has not developed their own standards and specifications in accordance with Virginia Erosion and Sediment Control Law (§ 62.144.15:51 et seq. of the Code of Virginia) and Virginia Erosion and Sediment Control Regulations (9VAC25-840). ANC requires contractors to perform inspections for land-disturbing activities as defined in § 62.144.15:51 of the Code of Virginia resulting in disturbance activities greater than 2,500 square feet.	☐ NA, ANC did not conduct land disturbing activities during the reporting period ☒ Confirmed ☐ Not Confirmed (see below) **Appendix A** contains a table listing ANC's Construction General Permits.

If one or more of ANC's land disturbing projects were not conducted with the department approved standards and specifications. Explain why the project(s) did not conform to the approved standards and specifications: All land disturbing projects at ANC occurring during the reporting period have been conducted in accordance with the current VDEQ approved standards and specifications for erosions and sediment control.

(2) Total number of construction site inspections conducted during the reporting period at ANC:	Routine reports: 201 **Appendix A** contains a table listing the number of inspections for each project. 48-hour reports: N/A
(3) Total number of enforcement actions:	0

Number	Enforcement Action(s) Implemented	Type of Enforcement Action(s)
1		
2		
3		

MCM 4 Review and Evaluation Construction Site Stormwater Runoff Control			
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**
Perform ESC inspections	Number of ESC inspections performed	☒ Effective ☐ Not Effective	N/A
Correct compliance issues when found or reported	Number of issues found and corrected	☒ Effective ☐ Not Effective	N/A

2.5 Post-Construction Stormwater Management for New Development and Development on Prior-Developed Lands

(1) ANC has not developed their own standards and specifications in accordance with the Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and Virginia Stormwater Management Regulations (9VAC25-870). ANC addresses post-construction stormwater runoff control by requiring compliance with 9VAC25-870.	
(2) Total number of stormwater management facility inspections conducted on stormwater management facilities owned or operated by ANC.	36 **Appendix A** contains Stormwater BMP inspection forms**.**
(3) Description of the significant activities performed on ANC's stormwater management facilities to ensure they continue to perform as designed. (This does not include activities such as grass mowing or trash collection.)	
Underground manufactured treatment devices (MTD) STC-7 and STF-2, and UTD/PT-UTD were cleaned in September 2022. ANC has an active contract to provide quarterly and bi-annual cleaning of these BMPs. ANC has a contract in place to develop a booklet of stormwater BMP information. Each BMP has a datasheet that includes BMP type, year installed, design information, maintenance activities and frequency, location map, photos, and as-built plans (if available). The BMP booklet is compiled in a binder for quick reference about all of ANC's structural stormwater BMPs.	
(4) Confirmation Statements (confirm one)	
☒	ANC submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which ANC was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Part I E 5 f.
☐	ANC did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities.
(5) ANC electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part I E 5 g.	☐ Yes Date submitted: _____ ☒ NA ANC did not have any new BMPs to report to the Warehouse. However, ANC reviewed the BMP Warehouse and has identified necessary updates to the existing information, which will be completed during FY23.

MCM 5 Review and Evaluation Post-Construction Stormwater Management for New Development and Development on Prior-Developed Lands			
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**
Inspect stormwater management facilities	Number of stormwater management facility inspections performed	☒ Effective ☐ Not Effective	N/A
Submit stormwater facility database updates to VDEQ	Submit stormwater facility database updates to VDEQ when facilities are added or retrofitted	☒ Effective ☐ Not Effective	N/A

2.6 Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by ANC

(1) Summary of any daily operational procedures developed or modified in accordance with Part I E 6 a during this reporting period:
N/A. **Appendix A** includes SWPPP inspection forms.
(2) Summary of any new SWPPPs developed in accordance Part I E 6 c during this reporting period:
N/A
(3) Summary of any SWPPPs modified in accordance with Part I E 6 f during the reporting period:
ANC's SWPPP was updated in December 2021 and is included in the MS4 Program Plan as a stand-alone document presented in Appendix E.
(4) Summary of any new turf and landscape nutrient management plans developed:

Location of each land area in nutrient management plan	**Total Acreage of land area**	**Date of plan approval**
No new turf and landscape NMPs were prepared during this reporting cycle.		

(5) Training events conducted in accordance with Part I E 6 m	**(a) The date of the training event**	**(b) Number of employees attending**	**(c) Objective of the training event.**
Stormwater Awareness Training for ANC Newcomers	3 August 2022 2 November 2022 8 February 2023 1 May 2023	11 8 7 7	Stormwater Awareness Training, Handouts, and Slides cover the following topics: • Recognition and reporting of illicit discharges • Pollution prevention and good housekeeping associated with road, street, and parking lot maintenance • Pollution prevention and good housekeeping associated with maintenance, public works, or recreational facilities • General stormwater topics, and • Spill response. **Appendix A** includes stormwater training slides.
Stormwater Handouts for VOS (Screeners)	15 March 2023	75	
Stormwater Handouts for PLMS (Horticulture – Landscape)	15 March 2023	1	
Stormwater Handouts for DTS (Horticulture – Trees)	23 March 2023	11	
Stormwater Handouts for Greenleaf (Horticulture – Turf)	15 March 2023	11	
Stormwater Handouts for CVICS (Interment Ops – Headstones)	23 March 2023	8	
Stormwater Slides for ANC Town Hall (hybrid)	2 May 2023	All staff	
Stormwater Handouts for TEYA (Custodial)	Handouts placed in breakroom	5	

MCM 6 Review and Evaluation Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by ANC			
BMP	**Measurable Goal**	**Evaluation results**	**If not effective, provide discussion of MS4 Program Plan changes required**
NMP Plan implementation	NMP effectiveness	☒ Effective ☐ Not Effective	N/A
SWPPP implementation	SWPPP effectiveness at preventing illicit discharges and promoting good housekeeping	☒ Effective ☐ Not Effective	ANC will investigate compiling SWPPPs into single document following completion of relocation of the service center and southern expansion project (estimated for completion by 2029).
Training program events	Number of attendees at training program events	☒ Effective ☐ Not Effective	N/A

3.0 TMDL ACTION PLAN STATUS REPORT

a. BMPs implemented at ANC during the reporting period but not reported to the DEQ BMP Warehouse in accordance with Part I E 5 g

BMP Type	Location	Total Load Reductions (lbs/yr)		
		Nitrogen	Phosphorus	Total Suspended Solids

No new BMPs were implemented or installed during this reporting period. ANC will work with VDEQ to update warehouse and ensure data is correct and completed. A contract to complete this work is in place for RY 2023-2024.

b. ANC will meet all required reductions during each reporting period of the permit as shown in its TMDL Action Plan dated March 2022 and will not acquire credits.

ANC updated the Chesapeake Bay TMDL Action Plan in March 2022. The plan was updated to include the 16 acres of land along Memorial Avenue acquired from NPS; BMPs that have been implemented since the last Plan update; adjustment of STCP-1 BMP removal efficiencies; source loads and reductions associated with the Southern Expansion Project; and enhancements to ANC's legal authority to ensure TMDL compliance. ANC has met and exceeded the required 40% reduction of pollutants of concern required by the end of the second permit cycle. A draft TMDL plan is in progress to address 100% reduction requirements under the third permit cycle. The draft TMDL Plan will be submitted to VDEQ with the permit renewal application.

c. ANC meets and exceeds the reductions for total nitrogen, total phosphorus, and total suspended solids required during this permit term as demonstrated in its TMDL Action Plan. The table below summarizes ANC's pollutant reduction achievements.

	First Permit Cycle		*Second Permit Cycle*	
Pollutant	**Reduction Required in 1st Permit Cycle (lbs/yr)**	**Total Reduction Achieved with BMPs (lbs/yr)**	**Reduction Required in 2nd Permit Cycle (lbs/yr) [8x or 40% of L2 Scoping Run Reductions]**	**Total Reduction Achieved with BMPs (lbs/yr)**
Nitrogen	21.57	612.73	178.07	648.95
Phosphorus	1.74	315.25	14.53	173.26
TSS	1,271.15	142,876.37	10,653.73	126,987.69

d. BMPs ANC plans to implement during the next reporting period.

BMP Type	Location
N/A	N/A

4.0 SUMMARY

ANC's MS4 program is effective based on BMPs implemented and measures of effectiveness used. If ANC is issued a new permit, then they will update the MS4 Program Plan accordingly.

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Appendix A
Supporting Documentation

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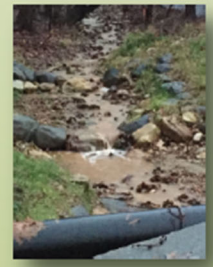
Public Education and Outreach

What is Stormwater?

Stormwater (i.e., rain or snowmelt) flows over the ground and impervious surfaces, such as parking lots, roads, sidewalks, and rooftops instead of being absorbed into the ground.

Why is Stormwater Runoff a Problem?



As stormwater runoff flows over surfaces, it collects pollutants, such as trash, chemicals, nutrients, and sediment. This untreated runoff flows into storm drains that lead directly to rivers, streams, wetlands, or coastal waters. The runoff carries pollutants into the waterbodies we use for drinking, swimming, and fishing.

- Sediment can cloud the water, making it difficult for aquatic plants to grow.
- Excess nutrients from pesticides and fertilizers can cause algae blooms.
- Bacteria and other pathogens can create health hazards.
- Litter and debris can choke, suffocate, or disable aquatic life such as ducks, fish, crabs, and birds.
- Common pollutants like trash, pesticides, paint, solvents, and motor oil can poison animals and people.

According to the EPA, impervious surfaces in a typical city block generate more than 5x the runoff than a forested area the same size.

What Should I do if There is a Spill?

If the spill is life-threatening, immediately call 911, then the Environmental POC

If not life-threatening, immediately call the Environmental POC

If safe to do so:

- STOP THE FLOW OF PRODUCT
- WARN PERSONNEL
- PROTECT STORMWATER INLETS
- SHUT OFF IGNITION SOURCES
- INITIATE CONTAINMENT
- COMPLETE THE SPILL RESPONSE FORM AND SUBMIT IT TO THE ENVIRONMENTAL POC

What is an Illicit Discharge?

An illicit discharge is any discharge into a storm drain system that is not composed entirely of stormwater.

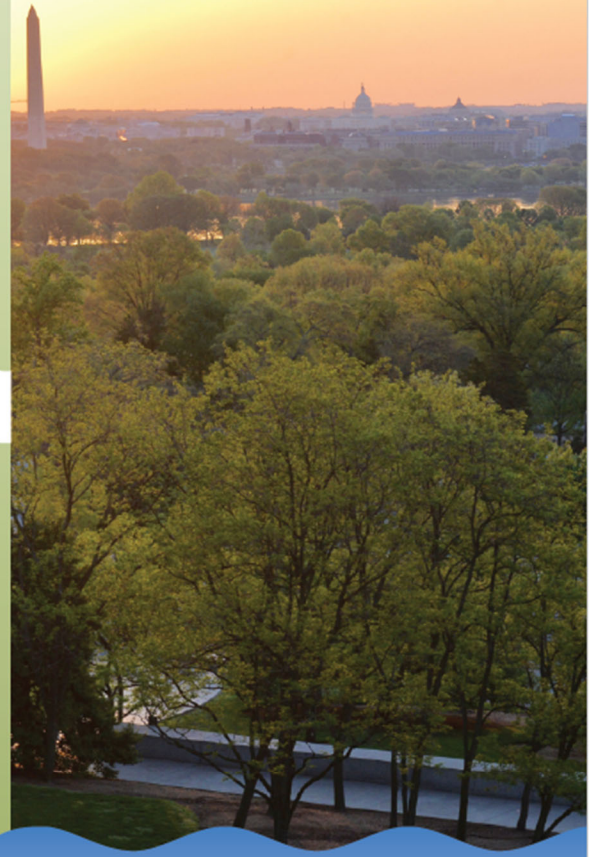
What to look for...

- Water, chemicals, and other fluids flowing in storm drains during dry weather
- Water that is cloudy, dirty, has a sheen, contains debris or litter, has an odor
- Sediment, trash, fuels, and oils on the ground

IF YOU SPILL SOMETHING OR SUSPECT AN ILLICIT DISCHARGE, CONTACT THE ENVIRONMENTAL POC AT 703-614-0520

Stormwater Pollution Prevention

At Arlington National Cemetery



What We're Doing at Arlington National Cemetery

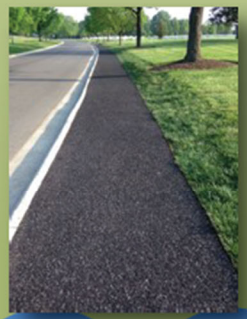
Low-Impact Development (LID)

LID practices are stormwater management practices that mimic natural infiltration or evaporation to remove pollutants and reduce the amount of stormwater runoff.

ANC attempts to manage stormwater as close to its source as possible by preserving and recreating natural landscape features, minimizing impervious areas, and treating stormwater as a resource rather than a waste. To achieve this, ANC uses rain gardens, bioretention ponds, and permeable pavement.

Use and Benefit of Permeable Pavement

Permeable pavement reduces polluted runoff by allowing stormwater to seep through the surface, filtering out pollutants.



Permeable pavement is installed at the Millennium Site and used for sidewalks near the new Chapel Gate and along Eisenhower Avenue.

Pollution Prevention and You

Good Housekeeping

Good housekeeping is the easiest and most effective way you can help reduce or eliminate stormwater pollution.

ANC's GOAL: Keep stormwater from contacting pollutants and entering storm drains.

Keep a look out!

Contact ANC's Environmental POC if you see any of the following:

- Sediment or litter in drains, rain gardens, or bioretention ponds
- Dying vegetation
- Sediment in roads or not contained to construction sites
- Blocked drains
- Significant litter on the ground
- Chemical spills, leaks, or stains

The EPA estimates that polluted stormwater accounts for 65% of pollution in rivers.

How You Can Reduce Your Impact on Stormwater Pollution

At work, at home, anywhere!

- NEVER DUMP ANYTHING DOWN STORM DRAINS!
- Don't litter!
- Maintain your car.

Only rain down the drain!

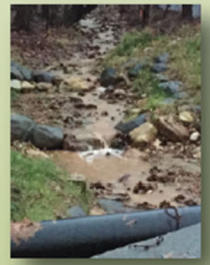
- Wash your car at a car wash or on your lawn.
- Pick up after your pet.
- Have your gutters discharge to vegetated or grassed areas.

- Reseed lawns to prevent sediment runoff.
- Compost or recycle yard waste.
- Use water-based paints and clean paint brushes in a sink.
- Deliver used oil to recycling centers.
- Use minimal amounts of pesticides and fertilizers.
- Consider using porous/permeable pavers when building patios and walkways.
- Clean up oil and chemical spills upon discovery.

¿Qué es la escorrentía pluvial?

Escorrentía pluvial (i.e., lluvia o nieve derretida) fluye sobre el terreno y superficies impermeables, tal como estacionamientos, carreteras, aceras y azoteas en vez de ser absorbida por el terreno.

¿Por qué la escorrentía pluvial es un problema?



Según la escorrentía pluvial fluye a través de las superficies, recoge contaminantes, tales como basura, compuestos químicos, nutrientes y sedimentos. Esta escorrentía pluvial sin tratamiento fluye hacia los drenajes pluviales que la llevan directamente a los ríos, quebradas, humedales o aguas costeras. La escorrentía pluvial transporta contaminantes hacia los cuerpos de agua que utilizamos para beber, nadar y pescar.

- Los sedimentos pueden poner turbia el agua, lo cual dificulta que las plantas acuáticas crezcan.
- Los nutrientes en exceso provenientes de los pesticidas y fertilizantes pueden causar un sobre crecimiento de algas.
- Las bacterias y otros patógenos pueden crear problemas de salud.
- Los escombros y basura pueden asfixiar, sofocar o inhabilitar la vida acuática tal como patos, peces, cangrejos y pájaros.
- Contaminantes comunes como basura, pesticidas, pintura, solventes y aceite de motor pueden envenenar los animales y las personas.

Según la Agencia de Protección Ambiental (EPA, por sus siglas en inglés), las superficies impermeables dentro de un bloque de una ciudad típica pueden generar hasta 5 veces la escorrentía pluvial comparado con un área boscosa del mismo tamaño.

¿Qué debo hacer si ocurre un derrame?

Si el derrame representa una amenaza a la vida, llame inmediatamente al 911, y después llame a la Persona de Contacto (POC, por sus siglas en inglés) Ambiental.

Si el derrame no representa una amenaza a la vida, llame inmediatamente al POC Ambiental.

De ser seguro hacerlo:

- DETENGA EL FLUJO DEL PRODUCTO
- AVISE AL PERSONAL
- PROTEJA LAS ENTRADAS AL DRENAJE PLUVIAL
- APAGUE LAS FUENTES DE IGNICIÓN
- INICIE LA CONTENCIÓN
- COMPLETE LA FORMA DE RESPUESTA A DERRAMES Y ENTRÉGUELA AL POC AMBIENTAL

¿Qué es una descarga ilegal?

Una descarga ilícita es cualquier descarga a un sistema de drenaje pluvial que no está compuesta en su totalidad por escorrentía pluvial.

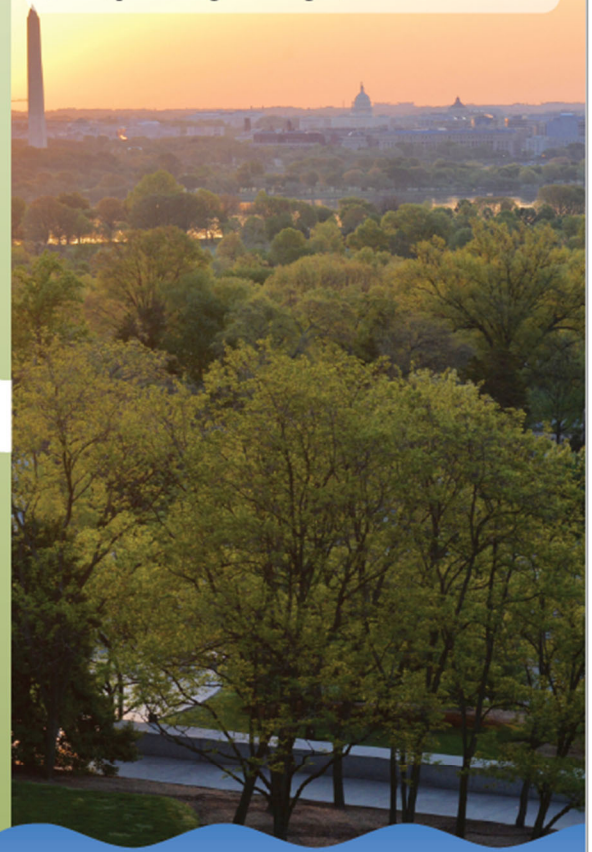
Lo que debe observar…

- Agua, compuestos químicos, y otros fluidos que estén fluyendo hacia los drenajes pluviales durante tiempo seco
- Agua turbia, sucia, que tenga un brillo, contenga escombros o basura, o que tenga un olor
- Sedimentos, basura, combustibles y aceites sobre el terreno

SI USTED DERRAMA ALGO O SOSPECHA UNA DESCARGA ILEGAL, CONTACTE AL POC AMBIENTAL AL SIGUIENTE NÚMERO DE TELÉFONO 703-614-0520

Prevención de Contaminación de la Escorrentía Pluvial

en el Cementerio Nacional de Arlington (ANC, por sus siglas en inglés)



Lo que estamos haciendo en el Cementerio Nacional de Arlington

Desarrollo de Bajo Impacto (LID, por sus siglas en inglés)

Las practicas LID son prácticas de manejo de escorrentía pluvial que imitan la infiltración natural o evaporación para remover los contaminantes y reducir la cantidad de escorrentía pluvial.

El ANC intenta manejar las escorrentías pluviales de la manera más cercana posible a la fuente al preservar y recrear las características naturales del entorno, minimizando las áreas impermeables, y utilizando la escorrentía pluvial como un recurso y no como un desperdicio. Para lograr esto, el ANC utiliza jardines de lluvia, lagunas de bio-retención, y pavimento permeable.

El Uso y Beneficio del Pavimento Permeable

El pavimento permeable reduce las escorrentías contaminadas al permitir que las aguas de escorrentía pluvial se infiltren a través de la superficie, lo cual filtra los contaminantes.

El pavimento permeable se instala en el Sitio del Milenio ("Millenium Site") y se utiliza para las aceras cerca al Portón de la Capilla ("Chapel Gate") y cerca de la Avenida Eisenhower ("Eisenhower Avenue").

Prevención de Contaminación

Su Buen Mantenimiento de las Facilidades

El buen mantenimiento de las facilidades es el método más fácil y efectivo en que usted puede ayudar a reducir o eliminar la contaminación de las escorrentías pluviales.

ALa META del ANC: Prevenir que las escorrentías pluviales entren en contacto con contaminantes y entren a los drenajes pluviales.

¡Manténgase pendiente!

Contacte al POC Ambiental del ANC si usted observa alguno de los siguientes:

- Sedimento o basura en los drenajes, jardines de lluvia o en las lagunas de bio-retención.
- Vegetación que esté decayendo.
- Sedimento en las carreteras o no contenido dentro de los sitios de construcción.
- Drenajes bloqueados.
- Cantidades excesivas de basura sobre el terreno
- Derrames de compuestos químicos, escapes o manchas.

La EPA estima que las escorrentías pluviales contaminadas contribuyen al 65% de la contaminación en los ríos.

Como usted puede reducir su impacto en la contaminación de las escorrentías pluviales

¡En su trabajo, hogar y dondequiera!

- ¡NUNCA TIRE NADA DENTRO DE LOS DRENAJES PLUVIALES!
- No tire basura al piso
- Provea mantenimiento a su vehículo

¡Solamente lluvia por el desagüe!

- Lave su carro en un establecimiento de autolavado o sobre su césped.
- Recoja los desperdicios de su mascota.
- Coloque sus drenajes pluviales para que descarguen a áreas con vegetación o al césped.
- Re-siembre los jardines con césped para evitar que la escorrentía se lleve el sedimento.
- Haga composta o recicle los desechos del jardín.
- Utilice pinturas a base de agua y limpie las brochas dentro del lavadero.
- Entregue sus aceites usados a centros de reciclaje de aceite.
- Utilice cantidades mínimas de pesticidas y fertilizantes.
- Considere utilizar adoquines porosos / permeables cuando vaya a construir patios o aceras.
- Limpie los derrames deaceite o compuestos químicos tan pronto los descubra.

Spring 2023

DoD Chesapeake Bay Program Journal

Edited by the DoD Chesapeake Bay Program Team

PROTECTING THE CHESAPEAKE BAY FOR MILITARY READINESS, FOR OUR COMMUNITY, FOR FUTURE GENERATIONS

Navy Climate Resilience Funding and Contract Support

By Kevin Du Bois, Department of Defense (DoD) Chesapeake Bay Program (CBP)

As part of its approved Fiscal Year (FY) 2023 Climate Installation Physical Resilience spend plan, the Department of the Navy (DoN) has approved 14 projects in the Chesapeake Bay watershed, at Naval Support Activity (NSA) Bethesda, Naval Weapon Station (NWS) Yorktown, Naval Air Station (NAS) Patuxent River, Naval Support Facility (NSF) Dahlgren, NSF Indian Head, NSF Carderock, and NSA Annapolis. The projects provide for stream restoration, tidal shoreline erosion protection and stabilization, and listed species habitat restoration. To facilitate execution of these projects, DoN installations should be aware that Naval Facilities Engineering Systems Command (NAVFAC) Atlantic has an existing Indefinite Delivery/Indefinite Quantity (IDIQ) contract for mission sustainment and coastal resilience environmental planning services. The contract is designed to provide timely and vital professional services that will support the study and implementation of mission sustainment and coastal readiness measures, including hardened structures and green infrastructure that will ensure Navy and Marine Corps readiness of installations, ranges, and operation areas.

Services may include technical support for coastal resilience planning, climate adaptation services, master planning, installation development planning, encroachment and conservation planning, and Installation Natural Resource Management Plan (INRMP) and Integrated Cultural Resources Management Plan (ICRMP) support. Scopes of Work related to the DoD CBP can include:

- Mission Sustainment and Readiness Services
- Coastal and Riverine Enhancement and Restoration
- Adaptation Action Alternatives/Green Infrastructure Planning
- Risk and Vulnerability Assessment
- Modeling and Analyses Services for Coastal Resiliency
- Economic Analyses for Resilience Planning, Adaptation Alternatives, and Valuation of Natural Resources
- Ecological Studies and Surveys
- Weather Related Services
- Landscape Conservation Services, Regulatory Permitting, Biological Consultation and National Environmental Protection Act
- Spatial Data Acquisition, Optimization, Integration, Conversion, and Management Services
- Specialized Services Related to Wildland Fire Management

To date, there have been 20 total task orders awarded on this contract for a total of approximately $6 million (M). Of these task order awards, 11 have been awarded using environmental compliance funds, and 9 have been awarded using facilities planning funds. There is approximately $12M of remaining capacity on the IDIQ contract, and the contract expiration date August 9, 2024. This contract was designed to be a shared contract between Asset Management (Planning) and Environmental, and the overall task order awards are aligned almost perfectly to that climate-related execution plan. For more information on the IDIQ contract, please contact david.m.james@navy.mil.

IN THIS ISSUE

Commander's Corner: Resources for Effective CBP Information Transfer to Commanding Officers

By Elizabeth Karivelil, Brown and Caldwell

Installation Chesapeake Bay Program activities integrate a wide range of environmental initiatives, including implementing best management practices (BMPs) to reduce stormwater pollution and provide other co-benefits, conducting projects aimed at the conservation and restoration of natural resources, building climate resilience, and contributing to the protection of plant and animal species on DoD lands. For Commanding Officer (CO) awareness, installation environmental leadership and staff are expected to identify and routinely communicate environmental requirements and commitments, progress and planned activities to achieve interim and long-range targets, and challenges to attaining goals.

The DoD CBP routinely develops and releases several outreach materials to facilitate regular information exchange between installation environmental leadership and COs. This includes the quarterly DoD CBP Journal, quarterly fact sheets, and the Annual Progress Report. Past DoD CBP materials can be found online at: https://www.denix.osd.mil/chesapeake/.

Journal. The quarterly DoD CBP Journal includes articles that highlight installation success stories and technical topics relevant to DoD environmental staff. Each Journal also includes a Commanders' Corner article with highly pertinent information selected specifically for COs.

Fact Sheets. The quarterly fact sheets provide a concise two-page resource on a Chesapeake Bay-related topic. Recent examples of fact sheet topics include the updated Commanders' Guide to the Chesapeake Bay, which can be found at: https://denix.osd.mil/auth/chesapeake/dod-cbp-chesapeake-bay-action-team-cbat/training-and-guidance-documents/.

DoD CBP Annual Progress Report. The DoD CBP Annual Progress Report, which is released each spring, highlights installation projects and DoD accomplishments across the Chesapeake Bay watershed in a polished document that can be shared with COs and non-DoD partners.

Installation Chesapeake Bay Program Status Reports. In 2019, the DoD CBP launched a pilot program to summarize installation-level CBP data in a two-page status report that could be used for both internal and external communication. The status reports included a standard list of metrics for each installation, which are included in Table 1. However, the DoD CBP team received feedback from participating installations that the chosen metrics did not accurately characterize the breadth of installation activities due to variability in landcover or mission requirements and that a more customized approach would provide greater utility.

Table 1. 2019 Pilot CBP Status Report Template Sections

Metric Name	Description of Metric
Expenditures for Chesapeake Bay-related Projects	Provides a breakdown of DoD funds that contribute to the goals of Executive Order (EO) 13508 by fiscal year
Expenditures for Best Management Practices	Charts reported BMP investment from 2015 to 2020 and planned BMP investment through 2025, as reported in the annual datacall
BMPs credited in the Chesapeake Assessment Scenario Tool (CAST)	Represents BMPs credited toward pollution reduction goals and the number of BMPs that require corrective action to be credited in CAST
BMP Inspection and Maintenance Activity	Includes metrics that describe the number of BMPs inspected and maintained and the number of BMPs needing inspection and/or maintenance
BMPs with Natural Resource and Climate Resilience Co-Benefits	Presents number of BMPs with natural resource or climate resilience co-benefits
Implementation of BMPs in the Fill Gap Strategy	The Fill Gap Strategy expressed each installation's contribution to DoD's Federal Planning Goals as BMP implementation. This section shows the remaining implementation needed by the installation
Citizen Stewardship	Highlights the number of stewardship events and participating volunteers

In response, the DoD CBP team is developing two new outreach materials. The first is a fact sheet listing a comprehensive set of CBP metrics that can be extracted from the annual installation datacalls. The second is a PowerPoint template with sample slides and infographics that can be customized into a status report that meets installation needs. Expected in late spring, 2023, these materials should serve as a ready and powerful tool to track installation CBP status and inform COs about the many ways their environmental staff are helping to protect and restore the Chesapeake Bay.

Natural and Nature-Based Features to Build Resilience

By Elizabeth Karivelil, Brown and Caldwell

Rising sea levels and intense rain events create storm driven flood events, making flooding a widespread issue for coastal and inland communities. For DoD personnel, flooding events can harm mission readiness by impacting access to DoD facilities or the availability of resources to conduct routine training and testing activities. A study conducted by the Virginia Institute of Marine Science (VIMS) provides one example of how natural and nature-based features (NNBFs) can be implemented to protect against flooding if placed at strategic locations along the coast. In this example, the Adapt VA Interactive Map was used to identify opportunistic locations for NNBFs, but similar methods could be used throughout the Bay watershed. For military installations, environmental staff can identify NNBF projects that can contribute to Integrated Natural Resource Management Plan or Sikes Act objectives and Chesapeake Bay Total Maximum Daily Load (TMDL) goals or municipal separate storm sewer system permit requirements.

Why Choose NNBFs for Climate Resilience?

Existing natural features, such as dunes, forests, riparian buffers, and wetlands, provide climate resilience co-benefits and sequester carbon to buffer against the effects of future climate conditions. They also provide numerous ecosystem services for water quality and natural resources; protection or enhancement of natural features will ensure these benefits will persist over time. Nature-based features can be specifically designed and installed to protect against storm effects; however, in contrast to many hard structures, they can also be built to augment and mimic the benefits provided by naturally occurring ecosystems. Meeting multiple installation objectives and regulatory requirements related to water quality, natural resources, climate adaptation, and carbon sequestration is a wise use of DoD's limited staff, land, and fiscal resources.

Research Methodology and Results

The VIMS researchers' study area included sections of the Virginia coastal zone up to an elevation of 10 feet based on the North American Vertical Datum of 1988 (NAVD 88). The goals of the analysis were to rank existing NNBFs based on their benefits for climate resilience and identify opportunities for nature-based projects that may maximize those benefits. Existing land and shoreline NNBFs selected for the assessment included non-tidal wetlands, living shorelines, tidal marshes, and wooded features. The researchers used elevation contours to identify Inundation Pathways (IPs) that show the flow of water from tidal waterways to inland buildings and then identified existing NNBFs along the flow path. Based on existing scientific literature, those NNBFs are assumed to provide some protection to the upstream buildings from coastal flooding. The researchers ranked the benefits of existing NNBFs based on the following criteria:

- **Flood mitigation benefits:** Determined based on the NNBF's flood mitigation ability (see Table 1 below) and elevation along the IP. These two factors were used to estimate the likelihood of a building flooding.
- **Number of buildings:** Defined as the number of the buildings protected by NNBFs.
- **Types of buildings:** Determined by whether the protected building is a facility used for immediate emergency response such as law enforcement buildings, medical facilities, educational facilities, places of worship, and airports.
- **Other co-benefits:** Assessed by whether the NNBF provides co-benefits for water quality improvement toward the Chesapeake Bay TMDL.

Table 1. Scoring to describe NNBFs' flood mitigation ability based on permeability, surface roughness, and vegetation roughness.

Feature Type	Permeability (out of 3)	Surface Roughness (out of 3)	Vegetation Roughness (out of 3)	Total (out of 9)
Beach	3	1	0	4
Dune	3	2	2	7
Wooded	3	2	3	8
Scrub-Shrub	3	3	3	9
Non-Tidal Forested Wetlands	2	3	3	8
Non-Tidal Scrub-Shrub Wetlands	2	3	3	8
Non-Tidal Emergent Wetlands	2	3	2	7
Tidal Marsh	2	3	2	7
Hybrid Living Shoreline: Marsh Sill	0	3	0	3
Hybrid Living Shoreline: Oyster Sill	0	3	0	3
Hybrid Living Shoreline: Breakwater	0	3	0	3

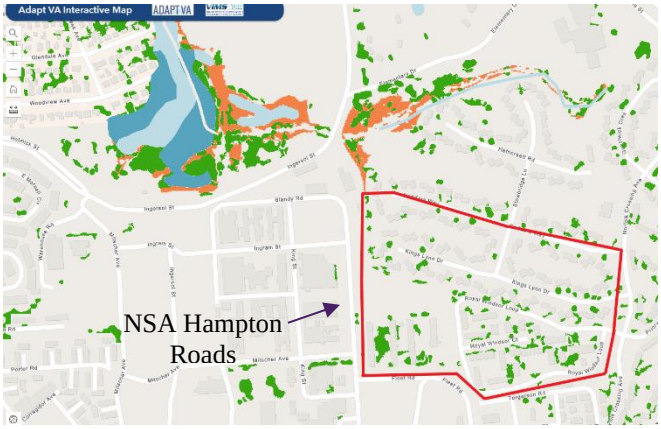
After the analysis of existing NNBFs, researchers recommended potential new NNBF implementation locations for enhanced flood mitigation by identifying shoreline locations along IPs where there were no NNBFs. Researchers noted shoreline locations are more likely to maximize benefits compared to upland locations. Additionally, the Center for Coastal Resources Management Shoreline Management Model, which is focused on shoreline practices, was used to recommend one of six shoreline BMPs: non-structural living shoreline, plant marsh with sill, groin field with beach nourishment, maintain beach or construct offshore breakwater with beach nourishment, revetment, and revetment/bulkhead toe revetment. In the Adapt VA Interactive Map, these shoreline BMPs are within the Shoreline Management Model v5.1 layer of the Shoreline Management layer group. It is important to note that the evaluation of NNBF opportunities only evaluated shoreline locations and BMP types; upland opportunities were not considered.

Applicability for Virginia Installations

The information presented in the study can be used by Virginia installations to select and map potential projects to increase climate resilience and potentially satisfy multiple Chesapeake Bay restoration and INRMP goals. Particularly, it could be used in projects aimed at building coastline resilience while providing natural resource and water quality co-benefits. It is important to note that installations should further evaluate project locations for feasibility, mission compatibility, and relevant benefits.

Transferability Beyond Virginia

In addition to the interactive map, VIMS developed fact sheets about 10 different NNBF types and their benefits. Installations outside of Virginia may use the fact sheets for reference when assessing if NNBFs are viable options within their local context. Moreover, repeating the procedures in the study could allow installations outside Virginia to create a map of local NNBF opportunities. Installations may need assistance from a contractor or academic partner to perform the analysis to identify the ideal location to implement NNBFs. The technical partner could also help expand the types of NNBFs considered beyond just shoreline locations and BMPs into upland areas where more resilience benefits may be achieved. Table 2 summarizes partnership opportunities and funding sources for projects, depending whether the proposed location of the NNBF to protect DoD assets or critical infrastructure is on- or off-base.



SCREEN GRAB FROM ADAPT VA INTERATCTIVE MAP

Adapt VA Interactive Map shows restoration opportunities (orange features) surrounding a portion of the NSA Hampton Roads base (outlined in red). NNBFs pictured include wetlands (blue features) and upland wooded area (green features).

Table 2. Potential opportunity locations, partners, and funding sources to repeat study procedures for installations outside Virginia.

Opportunity Locations	Partners	Funding Sources
On DoD Property	Installation Natural Resource Managers, Stormwater Subject Matter Experts, Planners	Legacy Grants, Operation and Maintenance Funds, and Emerging Climate Resilience Funding
Off DoD Property	Private Landowners, Adjacent Defense Communities, Non-Governmental Organizations, Other Federal and State Agencies, Academics	Office of Local Defense Community Cooperation (OLDCC) Compatible Use Plan (CUP) and Military Installation Resilience (MIR) Studies, Readiness and Environmental Integration Program (REPI) including the Sentinel Landscape Partnership Program, Defense Community Infrastructure Program (DCIP), Federal Grant Opportunities (Building Resilient Infrastructure and Communities, etc.)

Takeaways for DoD Installations

A diverse suite of natural and nature-based features can work together to protect and enhance valuable ecosystem services, build climate resilience, and improve water quality. The Adapt VA Interactive Map or a similar analysis can help identify locations for new NNBF implementation within inundation pathways that protects valuable assets from coastal flooding. Combined with installation staff knowledge of approved BMPs for the Chesapeake Bay TMDL and their installation's INRMP objectives, NNBFs can provide an effective use of the installation's limited resources to meet multiple mission objectives.

For More Information

VIMS, "Increasing Use of Natural and Nature-Based Features to Build Resilience to Storm-Driven Flooding" paper: https://scholarworks.wm.edu/cgi/viewcontent.cgi?article=3827&context=reports

VIMS, "Adapt VA Interactive Map" web map: https://cmap22.vims.edu/AdaptVA/AdaptVA_viewer.html

VIMS, "Nature-Based Solutions" fact sheets: https://www.vims.edu/ccrm/research/climate_change/adaptation/nnbfs/index.php

Success Story: Big Bethel Reservoir Swamp Forest Preservation

By Elizabeth Karivelil, Brown and Caldwell with information provided by Alicia Garcia, JBLE-Langley

Discovery of the invasive emerald ash borer (EAB) in the United States in 2002, has led to new efforts to safeguard America's unique and important ash trees[1]. EAB causes ash trees to lose most of their canopy within 2 years of infestation and is generally fatal to more than 90% of trees within 5 years. On June 20, 2022, Joint-Base Langley-Eustis (JBLE) staff discovered the presence of EAB around a 67-acre forested swamp located upstream of the Big Bethel Reservoir. Approximately 25% of the forested tree canopy consists of pumpkin ash and green ash trees, both of which are at risk of elimination from the EAB infestation. The loss of this forested wetland would threaten existing water quality benefits and the habitat, climate resilience, and other ecosystem services the swamp provides, which also contribute to EO 13508, 2014 Chesapeake Bay Watershed Agreement, and Chesapeake Bay TMDL goals and objectives.

PHOTO BY ALICIA GARCIA, JBLE-LANGLEY

Ash tree tissue damage typically associated with emerald ash borer at JBLE-Langley's Big Bethel Reservoir.

A Dual Strategy to Save the Ash Trees

JBLE-Langley partnered with the Virginia Department of Forestry (VDOF) to combat EAB infestation and used two methods to address the problem. Initially, a systemic Mectinite insecticide treatment was used on 20 pumpkin ash trees. These trees will be retreated biannually to preserve the genetic diversity of the forest population, especially since pumpkin ash is likely to become critically endangered within the next 10 years. Funds from Air Force Civil Engineer Center were utilized to purchase chemicals and equipment related to treatment with manpower to complete the insecticide application provided by VDOF and JBLE-Langley.

PHOTO BY CECILIA BOYD, JBLE-LANGLEY

Molly O'Liddy from VDOF works with Pablo Fitzen, an Air Force civilian with the 633 Civil Engineer Squadron's Pest Management Team, to treat pumpkin ash trees with insecticide.

For the remaining trees, a biocontrol release was planned to suppress local EAB populations. Larvae of a non-stinging parasitoid wasp population were released on the ash trees to prey on the EAB larvae. Research and implementation of this procedure was done in accordance with VDOF and USDA standards. The wasp species was supplied by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service and Plant Protection and Quarantine EAB Parasitoid Rearing Facility with funds from VDOF. JBLE has also banked seeds from the ash trees, allowing for the preservation of their unique genes that could support future species recovery efforts in case these efforts are not successful.

Recognizing the Ash Tree's Value for the JBLE Ecosystem

Preserving the swamp's forest cover and population diversity protects its capacity to naturally filter stormwater pollutants from the City of Hampton, the City of Newport News, and York County. In addition to the water quality benefits, preservation of ash tree also sustains biodiversity within the swamp and surrounding ecosystems. Therefore, combatting this invasive species means fighting to preserve a range of environmental benefits the forested wetlands provide. For more information about this project, please contact Alicia Garcia at alicia.garcia.4@us.af.mil.

[1] USDA Animal and Plant Health Inspection Service - Emerald Ash Borer, 05 January 2023. https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases/emerald-ash-borer

Success Story: Arlington National Cemetery Stream Restoration

By Stacey Rosenquist, ANC

PHOTOS BY STACEY ROSENQUIST, ANC

(Left) Excess sediment and debris inhibited stream flow, and lack of bank stabilization allowed for erosion upstream of the trash screen at Ord & Weitzel Drive. (Right) Removed sediment and debris, reconstructed stream plunge pools, and stabilized stream banks allow improved flow of water.

Arlington National Cemetery (ANC) grounds honor those who have served our nation and provide a sense of beauty with its perfect rows of marble headstones, peaceful views, and graceful trees. In recent years, ANC has strategically implemented many stormwater BMPs to add ecological richness and diversity to ANC's beautiful and historic grounds. These BMPs include restoration of a highly eroded stream, establishment of a riparian protection area, construction of beautiful and effective rain gardens, and installation of permeable walkways. Together, they demonstrate the Army's strong commitment to the goals and outcomes of EO 13508 and the 2022 Army Climate Strategy. This article highlights one project that demonstrates the benefits of inspection, maintenance, and retrofit to maintain its ecological and flood mitigation benefits into the future.

As part of a cemetery expansion project completed in 2018, ANC restored 1,900 linear feet of Millennium Stream in 2013. This stream traverses ANC's riparian protection area passes under internment sections, and flows through its historic boundary wall, eventually discharging into the Potomac River. This restoration project focused on debris removal, slope stabilization, and habitat improvement along the stream channel. While these actions improved the natural landscape, it also helped ANC achieve compliance with the Clean Water Act, Virginia's Chesapeake Bay Preservation Act, and Virginia Stormwater Management Program regulations.

Nonetheless, even after this successful restoration effort, routine inspections revealed that activities adjacent to the stream resulted in the excessive build-up of silt and debris at the culvert trash screen eventually leading to flooding and streambank erosion. In response, ANC conducted a maintenance and retrofit effort in 2021 to return 100 linear feet of stream back to the original 2013 design specifications. This effort required removal of accumulated sediment and debris from the step pools and stabilization of the streambank with seed mix and erosion control matting. The culvert trash screen was replaced with a larger screen with more surface area for capturing debris, increasing the amount of time between future maintenance activities. Ultimately, these actions enhanced water flow in the stream, mitigated flooding, and reduced future maintenance costs. For more information about this project, please contact Stacey Rosenquist at stacey.m.rosenquist.civ@army.mil.

PHOTOS BY STACEY ROSENQUIST, ANC

(Left) Excessive debris covers the trash screen and impedes water flow causing flooding during heavy rain events. (Right) The same location after removal of excessive debris and sediment and replacement of trash screen with a larger model.

Chesapeake Bay Action Team Updates

By Elizabeth Karivelil, Brown and Caldwell

Members convened for the second quarterly CBAT on January 28, 2023. Members reviewed ongoing Chesapeake Bay-related service and installation projects and activities and listened to a presentation about shoreline protection as summarized below.

Living Seawalls

Dr. Chela Zabin of the Smithsonian Environmental Research Center (SERC) discussed research conducted by SERC and the San Francisco State University Estuary & Ocean Science Center on greener solutions for shoreline protection in response to sea level rise. Traditional responses to sea level rise, such as groins and seawalls, present engineering and ecological problems including sediment starvation and development of scour. These issues cause loss of seagrasses and marine organisms and prohibit some marine vegetation species from becoming part of the nutrient cycle for terrestrial and marine organisms. Over the past decade, researchers have discovered that shoreline protection structures designed to incorporate elements of a natural shoreline with surface complexity attract a greater diversity of species.

PHOTO BY CORRYN KNAPP, SERC

A tile set-up as part of a preliminary experiment before the "Living Seawall Pilot" project began.

Dr. Zabin and her team at SERC are in collaboration with the Port of San Francisco to develop designs to improve the seawall from the Embarcadero waterfront to Fisherman's Wharf in San Francisco. The City of San Francisco was planning to renovate its seawall for seismic safety issues and to address flooding, which is occurring more frequently during high tides and storm events. Dr. Zabin noted that incorporating textured tiles to the Port's seawall will provide habitat for a greater diversity of marine creatures. Dr. Zabin's efforts to develop a softer, greener approach for shoreline protection extend beyond the Port of San Francisco to other areas throughout San Francisco Bay.

The DoD CBP facilitated a discussion that resulted in several installations volunteering to partner with SERC to develop a Strategic Environmental Research Development Program (SERDP) research proposal to pilot similar design retrofits that would add wildlife habitat/water quality elements to shorelines dominated by hardened structures in the Chesapeake Bay.

For more information on this project, visit the Living Seawall Pilot page at https://sfport.com/wrp/living-seawall.

DoD Chesapeake Bay Program Updates

- The DoD CBP requested high-quality photographs of outreach and stewardship events, stormwater BMPs, land conservation activities, habitat restoration, and other environmental projects for consideration in the FY2022 CBP Annual Progress Report. Photos were requested by February 13 but are accepted throughout the year.
- Kevin Du Bois asked attendees to send digital links or copies of their INRMPs via email or a DoD SAFE drop. Alternatively, they can provide the point of contact for this matter at their installation.
- The DoD CBP requested success stories for the Spring 2023 Journal by February 13.
- The Chesapeake Stormwater Network was accepting applications for the 2023 Best Urban BMP in the Bay Awards (BUBBAs) until February 24.
- The Commonwealth of Virginia has proposed for a revised boundary for the Sentinel Landscape in Virginia. Updates and more information on the new boundary will be provided in the future.
- The DoD CBP has been asked to develop climate metrics that report on current and ongoing efforts to address the impacts of climate on BMP effectiveness. For those interested in the results of this effort, contact Kevin Du Bois.
- The next CBAT meeting is scheduled for April 27, 2023.

DoD/DoN Chesapeake Bay Program Office
1510 Gilbert Street
Building N-26, Room 3300
Norfolk, VA 23511

Check it Out

Risks, Resilience, and Readiness of Military Lands Facing Coastal Flooding, SERDP-ESTCP Webinar, May 4, 2023, 12:00 pm, EDT. Discover more about the SERDP and Environmental Security Technology Certification Program (ESTCP) presentation by registering at: https://www.zoomgov.com/webinar/register/WN_uUaBNWCQ0eXZ3QJ2g

2023 REPI Report to Congress, REPI Webinar, March 15, 2023, 1:30 to 2:30 pm, EDT. A recording of the presentation, which reviewed REPI's accomplishments through Fiscal Year 2022 and project examples in the 2023 Report to Congress, can be found at: https://www.repi.mil/Resources/Webinars/ModuleID/84948/ItemID/4674/mctl/EventDetails/: https://bah16f18.adobeconnect.com/rm7ft8rgav7w/

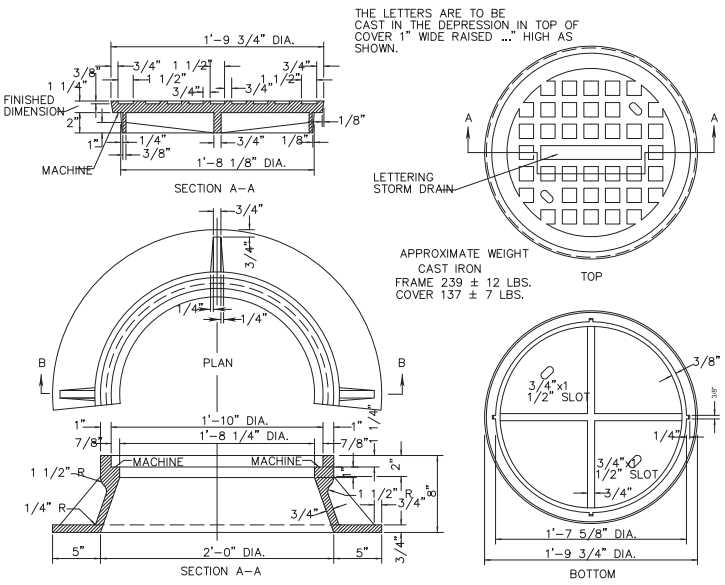
Estimating Stormwater Infiltration and Canopy Interception for Street Tree Pits, published January 23, 2023. This article by researchers at The Citadel compares the amount of stormwater intercepted by leaves and branches of urban tree pits in New York City and the stormwater infiltrated by the tree pits to assess how they reduce stormwater runoff: https://www.mdpi.com/1999-4907/14/2/216

FY2022 DoD CBP Annual Progress Report. Development of this year's Annual Progress Report has started, and the completed FY22 DoD CBP Annual Progress Report will be released in Spring 2023!

CBAT Quarterly Conference Call and Meeting. April 27, 2023, 10:00 am to 12:00 pm. EDT. This meeting will include a review of the 2022 Chesapeake Bay Commanders' Conference After Action Report. Contact Kevin Du Bois or Angela Jones to receive a meeting invitation with a web link.
MS Teams Conference Call Phone Number: (888) 404-2493
Phone Conference ID: 851 068 092#

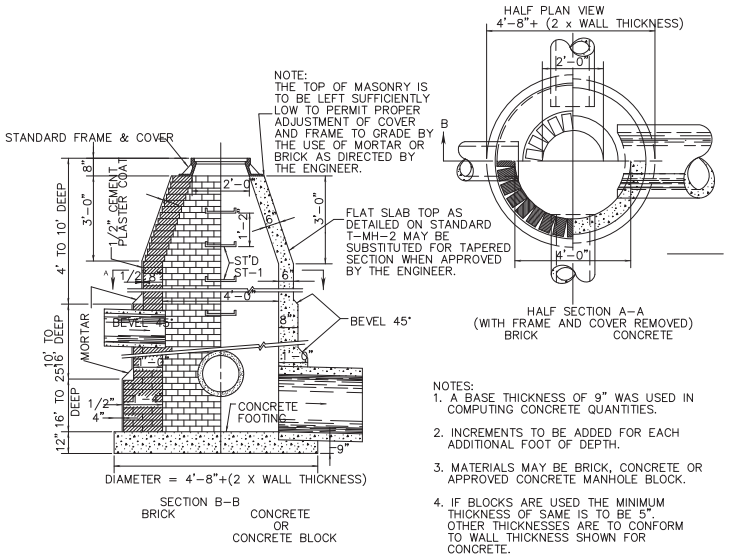
MDE/DoD/EPA Partnership Meeting. April 24, 2023, 1:00 to 3:00 pm. EDT. Contact Kevin Du Bois or Angela Jones to receive a meeting invitation with a web link.
MS Teams Conference Call Phone Number: (888) 404-2493
Phone Conference ID: 183 847 370#

This newsletter is produced by Brown and Caldwell under NAVFAC Atlantic A-E Contract N62470-14-D-9022 for Support of Safe Drinking Water Act and Clean Water Act Environmental Compliance Program. For more information or to be added to the email distribution list, please contact the DoD Chesapeake Bay Program: http://www.denix.osd.mil/chesapeake/home.



STANDARD MANHOLE FRAME & COVER

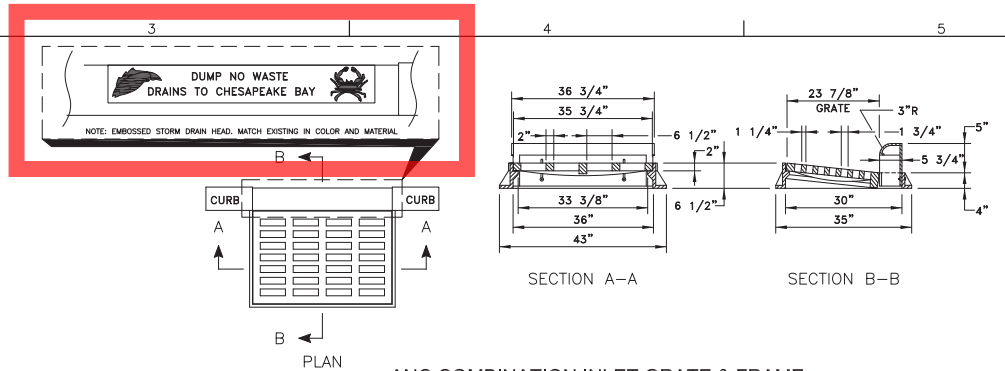
NOT TO SCALE



NOTES:
1. A BASE THICKNESS OF 9" WAS USED IN COMPUTING CONCRETE QUANTITIES.
2. INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH.
3. MATERIALS MAY BE BRICK, CONCRETE OR APPROVED CONCRETE MANHOLE BLOCK.
4. IF BLOCKS ARE USED THE MINIMUM THICKNESS OF SAME IS TO BE 5". OTHER THICKNESSES ARE TO CONFORM TO WALL THICKNESS SHOWN FOR CONCRETE.
5. ALL CONCRETE TO BE CLASS A3.

MANHOLE FOR 12"- 48" PIPE CULVERTS

NOT TO SCALE



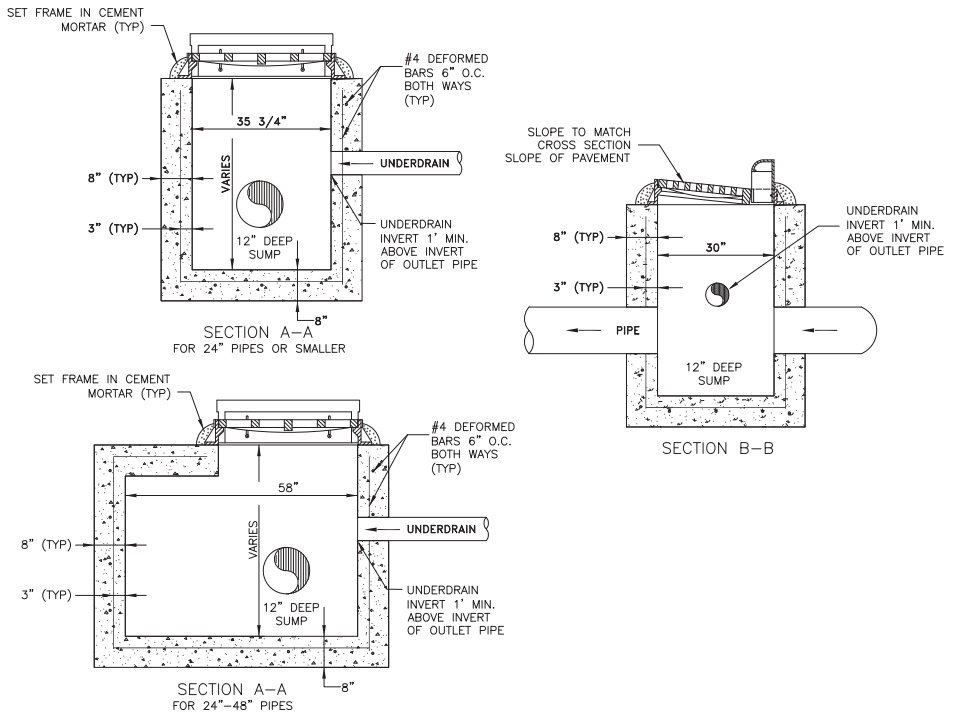
ANC COMBINATION INLET GRATE & FRAME

NOT TO SCALE

NOTES:

1. ALL NEW COMBINATION INLETS SHALL BE ENVIRONMENTALLY FRIENDLY WITH EMBOSSED MESSAGES AND IMAGE OF FISH (EMBOSSED) UPON CASTING. MESSAGES SHALL READ "DUMP NO WASTE" AND "DRAINS TO WATERWAYS". CASTINGS FOR COMBINATION INLETS SHALL BE SIMILAR TO EAST JORDAN FOUNDRY PRODUCT NO. 00703041C12, RATED FOR HEAVY DUTY TRAFFIC AND CONFORMS TO ASTM A48 CERTIFICATION. MATERIALS FOR FRAME, GRATE AND HOOD SHALL BE PAINTED BLACK. CONTRACTOR MAY SUBMIT SIMILAR ALTERNATE (WITH EMBOSSED INFO ON CASTING) COMBINATION GRATE AND FRAME FOR EVALUATION FOR USE ON THIS PROJECT.

2. JOINTS (EXPANSION AND CONTRACTION) IN CONCRETE CURBS, GUTTERS, ETC. SHALL BE SEALED WITH SEALANT PER SPECIFICATIONS.



ANC COMBINATION INLET

NOT TO SCALE

US Army Corps of Engineers
Norfolk District

NO.	DESCRIPTION	BY	APP.

DESIGNED: DBR
DRAWN: DBR
CHECKED: GAP
QUALITY: DBR
DATE: 22-JAN-2020
SCALE: AS SHOWN
PROJECT NO.
NORFOLK DISTRICT FILE NO.
DRAWING NO.
SPECIFICATION NO.
Last worked on:
File name:
Plot scale: 1:1

NORFOLK DISTRICT
CORPS OF ENGINEERS
NORFOLK, VIRGINIA

RTA SUBMITTAL
JANUARY 22, 2020

McPHERSON AREA ROAD REPAIRS
ARLINGTON NATIONAL CEMETERY
ARLINGTON, VA

STORM DRAIN DETAILS

SHEET REFERENCE NUMBER
C-504
SHEET 61 OF 78

Examples of social media posts from ANC's official Facebook page

Arlington National Cemetery
March 13 ·

Spring is just around the corner, which means it is the perfect time to visit the beautiful flowers and trees blooming at Arlington National Cemetery

Join our horticulture team for a tour at the dates below! #ExploreANC

Learn more about the Horticulture Tours here:
https://arlingtoncemetery.mil/Visit/Events-and-Ceremonies#/

Learn more about our horticulture program here:
https://arlingtoncemetery.mil/.../Memorial.../Welcome

425 12 67

Arlington National Cemetery
April 20 ·

Saturday is #EarthDay! Join us in celebrating our planet and learn about the plants that sustain our local ecosystem.

Learn more here: https://www.arlingtoncemetery.mil/.../Spring-Horticulture...

#ExploreANC

290 15 19

Examples of social media posts from ANC's official Facebook page

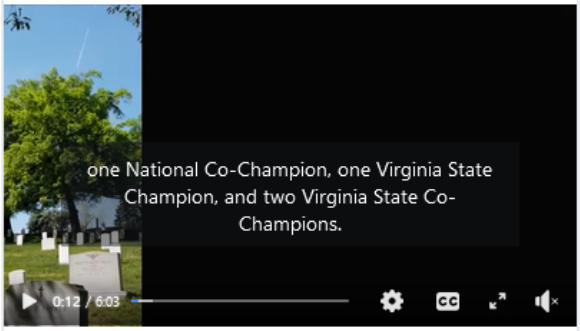
Arlington National Cemetery
April 22 ·

Arlington National Cemetery's Memorial Arboretum is home to four Champion Trees: one National Co-Champion, one Virginia State Champion, and two Virginia State Co-Champions. These trees represent the largest of their species in their state or in the nation and are a part of the more than 9,000 trees in the cemetery.

ANC is a Level 3 Accredited Arboretum, one of just 45 in the world. To achieve this level of accreditation, an arboretum must have a minimum of 500 species of tree or woody plants as well as a dedicate curator, educational outreach, and an active agenda related to tree science, strategic planting, and direct research and data sharing.

We welcome you to visit these hallowed grounds to explore its rich history and diverse plant collection. To learn more about our magnificent plant collection or to take a walking tour of our beautiful arboretum, visit our education materials at https://education.arlingtoncemetery.mil/.../Memorial...

#EarthDay



273 8 41

Arlington National Cemetery
June 8 ·

Each year, Arlington National Cemetery participates in the U.S. Department of Defense's June Clean the Bay event, with thousands of other Virginians that descend on the rivers, streams, beaches, and inland parks of the Chesapeake Bay watershed to remove harmful litter and debris. Clean the Bay Day has been a staple for Virginia's Chesapeake Bay community since its inception over three decades ago. This tradition is an annual opportunity for individuals, families, military installations, businesses, clubs, and civic and church groups to give back to their local waterways.

Elizabeth Fraser

283 21 10

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Public Involvement and Participation

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Clean the Bay Event at Arlington National Cemetery [Image 15 of 15]

ARLINGTON, VA, UNITED STATES
06.06.2023
Photo by Elizabeth Fraser
Arlington National Cemetery

Subscribe 21

Army National Military Cemeteries employees participate in the U.S. Department of Defense's June Clean the Bay event at Arlington National Cemetery, Arlington, Va., June 6, 2023. Clean the Bay Day has been a staple for Virginia's Chesapeake Bay community since its inception over three decades ago. This tradition is an annual opportunity for individuals, families, military installations, businesses, clubs, and civic and church groups to give back to their local waterways, including the Chesapeake Bay watershed. (U.S. Army photo by Elizabeth Fraser / Arlington National Cemetery / released)

https://www.dvidshub.net/image/7840890/clean-bay-event-arlington-national-cemetery

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Illicit Discharge Detection and Elimination

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Summary of 2023 IDS Results						
ID Number	**Date**	**Time**	**Flow?**	**Chlorine Result***	**Suspected Illicit Discharge?**	**Notes**
MS4 Outfall						
OF8-SEC74	10/7/22	11:50	Yes	None	No	Water was clear, no odor.
Interconnections to Adjacent MS4s						
IN1A-SEC52	10/7/22	12:53	Yes	None	No	Water was clear, no odor.
IN1B-SEC52	10/7/22	12:55	Yes	None	No	Water was clear, no odor. Concrete cracked below outfall (not a new condition).
IN6-PG North	10/7/22	13:10	No	-	-	Small amount of standing water, no flow.
IN7-PG South	10/7/22	13:05	No	-	-	Small amount of standing water, no flow.
IN9-SEC69	10/7/22	12:10	No	-	-	No flow.
IN10-B123	10/7/22	12:20	Yes	None	No	Water was clear, no odor.
IN11-SEC8	10/7/22	12:30	No	-	-	No flow.
IN12-SEC29	10/7/22	12:40	No	-	-	Minor erosion on slope above outfall from overland flow.

*The MDL for the LaMotte SMART3 Colorimeter Chlorine DPD tablet test is 0.03 ppm. A result less than the MDL indicates chlorine could not be reliably detected in the sample.

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Construction Site Stormwater Runoff Control

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ARLINGTON NATIONAL CEMETERY
CONSTRUCTION GENERAL PERMITS
1 JULY 2022 - 30 JUNE 2023
VAR040139

PERMIT	ISSUE DATE	CONTRACTOR	PROJECT
VAR10Q269	11/22/2021	Maverick Construction	Ord & Weitzel Gate Project
VAR10Q441	1/12/2022	Kokosing	Southern Expansion FHWA
VAR10O442	8/18/2020	Ocean Construction Services Inc	McPherson Drive Road Project

ARLINGTON NATIONAL CEMETERY
INSPECTIONS
1 JULY 2022 - 30 JUNE 2023
VAR040139

DATE	PERMIT	PROJECT	Inspector	#
7/1/2022 - 6/23/2023	VAR10Q441	DAR SE	KCC - Brandon Davis #20542	66
7/1/2022 - 6/23/2023	VAR10Q441	DAR SE / DEQ	DEQ - Michael Weitekamp	7
7/14/2022	VAR10Q441	DAR SE / ANC	ANC - Stacey Rosenquist #6164	1
7/1/2022 -10/31/2022	VAR10Q269	O & W / Maverick	Brad Gribble #	33
9/16/2022 - 6/30/2023	VAR10O442	McPherson / AllenMyers	Brandon Liberko #23904	81
			Kira Moore #18451	
7/29/2022 - 6/30/2023	VAR10O442	McPherson / ANC	ANC - Steve Crawford #22430	4
			ANC - Francis Han #	2
			ANC - Stacey Rosenquist #6164	7

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

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Arlington National Cemetery Post-Construction Inspection Checklist			UNDERGROUND CHAMBER/INFILTRATION CHAMBER	
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees, sprinkling			Time since last rainfall: 72+	
BMP INFORMATION				
BMP Installation Date: 2020			Type: ☐ Pre-Treatment ■ Storage ☐ Other	
BMP #: INF-1	Location: Section 52		As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access cover missing, cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 15% of diameter or interior depth of vault	☐ Yes ■ No			
Standing water inside chamber for more than 24 hours after storm	☐ Yes ■ No			
Scum line present	☐ Yes ■ No			
Chamber cracked (cracks wider than ½ inch), collapsed, or bent out of shape	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

Drain covers are not secure

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: MBR-1	Location: Gifford Shelter North	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: MBR-2	Location: Gifford Shelter South	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	■ Yes ☐ No ☐ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery Post-Construction Inspection Checklist			PERMEABLE/POROUS PAVEMENT
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2012		Underdrain Present: ☐ Yes ■ No	
BMP #: PP-1	Location: Sidewalk along Eisenhower Dr	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Dry-weather vacuum sweeping	Annually	■ Yes ☐ No

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Deterioration (e.g., sinking, spalling, cracking, broken pavers)	☐ Yes ■ No			
Erosion and/or bare or exposed soil in grid paver areas	☐ Yes ■ No			
Presence of loose material, sediment deposits, or ponding	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Vegetation encroachment	☐ Yes ■ No			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No			
Inlets/Outlets				
Erosion	☐ Yes ■ No ☐ N/A			
Clogged or obstructed	☐ Yes ■ No ☐ N/A			
Observation Wells				
Caps present	☐ Yes ■ No ☐ N/A			
Standing water in well (3 days after storm event >½ inch)	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery Post-Construction Inspection Checklist			PERMEABLE/POROUS PAVEMENT
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2014		Underdrain Present: ☐ Yes ■ No	
BMP #: PP-2	Location: Sidewalk along Megis Drive	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
Dry-weather vacuum sweeping	Annually	■ Yes ☐ No

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Surface				
Deterioration (e.g., sinking, spalling, cracking, broken pavers)	☐ Yes ■ No			
Erosion and/or bare or exposed soil in grid paver areas	☐ Yes ■ No			
Presence of loose material, sediment deposits, or ponding	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Vegetation encroachment	☐ Yes ■ No			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No			
Inlets/Outlets				
Erosion	☐ Yes ■ No ☐ N/A			
Clogged or obstructed	☐ Yes ■ No ☐ N/A			
Observation Wells				
Caps present	☐ Yes ■ No ☐ N/A			
Standing water in well (3 days after storm event >½ inch)	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING

Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery Post-Construction Inspection Checklist			PERMEABLE/POROUS PAVEMENT
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ☐ Yes ■ No	
BMP #: PP-3	Location: Millenium	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Dry-weather vacuum sweeping	Annually	■ Yes ☐ No

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Deterioration (e.g., sinking, spalling, cracking, broken pavers)	☐ Yes ■ No			
Erosion and/or bare or exposed soil in grid paver areas	☐ Yes ■ No			
Presence of loose material, sediment deposits, or ponding	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Vegetation encroachment	☐ Yes ■ No			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No			
Inlets/Outlets				
Erosion	☐ Yes ■ No ☐ N/A			
Clogged or obstructed	☐ Yes ■ No ☐ N/A			
Observation Wells				
Caps present	☐ Yes ■ No ☐ N/A			
Standing water in well (3 days after storm event >½ inch)	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery Post-Construction Inspection Checklist			UNDERGROUND CHAMBER/INFILTRATION CHAMBER
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, humid, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 1996		Type: ■ Pre-Treatment ☐ Storage ☐ Other	
BMP #: PT-UTD	Location: Bldg 123	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access cover missing, cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 15% of diameter or interior depth of vault	☐ Yes ■ No			
Standing water inside chamber for more than 24 hours after storm	☐ Yes ■ No			
Scum line present	☐ Yes ■ No			
Chamber cracked (cracks wider than ½ inch), collapsed, or bent out of shape	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 75		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2012		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-1	Location: Bldg 123	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	■ Yes ☐ No ☐ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ☐ No ■ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 75		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2012		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-2	Location: Bldg 123	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	■ Yes ☐ No ☐ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, humid, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2012		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-3	Location: Bldg 123	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	■ Yes ☐ No ☐ Not due

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ☐ No ■ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	■ Yes ☐ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

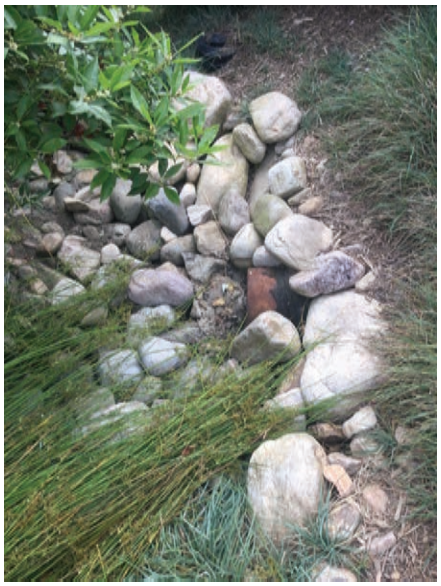
Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-4	Location: Lewis Shelter	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**



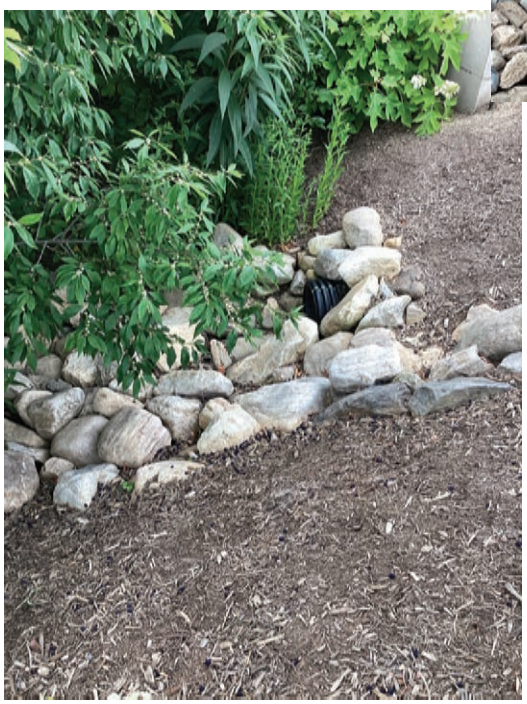
Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/22
Weather/site conditions: Cloudy, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-5	Location: Columbarium 12	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A		Built on an angle, present	
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**



Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-6	Location: Columbarium 13	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3" layer • Prune trees and shrubs	Annually	☐ Yes ■ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No		Flags used to show where new plants are growing	
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	■ Yes ☐ No	ANC	Low in some areas	

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A		Observed 4	
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-7	Location: Admin South Parking Lot	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3" layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments: Clean out clean. Outlet drain dry.				
ANNUAL REPORTING				
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)				**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-8	Location: Admin South Parking Lot	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A		Clean out clean	
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ☐ Yes ■ No	
BMP #: RG-9	Location: Admin North Parking Lot	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ■ No ☐ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	■ Yes ☐ No	ANC	More mulch needed	

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A		Cleanouts present, couldn't open caps. No concerns.	
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments: ANC added rocks to inlets to minimize erosion				
ANNUAL REPORTING				
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)				**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: RG-10	Location: East Employee Parking Lot	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3" layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	☐ Yes ■ No ☐ Not due

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	■ Yes ☐ No	ANC	Mulch needed throughout center	

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**OTHER BMPS**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2016		Type: Stream Restoration	
BMP #: SR	Location: Millennium Stream	As-Built Plans available: ☐ Yes ☒ No ☐ N/A	
OBSERVATIONS AND RECOMMENDATIONS			
Observations: No issues			
Recommendations:			
ANNUAL REPORTING			
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)			☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**OTHER BMPS**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Rainy, 70		Time since last rainfall: 72 +	
BMP INFORMATION			
BMP Installation Date: 2013		Type: Street Sweeping	
BMP #: SS	Location: ANC roads	As-Built Plans available: ☐ Yes ☐ No ■ N/A	
OBSERVATIONS AND RECOMMENDATIONS			
Observations: Street sweeping overall effective throughout site. Some sediment present near contractor yard.			
Recommendations:			
ANNUAL REPORTING			
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)			☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, sprinkling, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2002		Model: ☐ 900 ☐ 1200 ■ 1800 ☐ 2400	
BMP #: STC-1	Location: Columbarium 7	As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 — 6 STC 1200 — 7 STC 1800 — 12 STC 2400 — 12 FD-6 — 18 DD 8-ft — 30	☐ Yes ■ No		Approximately ten inches of sediment, may need maintenance soon	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No		No oil sheen	
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, sprinkling, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2002		Model: ☐ 900 ☐ 1200 ■ 1800 ☐ 2400	
BMP #: STC-2	Location: Columbarium 8	As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 / 6 STC 1200 / 7 STC 1800 / 12 STC 2400 / 12 FD-6 / 18 DD 8-ft / 30	☐ Yes ■ No		Approximately 8 inches of sediment, may need maintenance soon	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No		No oil sheen	
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, sprinkling, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2013		Model: ■ 900 ☐ 1200 ☐ 1800 ☐ 2400	
BMP #: STC-3	Location: Columbarium 9 N	As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
None	NA	NA

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model #* / *Depth (in.)*: STC 900: 6; STC 1200: 7; STC 1800: 12; STC 2400: 12; FD-6: 18; DD 8-ft: 30	☐ Yes ■ No		Approximately one inch of sediment	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No		No sheen	
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING

Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, sprinkling, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2013		Model: ■ 900 ☐ 1200 ☐ 1800 ☐ 2400	
BMP #: STC-4	Location: Columbarium 9 S	As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
None	NA	NA

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No		Grass covered around the edge	
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900: 6 STC 1200: 7 STC 1800: 12 STC 2400: 12 FD-6: 18 DD 8-ft: 30	☐ Yes ■ No		No sediment, no sheen on water	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING

Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**


Stormceptor

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees, sprinkling		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2006		Model: ☐ 900 ☐ 1200 ☐ 1800 ■ 2400	
BMP #: STC-5	Location: Section 76	As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 / 6 STC 1200 / 7 STC 1800 / 12 STC 2400 / 12 FD-6 / 18 DD 8-ft / 30	☐ Yes ■ No		Unknown sediment depth, manhole depth is too great	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	■ **Yes** ☐ **No**

Arlington National Cemetery Post-Construction Inspection Checklist				HYDRODYNAMIC SEPARATOR
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees			Time since last rainfall: 72+	
BMP INFORMATION				
BMP Installation Date: 2006			Model: ☐ 900 ☐ 1200 ■ 1800 ☐ 2400	
BMP #: STC-6	Location: Section 73		As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model #* / *Depth (in.)*: STC 900 – 6; STC 1200 – 7; STC 1800 – 12; STC 2400 – 12; FD-6 – 18; DD 8-ft – 30	■ Yes ☐ No	Professional	Approximately twelve inches of sediment, will need clean out	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

Sprinklers were on when we got here, there is water flowing in the manhole structure

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	■ **Yes** ☐ **No**


OUT

Arlington National Cemetery Post-Construction Inspection Checklist			HYDRODYNAMIC SEPARATOR
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 09/12/2022	Date of last inspection: 6/28/2022
Weather/site conditions: Unknown		Time since last rainfall: Unknown	
BMP INFORMATION			
BMP Installation Date: 1998		Model: ☐ 900 ■ 1200 ☐ 1800 ☐ 2400	
BMP #: STC-7	Location: York Dr/Marshall Dr	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES

Activity	Frequency	Completed
None	NA	NA

FIELD INSPECTION CHECKLIST

Criteria	Maintenance Required?	ANC or Professional fix	Comments	Date Repaired
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 — 6 STC 1200 — 7 STC 1800 — 12 STC 2400 — 12 FD-6 — 18 DD 8-ft — 30	☐ Yes ■ No			
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

All sediment removed 12 September 2022. Photos are following cleaning, no structural damage observed.

ANNUAL REPORTING

Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, humid, 80 degrees		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Model: Hydro Int'l First Defense FD-6	
BMP #: STC-8	Location: Chaffee Parking Lot	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 / 6 STC 1200 / 7 STC 1800 / 12 STC 2400 / 12 FD-6 / 18 DD 8-ft / 30	☐ Yes ■ No		One inch of water, no sediment	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**


NO STEP
Hydro
International

Arlington National Cemetery Post-Construction Inspection Checklist			**HYDRODYNAMIC SEPARATOR**
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees, humid		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2020		Model: Hydro Int'l Downstream Defender 8-ft	
BMP #: STC-9	Location: Section 52	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access portals cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Levels				
Sediment depth of the following values (sampling procedures provided below): *Model # / Depth (in.)* STC 900 / 6 STC 1200 / 7 STC 1800 / 12 STC 2400 / 12 FD-6 / 18 DD 8-ft / 30	☐ Yes ■ No		Approximately 24 inches of sediment, will need to be cleaned out soon	
Oil Levels				
Oil greater than 1" (sampling procedures provided below):	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist			UNDERGROUND CHAMBER/INFILTRATION CHAMBER	
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, humid, 80 degrees			Time since last rainfall: 72+	
BMP INFORMATION				
BMP Installation Date: 2018			Type: ☐ Pre-Treatment ■ Storage ☐ Other	
BMP #: STCP-1	Location: Chaffee Parking Lot		As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access cover missing, cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 15% of diameter or interior depth of vault	☐ Yes ■ No			
Standing water inside chamber for more than 24 hours after storm	☐ Yes ■ No		One inch of standing water, no sediment	
Scum line present	☐ Yes ■ No			
Chamber cracked (cracks wider than ½ inch), collapsed, or bent out of shape	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery Post-Construction Inspection Checklist				STORMFILTER
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degrees			Time since last rainfall: 72+	
BMP INFORMATION				
BMP Installation Date: 2018			Type: ■ Vault ☐ Manhole ☐ Linear ☐ Other	
BMP #: STF-1	Location: East Employee Parking Lot		As-Built Plans available: ☐ Yes ■ No	
ROUTINE MAINTENANCE ACTIVITIES				
Activity			**Frequency**	**Completed**
None			NA	NA
FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access grates cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level and Cartridges				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 4 inches	☐ Yes ■ No		Leaf litter, may need cleaning out next inspection	
Sediment depth on top of cartridges greater than 0.25 inches	☐ Yes ■ No			
Cartridges submerged with greater than 4 inches water for more than 24 hours after storm	☐ Yes ■ No			
Filter media plugged (no pore space) or in bypass condition during storm	☐ Yes ■ No			
Scum line present above top cap	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				
ANNUAL REPORTING				
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)				☐ **Yes** ■ **No**

Arlington National Cemetery Post-Construction Inspection Checklist				STORMFILTER
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Unknown			Time since last rainfall: Unknown	
BMP INFORMATION				
BMP Installation Date: 2016			Type: ■ Vault ☐ Manhole ☐ Linear ☐ Other	
BMP #: STF-2	Location: Bldg 129		As-Built Plans available: ■ Yes ☐ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access grates cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level and Cartridges				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 4 inches	☐ Yes ■ No			
Sediment depth on top of cartridges greater than 0.25 inches	☐ Yes ■ No			
Cartridges submerged with greater than 4 inches water for more than 24 hours after storm	☐ Yes ■ No			
Filter media plugged (no pore space) or in bypass condition during storm	☐ Yes ■ No			
Scum line present above top cap	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			

Additional Observations or Comments:

Inspection performed following clean out and filter replacement.

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 70		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ■ Yes ☐ No	
BMP #: URG-1	Location: Columbarium 10	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ☐ No ■ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 75		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ☐ Yes ■ No	
BMP #: URG-2	Location: Columbarium 11	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ☐ No ■ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ☐ Yes ■ No	
BMP #: URG-3	Location: Columbarium 12	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	■ Yes ☐ No ☐ Not due
Replace the mulch layer	Every 3 years	■ Yes ☐ No ☐ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ■ No ☐ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**

Arlington National Cemetery **Post-Construction Inspection Checklist**			**BIORETENTION/RAIN GARDEN** (with or without underdrain)
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)		Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, 80 degree		Time since last rainfall: 72+	
BMP INFORMATION			
BMP Installation Date: 2018		Underdrain Present: ☐ Yes ■ No	
BMP #: URG-4	Location: Columbarium 13	As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
Mowing grass filter strips and bioretention turf cover	At least 4 times a year	■ Yes ☐ No
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season	■ Yes ☐ No
• Spring visual inspection and cleanup • Supplement mulch to maintain a 3” layer • Prune trees and shrubs	Annually	■ Yes ☐ No
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years	☐ Yes ☐ No ■ Not due
Replace the mulch layer	Every 3 years	☐ Yes ☐ No ■ Not due

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Surface				
Vegetation • Vegetation species inconsistent with design specs • Less than 75-90% cover (mulch plus vegetation) • High grass • Dying or dead vegetation • Vegetation killed by salt or winter elements	☐ Yes ■ No			
Filter Media/Mulch Layer • Too low, too compacted, and/or clogged • Older than 3 years and/or in poor condition • Ponding • Chemicals, fertilizers, oil, grease, trash, debris, sediment, sand • Erosion, exposed soil • Topsoil in poor condition	☐ Yes ■ No			

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Pre-treatment • Trash, sediment, debris, oil, grease • Clogging, standing water • Odor, algae, floating vegetation • Dead vegetation or exposed soil	☐ Yes ■ No			
Outlet				
Erosion or sediment build-up	☐ Yes ■ No			
Grate or spillway condition	☐ Yes ■ No			
Proper Drainage, Underdrains and Observation Wells				
Does not dewater between storms or ponding for more than 48 hours after rain event	☐ Yes ■ No			
Clogged underdrains	☐ Yes ■ No			
Observation well caps present	☐ Yes ☐ No ■ N/A			
Inlets				
Sediment build-up, trash, debris, or erosion at curb cuts, pavement edges, and/or bypassing	☐ Yes ■ No			
Inflow hindered by vegetation	☐ Yes ■ No			
Drainage and Adjacent Upstream Areas				
Adequate vegetation	☐ Yes ■ No			
Trash, debris, bare soil, signs of scour, oil, grease, and/or erosion	☐ Yes ■ No			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**■ Yes ☐ No**

Arlington National Cemetery Post-Construction Inspection Checklist			UNDERGROUND CHAMBER/INFILTRATION CHAMBER	
Inspector Name, Title, Affiliation: Renee Lavinsky, Liz Shepherd (Bluestone)			Date: 6/12/2023	Date of last inspection: 6/28/2022
Weather/site conditions: Cloudy, humid, 80 degrees			Time since last rainfall: 72+	
BMP INFORMATION				
BMP Installation Date: 1996			Type: ☐ Pre-Treatment ■ Storage ☐ Other	
BMP #: UTD	Location: Bldg 123		As-Built Plans available: ☐ Yes ■ No	

ROUTINE MAINTENANCE ACTIVITIES		
Activity	**Frequency**	**Completed**
None	NA	NA

FIELD INSPECTION CHECKLIST				
Criteria	**Maintenance Required?**	**ANC or Professional fix**	**Comments**	**Date Repaired**
Inlet/Outlet/Access				
Pipe blockages	☐ Yes ■ No			
Pipe or joint breaks or cracks	☐ Yes ■ No			
Access cover missing, cracked, damaged, or unable to open	☐ Yes ■ No			
Sediment Level				
Sediment accumulation in forebay	☐ Yes ■ No ☐ N/A			
Sediment depth on vault floor greater than 15% of diameter or interior depth of vault	☐ Yes ■ No			
Standing water inside chamber for more than 24 hours after storm	☐ Yes ■ No			
Scum line present	☐ Yes ■ No			
Chamber cracked (cracks wider than ½ inch), collapsed, or bent out of shape	☐ Yes ■ No			
Upstream and Drainage Area				
Oil, fuel, or chemical spills	☐ Yes ■ No ☐ N/A			
Sediment on pavement	☐ Yes ■ No ☐ N/A			
Trash, debris, bare soil, and/or erosion	☐ Yes ■ No ☐ N/A			
Additional Observations or Comments:				

ANNUAL REPORTING	
Are significant maintenance activities required for the stormwater management facility to perform as designed? (does not activities such as grass mowing or trash collection)	**☐ Yes ■ No**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Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by ANC

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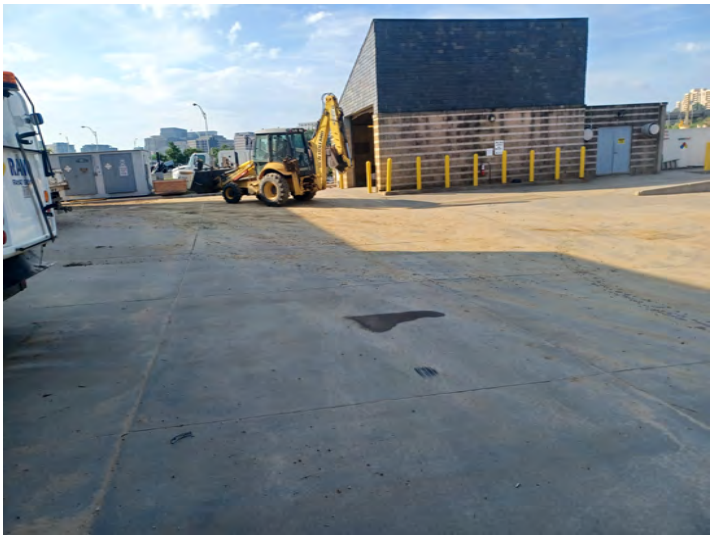
Arlington National Cemetery Comprehensive Site Compliance Evaluation	
Name: B123 Complex	
Date: 06/26/2023	**Reporting Period:** July1,2022 June 30,2023

Inspection Report	Results
Review of High-Priority Areas and SWPPP Availability	
Are there any new high-priority areas and/or activities that must be added to the SWPPP?	YES ☐ NO ☒
Any changes to activities such that an area is no longer classified as high-priority?	YES ☐ NO ☒
If YES, describe SWPPP modifications needed.	
SWPPP (hard-copy or electronic copy) available to employees at high-priority areas?	YES ☒ NO ☐
If NO, describe action required and expected date of completion.	
Are SWPPP updates required?	**YES ☐ NO ☒**
Site-Specific Source Controls Inspections	
Dates of inspections:	
Were all site-specific source control inspections completed?	YES ☒ NO ☐
Dates of inspections: 06/26/2023	
If NO, describe action required and expected date of completion.	
Were any corrective actions required?	YES ☐ NO ☒
If YES, were corrective actions completed?	YES ☐ NO ☒
If NO, describe action required and expected date of completion.	
Are all potential pollutants accurately described and included in the SWPPP?	YES ☒ NO ☐
If NO, describe.	
Are all source controls in place and effective for minimizing pollutants in stormwater?	YES ☒ NO ☐
If NO, describe. ANC Operations must close all doors when not actively removing or adding salt, sand and soil outside of the Storage Bays at B129 During rain events the soil from B129 enters the storm-drain system Via stormfilter (STF-2), or underground treatment device (UTD/PT-UTD) or both. Soil stored inside the bay appears to be spilling into the parking lot during transfer.	
SWPPP updates required?	**YES ☐ NO ☒**

Inspection Report	Results
Stormwater Management Facilities (Structural BMPs) Inspections	
Inspection Date(s): 06/26/2023	
Were any corrective actions required?	YES ☒ NO ☐
If YES, were corrective actions completed?	YES ☐ NO ☒
If NO, describe action required and expected date of completion. 06/30/2023 Operations to clean the parking area of all loose soil and maintain cleanliness standards.	
Are all stormwater management facilities in place and effective for minimizing pollutants in stormwater?	YES ☒ NO ☐
If NO, describe.	
SWPPP updates required?	**YES ☐ NO ☒**
Illicit Discharge Inspections	
Were any illicit discharges detected during the reporting period?	YES ☐ NO ☒
Was the source of the illicit discharge identified and eliminated?	YES ☐ NO ☒
If NO, describe.	
SWPPP updates required?	**YES ☐ NO ☒**
Spills and Leaks Reporting	
Did any reportable spills occur during the reporting period?	YES ☐ NO ☒
Were any corrective actions required?	YES ☐ NO ☒
If YES, were corrective actions completed?	YES ☐ NO ☐
If NO, describe action required and expected date of completion.	
SWPPP updates required?	**YES ☐ NO ☒**
SWPPP Compliance	
Is the SWPPP accurate and effective for the facility?	YES ☒ NO ☐
If NO, describe.	
Is the SWPPP compliant with the terms and conditions of the permit?	YES ☒ NO ☐
If NO, describe.	

Inspection Report	Results
Summary/Additional Comments	
Recommend improving the cleanliness of the area where indoor soil and salt with the street sweeper and the closer of the doors.	

Building 123 Complex



Building 123 Complex

Arlington National Cemetery Comprehensive Site Compliance Evaluation	
Name: Contractor Yard	
Date: June 26, 2023	**Reporting Period:** 1 July 2022 - 30 June 2023

Inspection Report	Results
Review of High-Priority Areas and SWPPP Availability	
Are there any new high-priority areas and/or activities that must be added to the SWPPP?	YES ☐ NO ☒
Any changes to activities such that an area is no longer classified as high-priority?	YES ☐ NO ☒
If YES, describe SWPPP modifications needed.	
SWPPP (hard-copy or electronic copy) available to employees at high-priority areas?	YES ☒ NO ☐
If NO, describe action required and expected date of completion.	
Are SWPPP updates required?	**YES ☐ NO ☒**
Site-Specific Source Controls Inspections	
Dates of inspections:	
Were all site-specific source control inspections completed?	YES ☒ NO ☐
Dates of inspections: June 26, 2023	
If NO, describe action required and expected date of completion.	
Were any corrective actions required?	YES ☒ NO ☐
If YES, were corrective actions completed?	YES ☐ NO ☒
If NO, describe action required and expected date of completion. See Below.	
Are all potential pollutants accurately described and included in the SWPPP?	YES ☒ NO ☐
If NO, describe.	
Are all source controls in place and effective for minimizing pollutants in stormwater?	YES ☐ NO ☒
If NO, describe. In accordance with the SWPP, topsoil and mulch is to be contained on three sides by jersey barriers and covered with tarp or plastic. Soil being stored in yard needs to be covered by a tarp to further prevent run off.	
SWPPP updates required?	**YES ☐ NO ☒**

Inspection Report	Results
Stormwater Management Facilities (Structural BMPs) Inspections	
Inspection Date(s):	
Were any corrective actions required?	YES ☒ NO ☐
If YES, were corrective actions completed?	YES ☐ NO ☒
The stone entrance needs to be refreshed.	
Are all stormwater management facilities in place and effective for minimizing pollutants in stormwater?	YES ☒ NO ☐
If NO, describe.	
SWPPP updates required?	**YES ☐ NO ☒**
Illicit Discharge Inspections	
Were any illicit discharged detected during the reporting period?	YES ☐ NO ☒
Was the source of the illicit discharge identified and eliminated?	YES ☐ NO ☒
If NO, describe.	
SWPPP updates required?	**YES ☐ NO ☒**
Spills and Leaks Reporting	
Did any reportable spills occur during the reporting period?	YES ☐ NO ☒
Were any corrective actions required?	YES ☐ NO ☒
If YES, were corrective actions completed?	YES ☐ NO ☐
If NO, describe action required and expected date of completion.	
SWPPP updates required?	**YES ☐ NO ☒**
SWPPP Compliance	
Is the SWPPP accurate and effective for the facility?	YES ☒ NO ☐
If NO, describe.	
Is the SWPPP compliant with the terms and conditions of the permit?	YES ☒ NO ☐
If NO, describe.	

Inspection Report	Results
Summary/Additional Comments	
Recommend ANC or contractors refresh stone entrance. Soil being stored in contractor yard needs to be covered by a tarp to help limit runoff. Contractors to store small gas powered equipment in containers. Contractors should continue to store equipment and soil properly.	

CONTRACTOR YARD

CONTRACTOR YARD

CONTRACTOR YARD

CONTRACTOR YARD

Arlington National Cemetery Comprehensive Site Compliance Evaluation	
Name: SPOILS YARD	
Date: 6/23/2023	**Reporting Period:** 1 July 2022 - 30 June 2023

Inspection Report	Results
Review of High-Priority Areas and SWPPP Availability	
Are there any new high-priority areas and/or activities that must be added to the SWPPP?	YES ☐ NO ☒
Any changes to activities such that an area is no longer classified as high-priority?	YES ☐ NO ☒
If YES, describe SWPPP modifications needed.	
SWPPP (hard-copy or electronic copy) available to employees at high-priority areas?	YES ☒ NO ☐
If NO, describe action required and expected date of completion.	
Are SWPPP updates required?	**YES** ☐ **NO** ☒
Site-Specific Source Controls Inspections	
Dates of inspections: 06/26/2023	
Were all site-specific source control inspections completed?	YES ☒ NO ☐
Dates of inspections: Q1: 06/23/2023 Q2: _____ Q3: _____ Q4: _____	
If NO, describe action required and expected date of completion.	
Were any corrective actions required?	YES ☒ NO ☐
If YES, were corrective actions completed?	YES ☒ NO ☐
If NO, describe action required and expected date of completion. The areas are the spoils yard and one of the access point wash racks leading into the yard. This must be cleared of dirt, sediment, and the apron to the entrance. The grate was full needed to be all cleaned out. The grate was cleaned following inspection.	
Are all potential pollutants accurately described and included in the SWPPP?	YES ☒ NO☐
If NO, describe.	
Are all source controls in place and effective for minimizing pollutants in stormwater?	YES ☒ NO ☐
If NO, describe.	
SWPPP updates required?	**YES** ☐ **NO** ☒

Inspection Report	Results
Stormwater Management Facilities (Structural BMPs) Inspections	
Inspection Date(s): 06/26/2023	
Were any corrective actions required?	YES ☒ NO ☐
If YES, were corrective actions completed?	YES ☒ NO ☐
If NO, describe action required and expected date of completion. The Spoils Yard does not have any structural BMPs as defined in the VSMP Regulation. The Spoils Yard has a stormwater retention basin. The basin and surrounding area have not achieved permanent stabilization. ANC has a contract in place to evaluate the pond and propose permanent engineering solutions.	
Are all stormwater management facilities in place and effective for minimizing pollutants in stormwater?	YES ☒ NO ☐
If NO, describe.	
SWPPP updates required?	**YES** ☐ **NO** ☒
Illicit Discharge Inspections	
Were any illicit discharged detected during the reporting period?	YES ☐ NO ☒
Was the source of the illicit discharge identified and eliminated?	YES ☐ NO ☒
If NO, describe.	
SWPPP updates required?	**YES** ☐ **NO** ☒
Spills and Leaks Reporting	
Did any reportable spills occur during the reporting period?	YES ☐ NO ☒
Were any corrective actions required?	YES ☐ NO ☒
If YES, were corrective actions completed?	YES ☐ NO ☐
If NO, describe action required and expected date of completion.	
SWPPP updates required?	**YES** ☐ **NO** ☒
SWPPP Compliance	
Is the SWPPP accurate and effective for the facility?	YES ☒ NO ☐
If NO, describe.	
Is the SWPPP compliant with the terms and conditions of the permit?	YES ☒ NO ☐
If NO, describe.	

Inspection Report	Results
Summary/Additional Comments	

The Spoils Yard has a stormwater retention basin. The basin does not have an overflow or underdrain. Stormwater runoff is managed within the Spoils Yard. Each access point (Marshall Drive and Halsey Drive) to the Spoils Yard has a washrack.

Stormwater retention basin requires permanent stabilization. Even though, ANC seeded the basin and the surrounding area in fall 2020, operations in the Spoils Yard requires ANC to grade (slope) and reseed the basin and the area surrounding the basin. ANC has a contract in place to evaluate and propose permanent engineered solutions.

Storm drain inlets along Halsey and Marshall Drives, adjacent to the Spoils Yard, discharge through STC7 to OF8-SEC74 and Boundary Channel. ANC cleans out most of its storm drain inlets at least annually and others, such as those adjacent to the spoils yard, they clean out several times a year.

Recommend Interment Operations develop a schedule for cleaning the wash racks and picking up trash.

Photos collected in September 2023