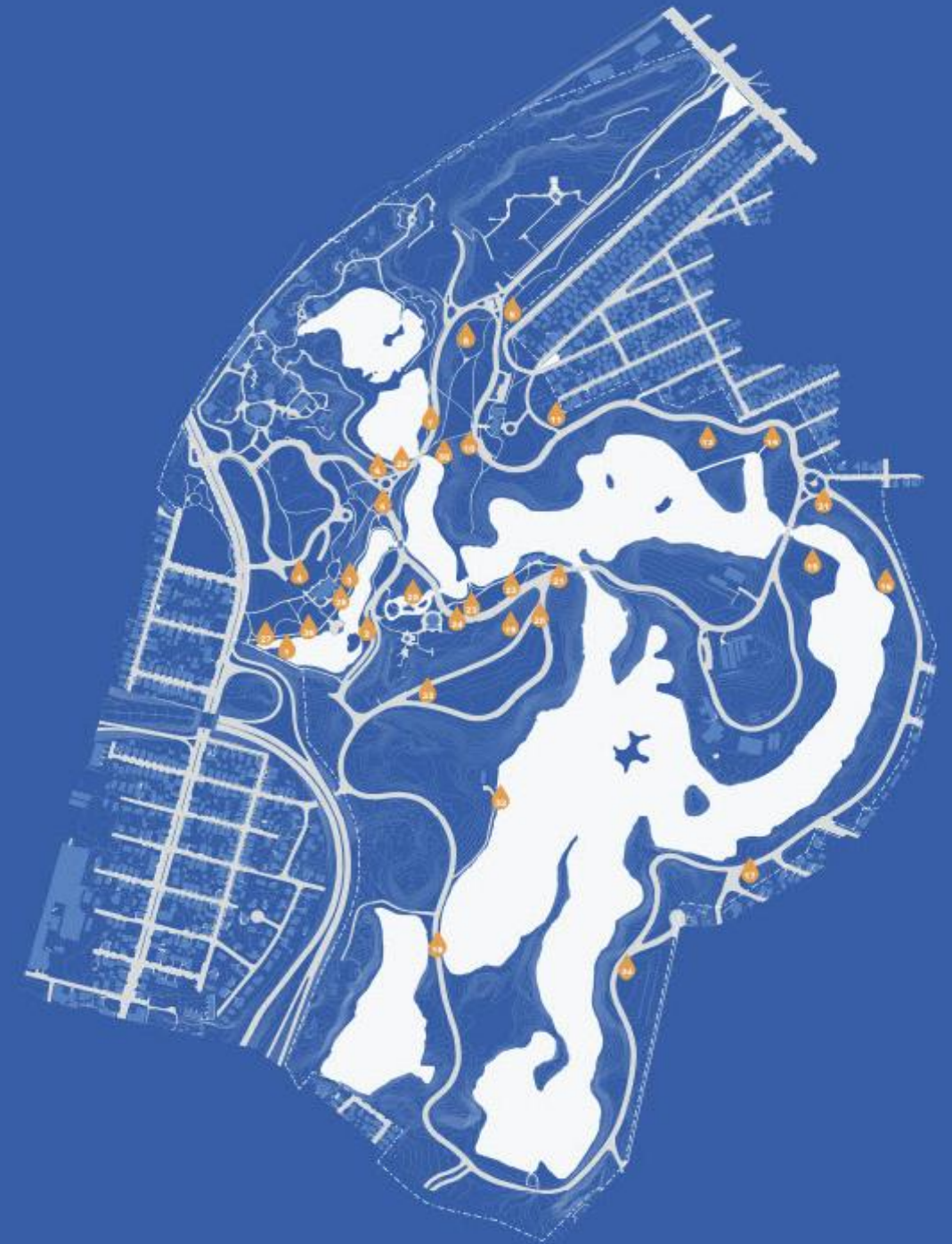




Providence Stormwater Innovation Center

TRAINING
MONITORING
PUBLIC OUTREACH



TRAINING FOR INDUSTRY PROFESSIONALS

MAINTENANCE – CONSTRUCTION - DESIGN

Place Based



Classroom



Virtual



Maximum Depth of Ponding

- 6 – 24 in.

Largely based on
vegetation
survival



Sharing Lessons Learned



OTHER TRAINING

Adult Job Training

BEFORE



DURING



AFTER



SELF GUIDED TRAINING

Green Infrastructure Maintenance Web App

Edit ×

Providence Stormwater Innovation Center



Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW

INLET

PRETREATMENT

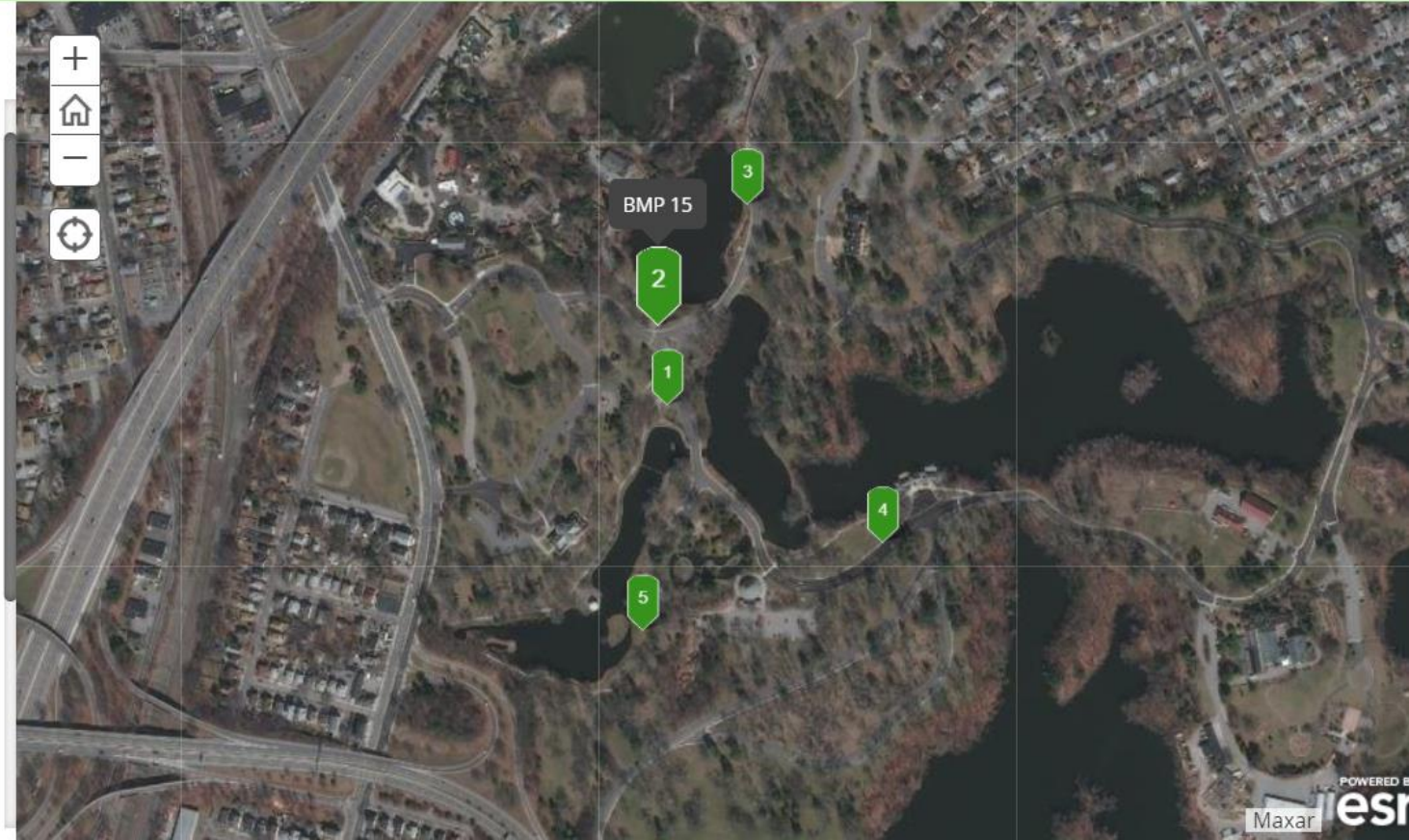
TREATMENT TYPE

OUTLET

VEGETATION

AS-BUILT PLANS

2 BMP 15



(scroll down)

[OVERVIEW VIDEO LINK](#)

[BMP PERFORMANCE VIDEO LINK](#)

INLET TYPE: Catch Basin and Piped Flow Entrance

PRETREATMENT TYPE: Paver Forebay

SELF GUIDED TRAINING

Green Infrastructure Maintenance Web App

Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW INLET PRETREATMENT TREATMENT TYPE OUTLET VEGETATION

2 BMP 15



(scroll down)

[OVERVIEW VIDEO LINK](#)

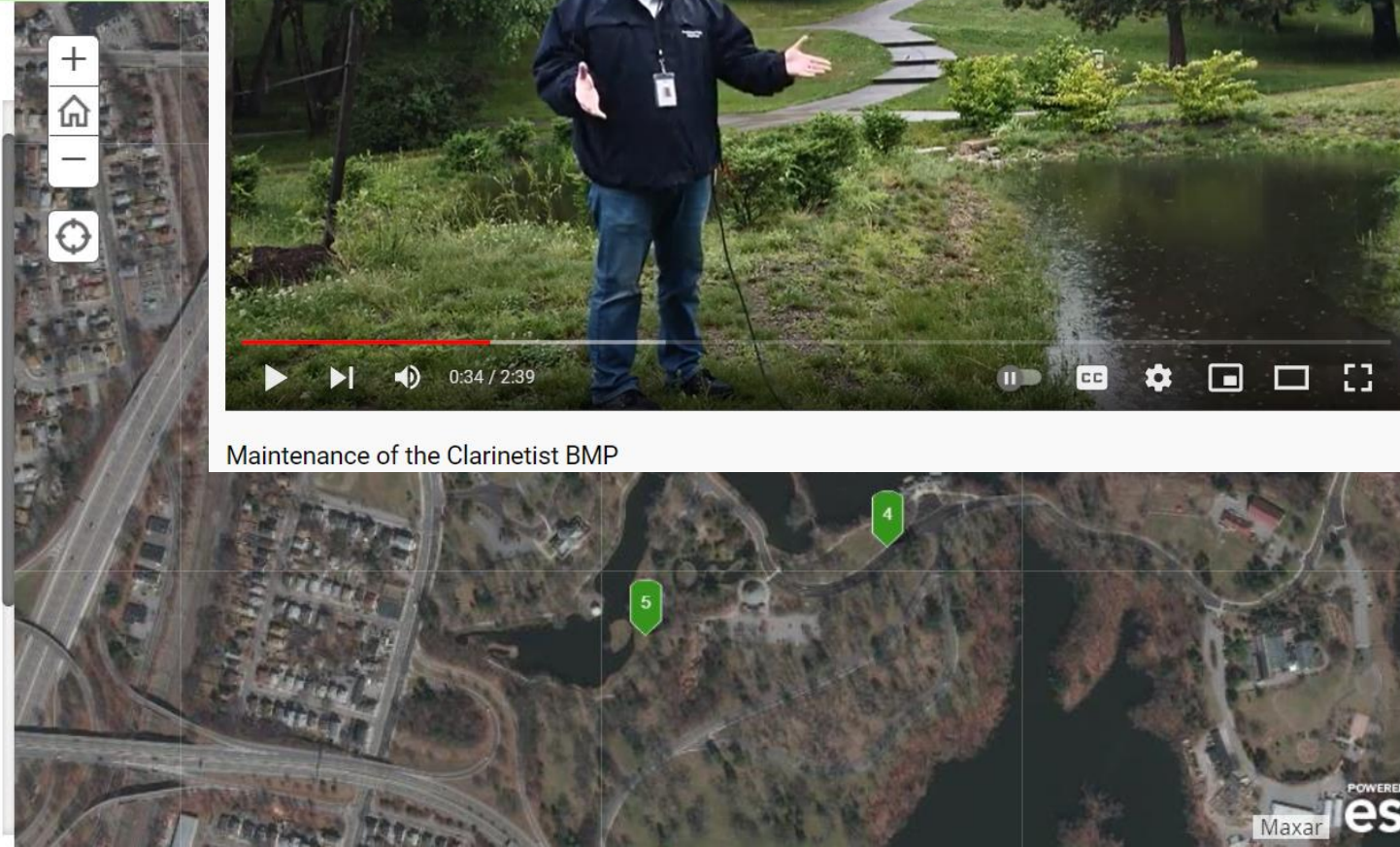
[BMP PERFORMANCE VIDEO LINK](#)

INLET TYPE: Catch Basin and Piped Flow Entrance

PRETREATMENT TYPE: Paver Forebay



Maintenance of the Clarinetist BMP



SELF GUIDED TRAINING

Green Infrastructure Maintenance Web App

Edit ×

Providence Stormwater Innovation Center



Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW

INLET

PRETREATMENT

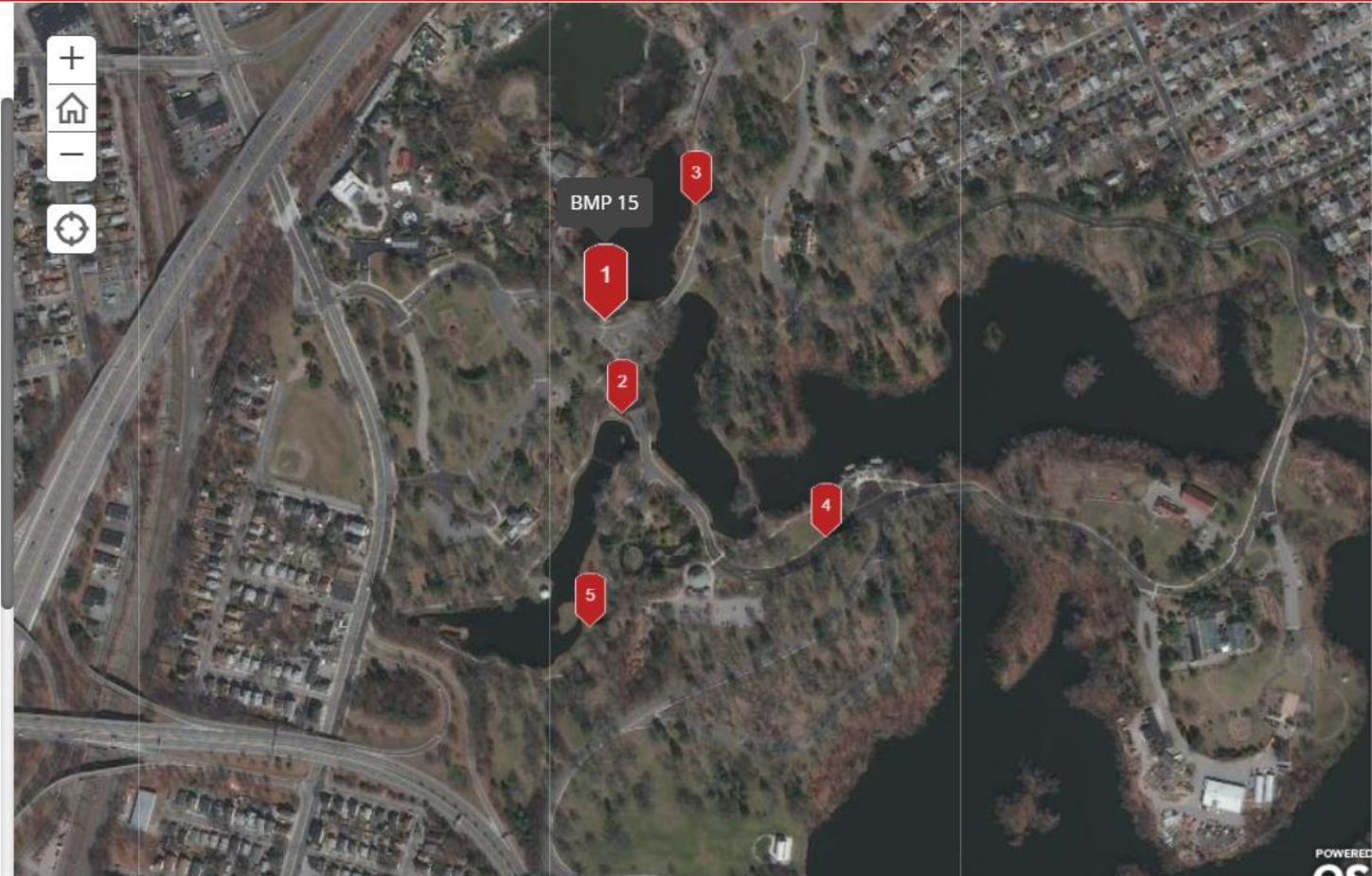
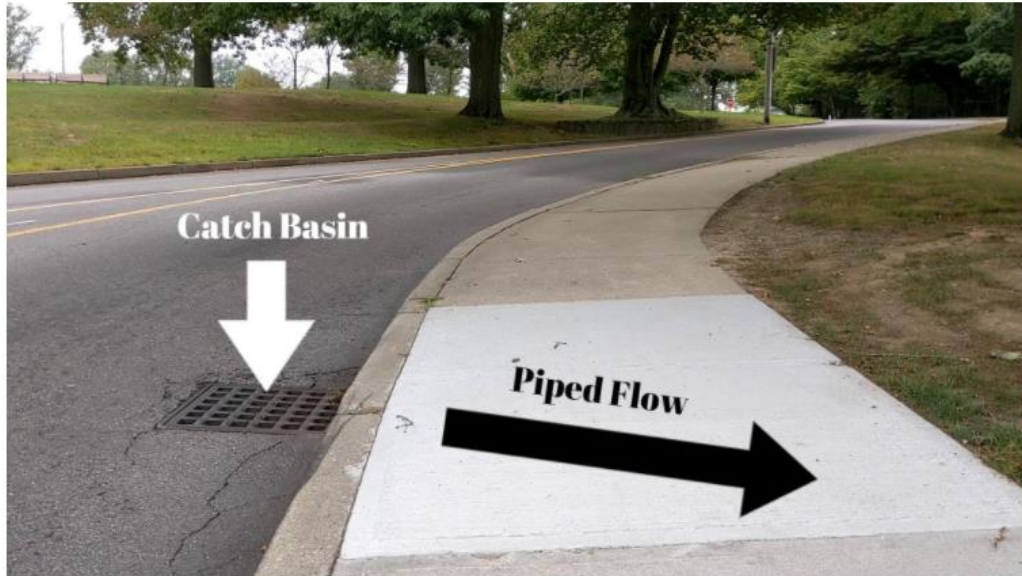
TREATMENT TYPE

OUTLET

VEGETATION

AS-BUILT PLANS

1 BMP 15



(scroll down)

Inlet controls manage runoff into a stormwater STU.

INLET TYPE: Catch Basin and Piped Flow Entrance

Inlet structures may be used to capture runoff, slow runoff velocities, settle solids and convey runoff to a downstream STU. A deep-sump catch basin is an example of an inlet structure.

SELF GUIDED TRAINING

Green Infrastructure Maintenance Web App

Edit × Providence Stormwater Innovation Center



Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW

INLET

PRETREATMENT

TREATMENT TYPE

OUTLET

VEGETATION

AS-BUILT PLANS

3 BMP 17/18



MAINTENANCE TASKS: Mowing, Weeding, Mulching, Trimming, Bagging Seed Heads

The main goal for most of the noxious/invasive weeds is to prevent flowering. Yanking or pulling up root systems often disturbs the soil bringing dormant seeds to surface to germinate or worse, allowing stems or roots to send out new shoots vegetatively. Many invasives are primarily distributed by seed. One plant can spread 2.7 million seeds in one year; hence focus on removing flowers before they seed up. They can also redistribute themselves by vegetative means to the tune of 30 new shoots for one rhizomatic stem.

SELF GUIDED TRAINING

Green Infrastructure Maintenance Web App

Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW

INLET

PRETREATMENT

TREATMENT TYPE

OUTLET

VEGETATION

AS-BUILT PLANS

3 BMP 17/18



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Green Infrastructure Maintenance Web App

Green Stormwater Infrastructure Maintenance Web App

BMP OVERVIEW

INLET

PRETREATMENT

TREATMENT TYPE

OUTLET

VEGETATION

AS-BUILT

3 BMP 17/18



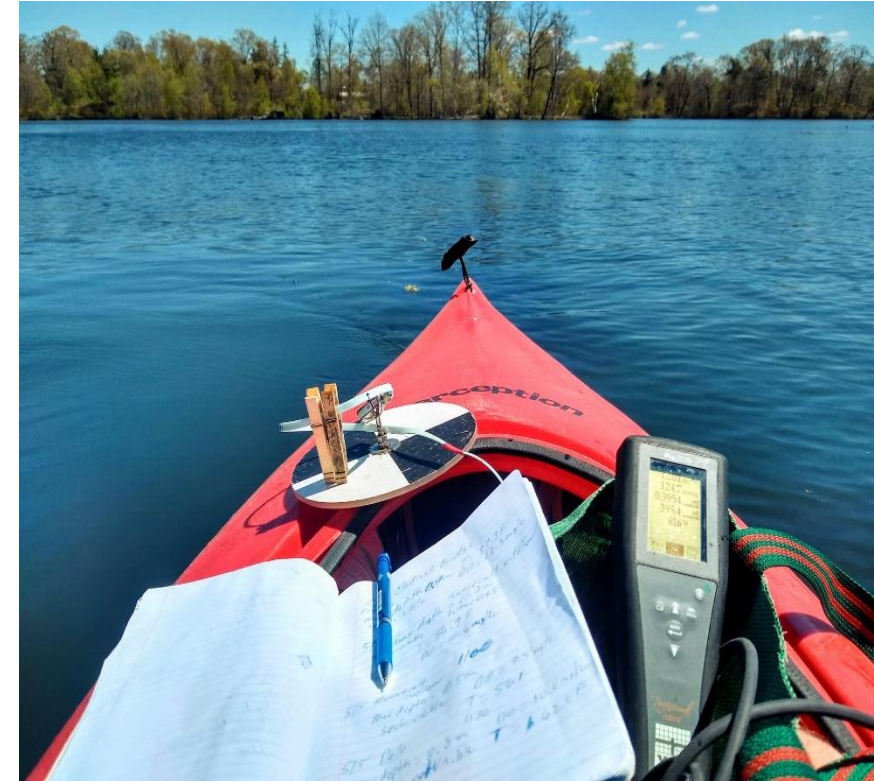
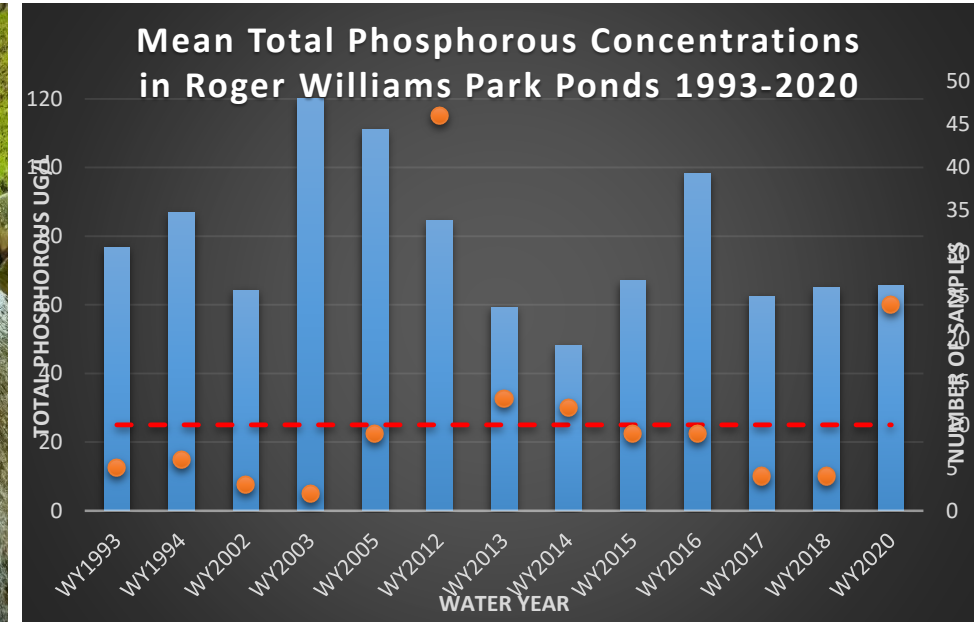
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MONITORING AND ASSESEMENTS

Water Resource Monitoring

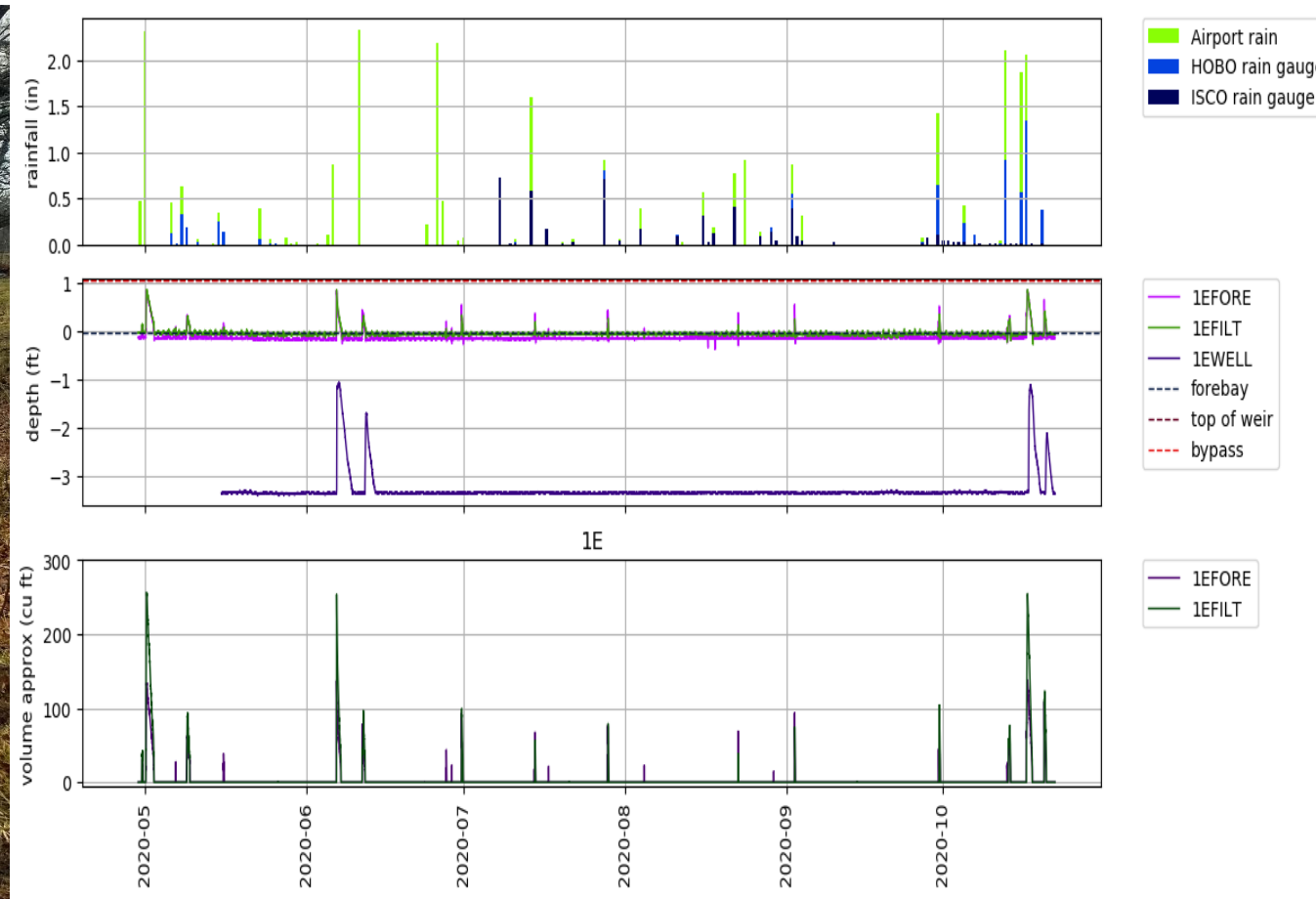
- Continuous Nutrient Monitoring
- Continuous Streamflow Monitoring
- Precipitation
- Volunteer Water Quality Sampling



MONITORING AND ASSESEMENTS

BMP Performance and Function

- Logging pressure transducers in forebay, treatment area a
- Survey the systems
- Compute volume of water entering the system
- Verify vs modeled volumes for a specific sized rain event
- Rotate transducers between BMPs twice per year





- Monthly Site Visits
- Functionality Checklists
- Site Visits after 1.5" rain events



MONITORING AND ASSESEMENTS

Visual assessments



- Photo – Video Documentation
- Site visits during rain events



PUBLIC OUTREACH

Cyanobacteria Monitoring Collaborative– RIDEM – Department of Health

POND SELECTOR

- Cunliff Lake
- Elm Lake
- Pleasure Lake
- Polo Lake
- Roosevelt Lake

[Reset](#) [Select all](#)

DATE SELECTOR

- Last Quarter
- This Month
- Last Month
- This Year
- Last Year
- All Data

To view data graphically, use the **POND** and **DATE SELECTOR**, **ZOOM** and **PAN** on the **MAP**.

To view Bloomwatch photos click on **SAMPLE DETAILS** in the **SUMMARY OF SAMPLE LIST**.

SUMMARY OF SAMPLE COLLECTIONS

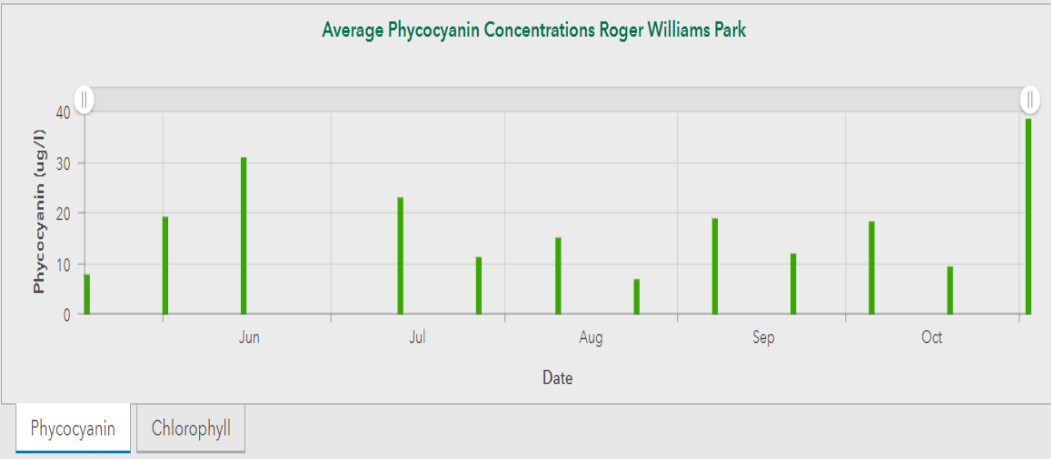
SAMPLE DETAILS
 DATE/TIME: 11/2/2021, 6:00 PM
 COLLECTED BY: Molly
 SAMPLE LOCATION: Roosevelt Lake
 CHLOROPHYLL -A: 0.75 ug/L
 PHYCOCYANIN: 38.56 ug/L
 CHL/PC RATIO: 51.45
[CYANOSCOPE PHOTO LINK](#)

SAMPLE DETAILS
 DATE/TIME: 11/2/2021, 5:45 PM
 COLLECTED BY: RDK
 SAMPLE LOCATION: Cunliff Lake
 CHLOROPHYLL -A: 4.22 ug/L
 PHYCOCYANIN: 4.47 ug/L
 CHL/PC RATIO: 1.05
[CYANOSCOPE PHOTO LINK](#)

SAMPLE DETAILS
 DATE/TIME: 10/19/2021, 5:15 PM
 COLLECTED BY: Ashley
 SAMPLE LOCATION: Cunliff Lake
 CHLOROPHYLL -A: 3.25 ug/L
 PHYCOCYANIN: 6.93 ug/L
 CHL/PC RATIO: 2.13
[CYANOSCOPE PHOTO LINK](#)

SAMPLE DETAILS
 DATE/TIME: 10/19/2021, 5:00 PM
 COLLECTED BY: Ashley
 SAMPLE LOCATION: Pleasure Lake
 CHLOROPHYLL -A: 2.29 ug/L
 PHYCOCYANIN: 2.84 ug/L
 CHL/PC RATIO: 1.24
[CYANOSCOPE PHOTO LINK](#)

SAMPLE DETAILS
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[CYANOSCOPE PHOTO LINK](#)



BLOOMWATCH PHOTOS

- IMG_20211102_194538.jpg
- IMG_20211102_193140.jpg
- IMG_20211102_193146.jpg

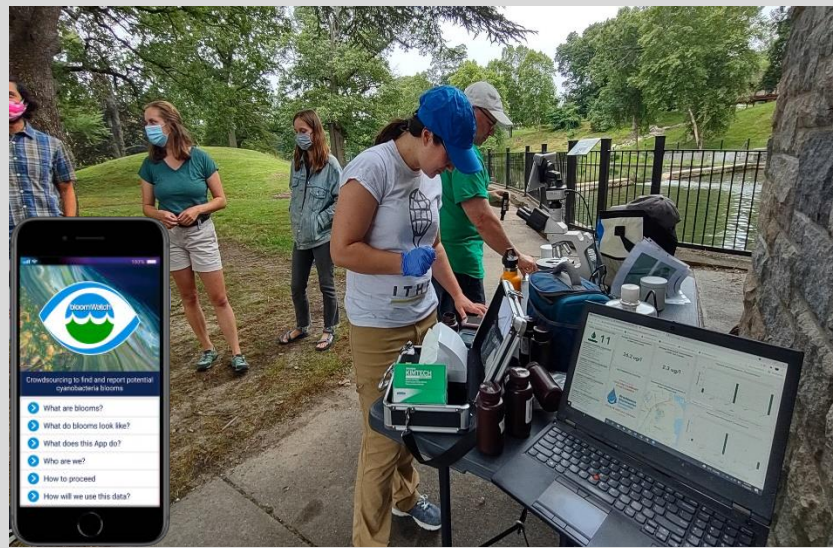
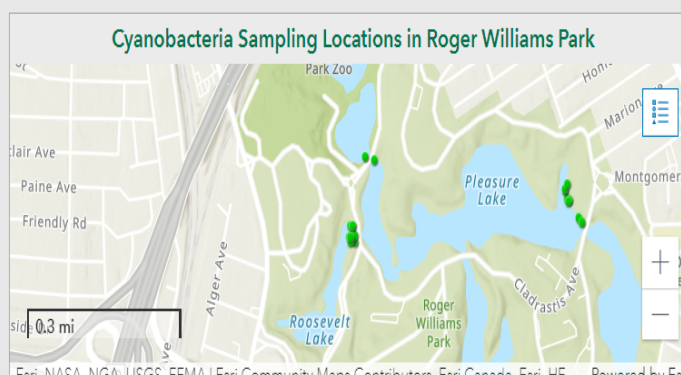
Last edited by rdkopp0153 on 11/2/2021, 7:50 PM.

Average Chlorophyll Concentration in RWP last 2 weeks

2.3 ug/l

Average Phycocyanin Concentration in RWP last 2 weeks

13.7 ug/l



PUBLIC OUTREACH

Cyanobacteria Monitoring Collaborative- RIDEM - Department of Health

POND SELECTOR

- Cunliff Lake
- Elm Lake
- Pleasure Lake
- Polo Lake
- Roosevelt Lake

Reset Select all

SUMMARY OF SAMPLE COLLECTIONS

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DATE SELECTOR

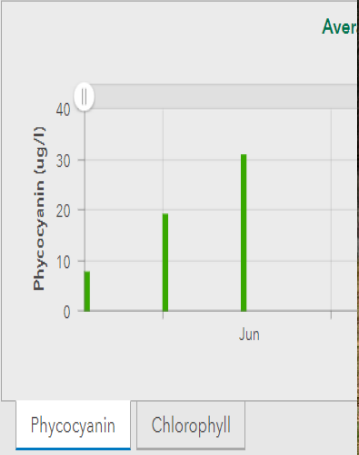
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- Last Year
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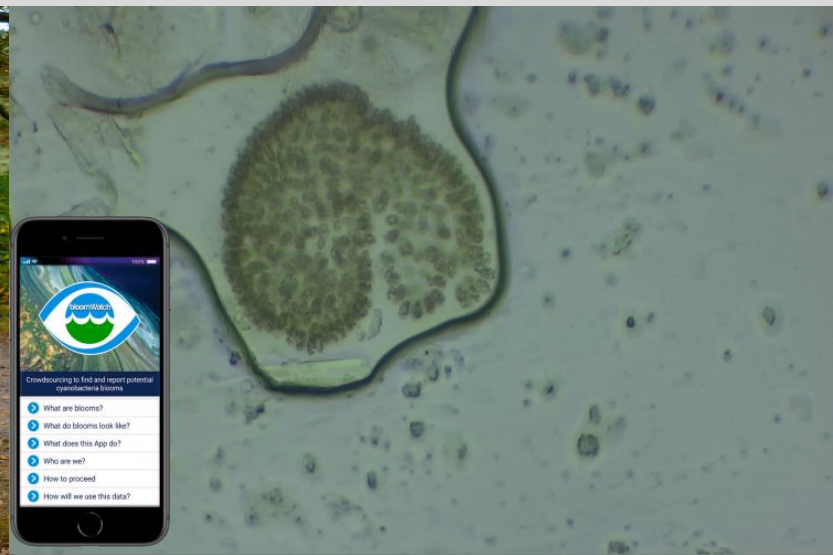
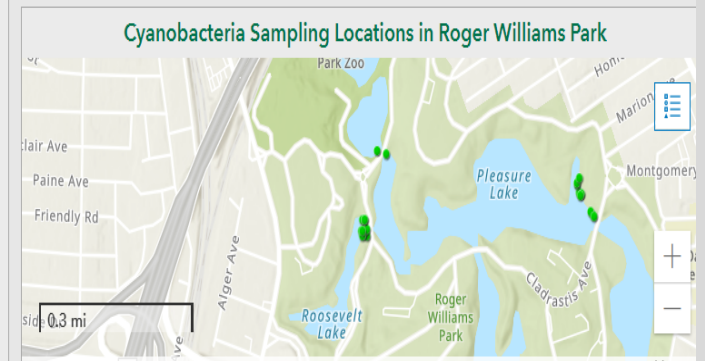
BLOOMWATCH PHOTOS

- IMG_20211102_194538.jpg
- IMG_20211102_193140.jpg
- IMG_20211102_193146.jpg

Last edited by rdkopp0153 on 11/2/2021, 7:50 PM.



2.3 ug/l 13.7 ug/l



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PUBLIC OUTREACH

Storm Drain Mural Project

- 3 schools in Providence and Cranston
- Stormwater and green infrastructure curriculum
- Tours of green infrastructure projects in Roger Williams Park
- Students worked with teaching artist to design murals



PUBLIC OUTREACH

Rain Harvest Arts Festival

- Water themed murals, storytellers, performance art, music
- Green Infrastructure Tours
- Educational Booths and Displays
- Water Quality Monitoring Demonstrations



PUBLIC OUTREACH

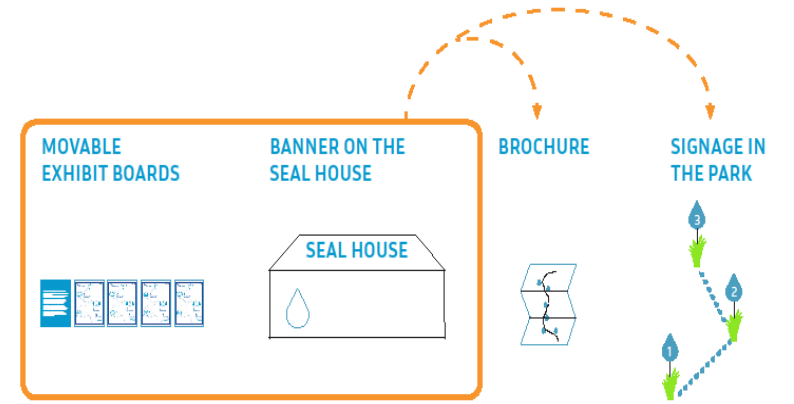


PARK EXHIBITS – 3 TIERS OF INTEREST

- 30 second user
- 30 minute user
- 30 hour user

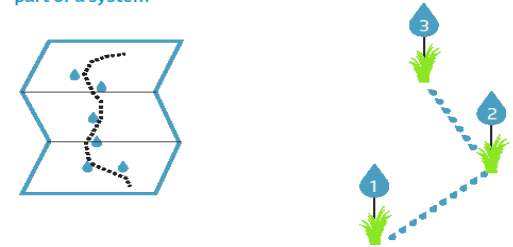


USE EXHIBIT TO GET PEOPLE OUT TO EXPLORE

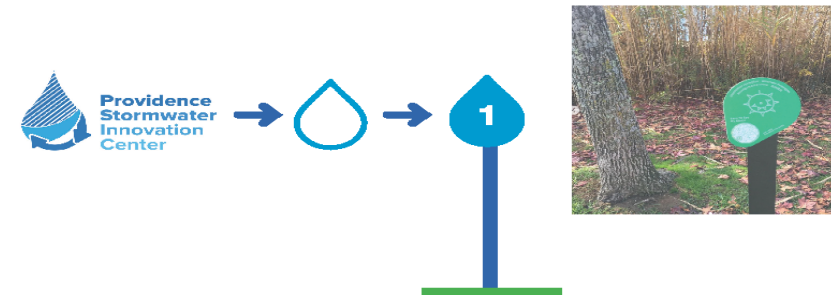


BUILD UNDERSTANDING OF FLOW + SYSTEM

- Use brochure to encourage people to visit the BMP sites
- Help draw a connection between where water flows and the BMP's
- Move past an isolated understanding of BMP to understanding it as part of a system



Form / Markers





BMP 7A/7B



BMP 6



BMP 12



BMP 9E



BMP 14



BMP 15



BMP 17/18



BMP 19A



BMP 37A



BMP 37 C



BMP 37B



BMP 30B



BMP 14



TYPE: Infiltration Basin

PHOSPHOROUS REDUCTION: 0.356 lbs/yr

PLANTINGS: Tulip Tree, Green Luster Japanese Holly, Mariesii Double-file Viburnum ,Compact Japanese Andromeda

CONSTRUCTION COST: \$27,535.73

[OVERVIEW VIDEO LINK 1](#)

[OVERVIEW VIDEO LINK 2](#)

[AS-BUILT PLAN LINK](#)

[BMP PERFORMANCE VIDEO LINK](#)

[BMP MAINTENANCE VIDEO](#)



BMP 14



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[BMP MAINTENANCE VIDEO](#)



Maintenance of the Clarinetist BMP



BMP 14



TYPE: Infiltration Basin

PHOSPHOROUS REDUCTION: 0.356 lbs/yr

PLANTINGS: Tulip Tree, Green Luster Japanese Holly, Mariesii Double-file Viburnum, Compact Japanese Andromeda

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[OVERVIEW VIDEO LINK 2](#)

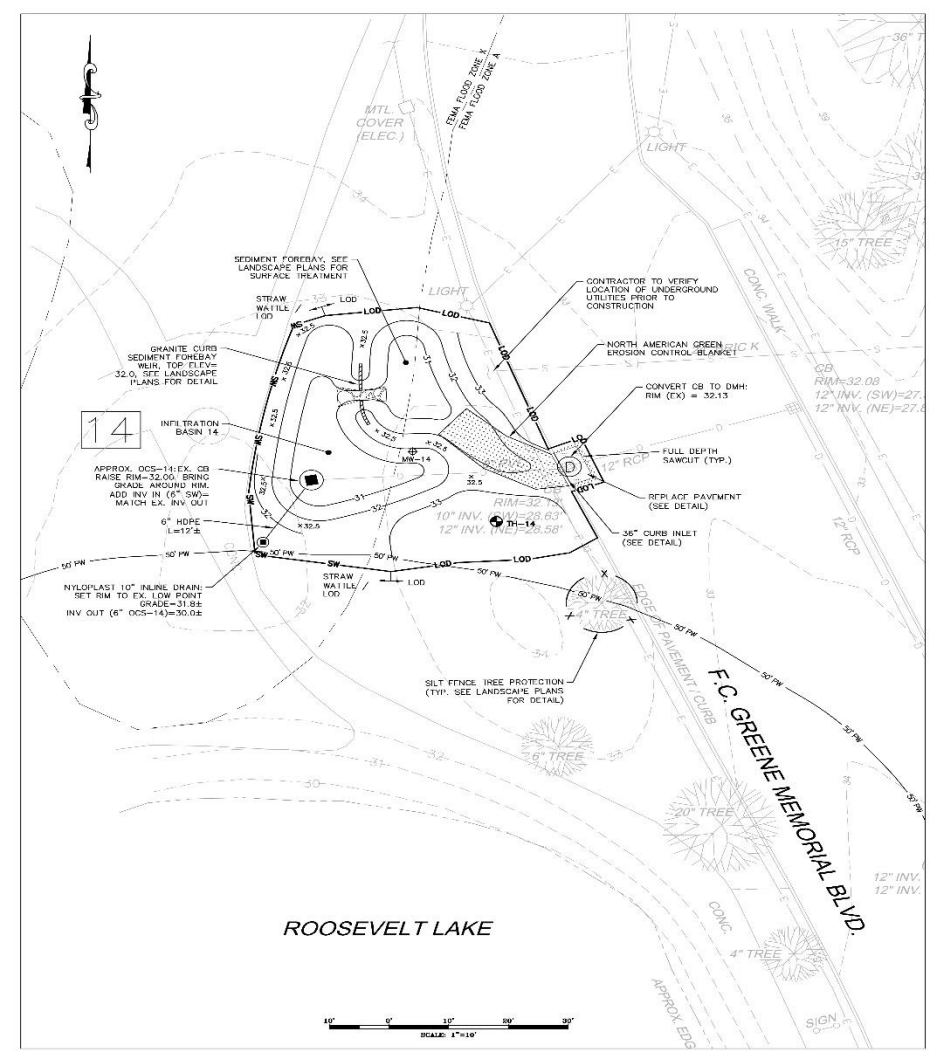
[AS-BUILT PLAN LINK](#)

[BMP PERFORMANCE VIDEO LINK](#)

[BMP MAINTENANCE VIDEO](#)



Maintenance of the Clarinetist BMF



BMP 14



TYPE: Infiltration Basin

PHOSPHOROUS REDUCTION: 0.356 lbs/yr

PLANTINGS: Tulip Tree, Green Luster Japanese Holly, Mariesii Double-Japanese Andromeda

CONSTRUCTION COST: \$27,535.73

[OVERVIEW VIDEO LINK 1](#)

[OVERVIEW VIDEO LINK 2](#)

[AS-BUILT PLAN LINK](#)

[BMP PERFORMANCE VIDEO LINK](#)

[BMP MAINTENANCE VIDEO](#)



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(401) 448-8800

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NYLOPLAST 20" DRAIN BASIN - 2024AG_X

Basin ID	Basin Length	Basin Width	Basin Depth	Basin Volume	Basin Area	Basin Perimeter	Basin Slope	Basin Material
10	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
11	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
12	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
13	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
14	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
15	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
16	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
17	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
18	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
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49	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST
50	50.0'	50.0'	30.0"	50.0'	50.0'	50.0'	1:1	NYLOPLAST

NYLOPLAST DRAIN - OUTLET CONTROL STRUCTURE (OCS)

TYPICAL GRASSPAVE DETAIL

MONITORING WELL

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