

Green Infrastructure Operation &
Maintenance Summit

February 27, 2020

DEC's Best Management Practice Verification Program

Helen Carr, Jordyn Geller, Rachel Wood



Overview of BMP Verification Program



BACKGROUND
AND GOALS



SCOPE



DEVELOPMENT



RESULTS



SUMMARY

Best Management Practice (BMP) Verification Program Purpose & Goals



To verify state-funded projects exist and are properly operating



To provide accountability that practices meet phosphorus reduction rates



To educate DEC's partners and expand partnerships



To increase confidence that state dollars are being spent effectively



Operation & Maintenance Plan and Agreement

- Identifies responsible party for maintenance
- Outlines regular maintenance items and frequency of inspections
- Provides guidance to all parties

Project Types Eligible for Verification

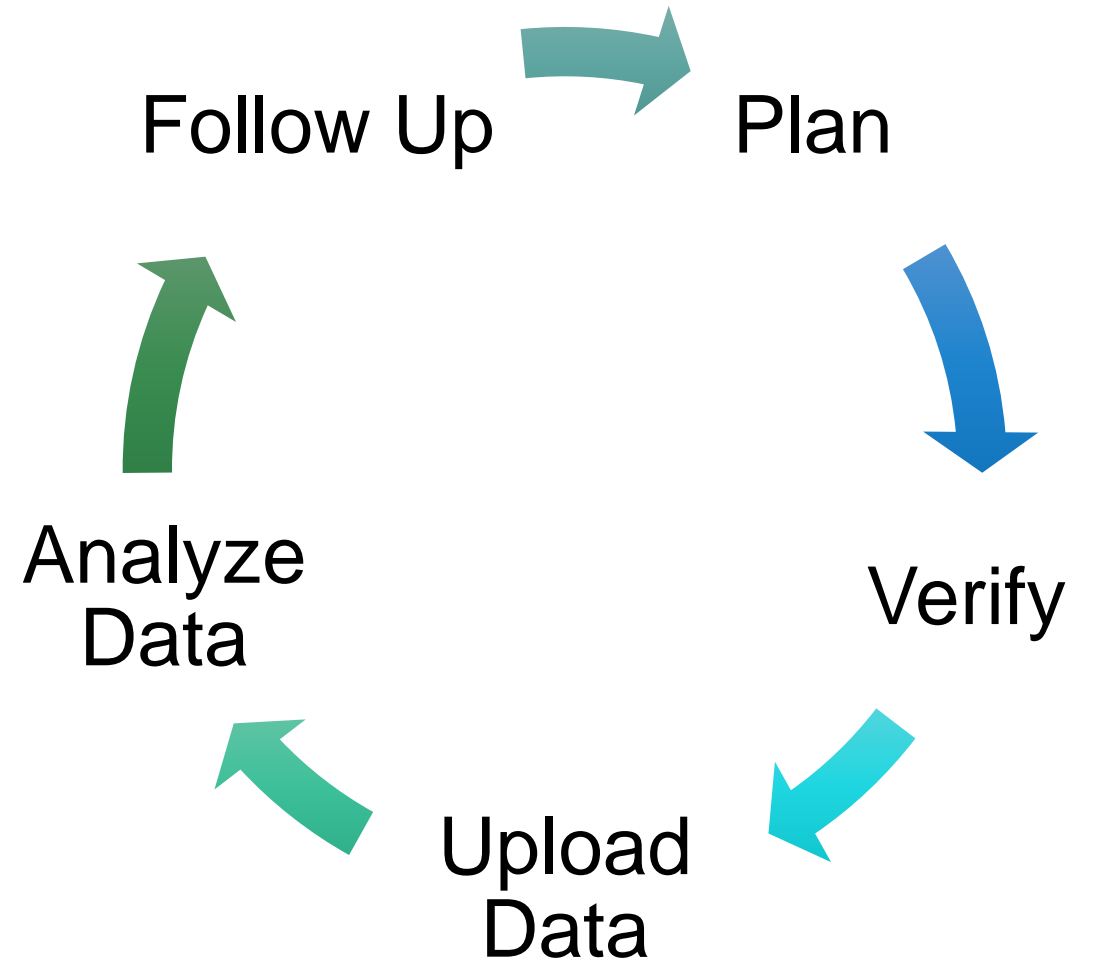
Visited by CWIP		Inspected by other programs	
✓	Stormwater	✗	Agricultural Pollution Prevention
✓	Buffer Plantings	✗	Dam Removal
✓	Road Projects	✗	Floodplain/Stream Restoration
		✗	River Corridor Easement
		✗	Wetland Restoration
		✗	Regulatory Stormwater and Road Projects

Research





Site Visits



From Database to Site Visits

VERMONT OFFICIAL STATE WEBSITE



AGENCY OF NATURAL RESOURCES
CLEAN WATER PORTAL

[HOME](#) [PROJECT EXPLORER](#) **[WPD SEARCH](#)** [SCREENING TOOL](#) [FUNDING OPPORTUNITIES](#) [STP CALCULATOR](#) [ANR](#) [DEC](#) [FPR](#) [FWD](#)

Watershed Projects Database Search

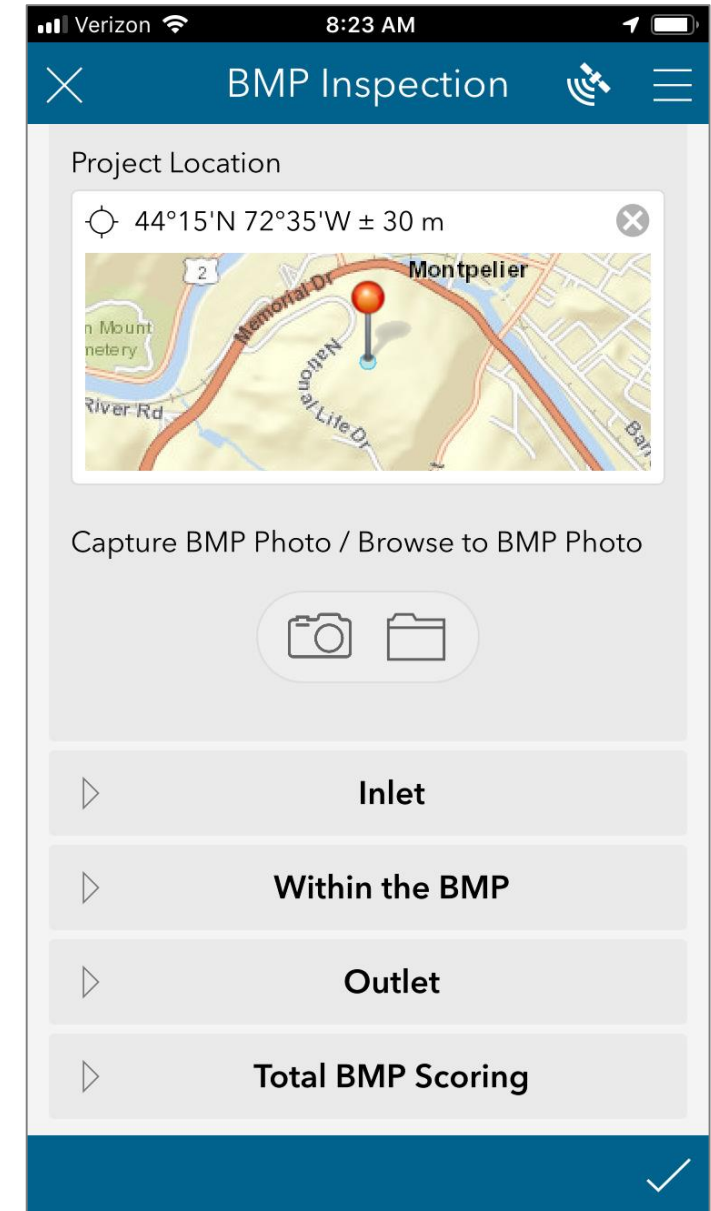
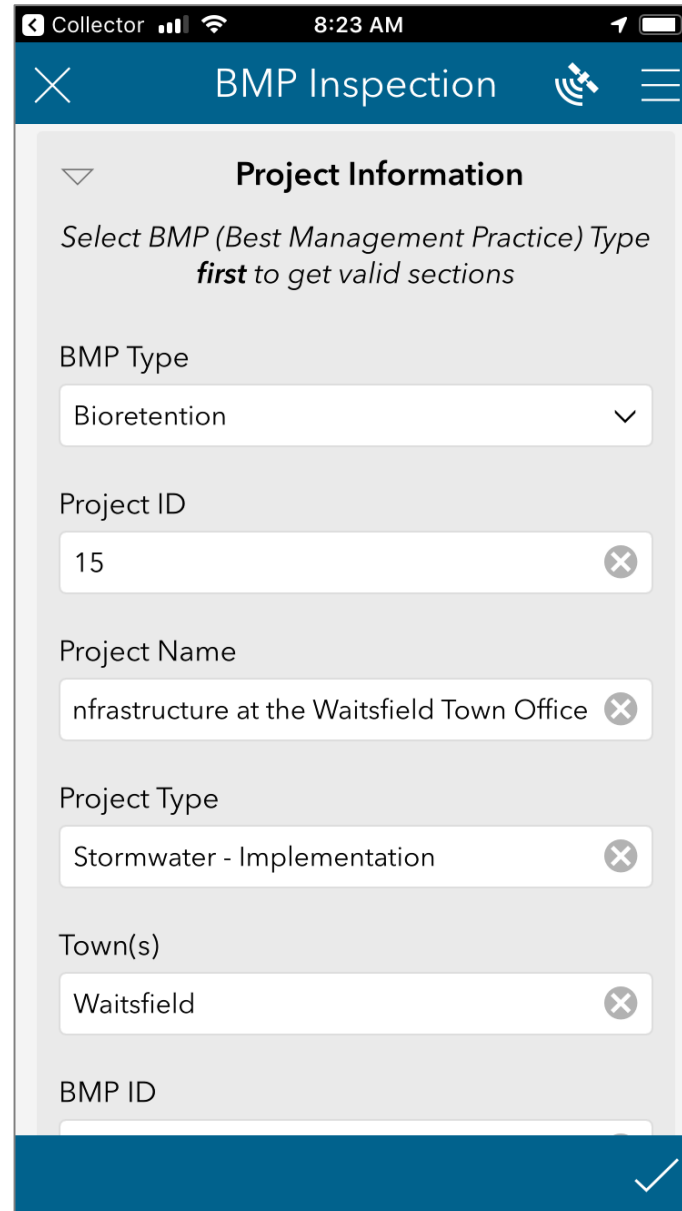
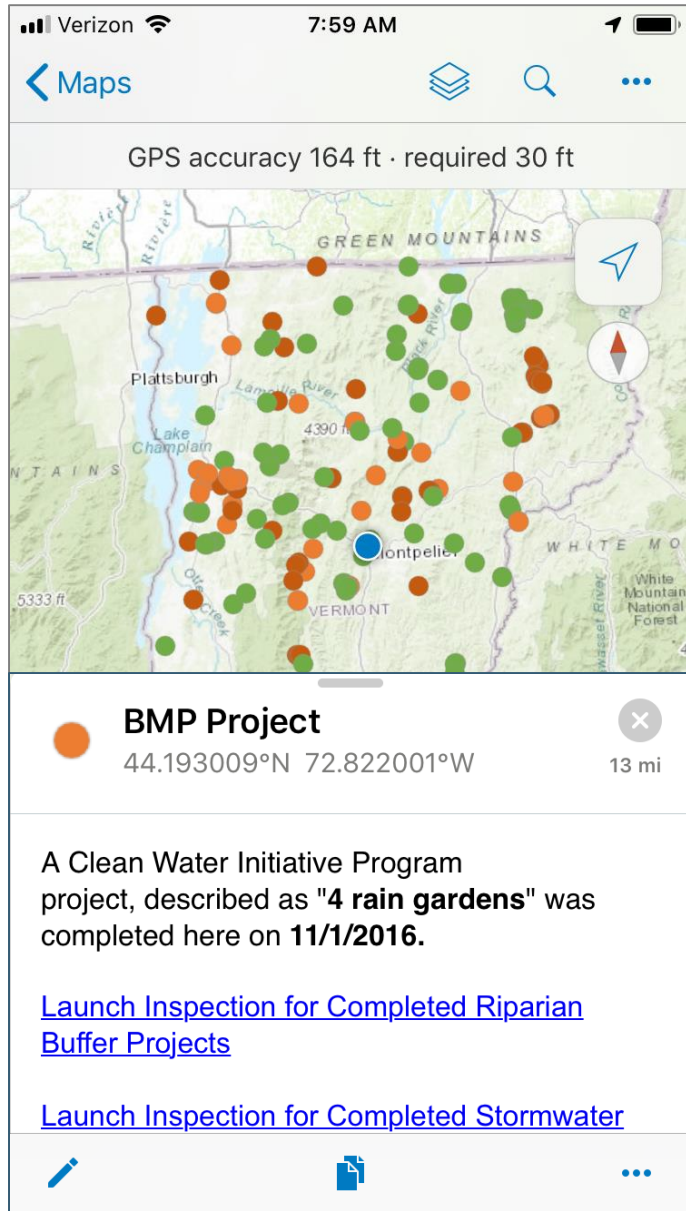
Name	<input type="text"/>	Status	<input type="text" value="Completed"/>	FED Step	<input type="text"/>
Project Type	<input type="text" value="Stormwater - Implementation"/>	County	<input type="text"/>	Grant Number	<input type="text"/>
Basin Plan	<input type="text"/>	Town	<input type="text"/>	Project ID	<input type="text"/>
Grade Type	<input type="text"/>	Grade	<input type="text"/>		

[Search](#) [Clear](#) [To Report](#)

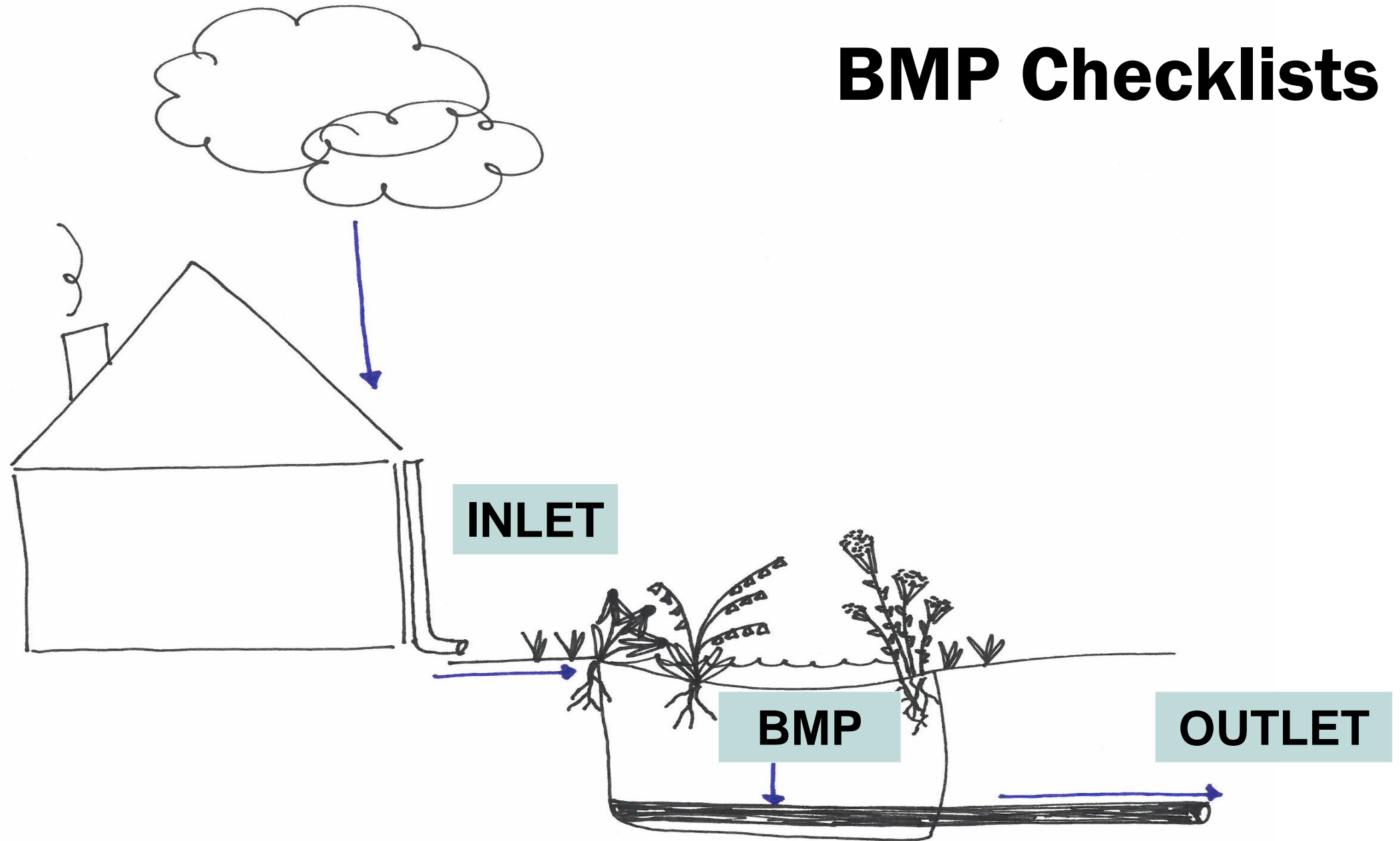
	ID	Project Name	Project Type	Status	Grant Number(s)
Screening Report	15	Constructing Green Stormwater Infrastructure at the Waitsfield Town Office	Stormwater - Implementation	Completed	2016-ERP-2-09

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Survey 123 Mobile Application



BMP Checklists



Visual Indicators



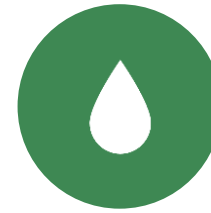
EROSION



SEDIMENT
ACCUMULATION



TRASH
AND
NATURAL
DEBRIS



STANDING
WATER



VEGETATION




BMP Verification Inspection Report

Stormwater

SUBMITTED BY: CLEAN WATER INITIATIVE PROGRAM

SUBMITTED TIME: 10/15/2019; 1:10 PM

Project Information

BMP Type	Bioretention		
Project Name	Northfield Stormwater Mitigation Site Construction (Central Street and Main Street)		
BMP System Name	Kenyon		
Project ID	83	BMP ID	143
Project Type	Bioretention		
Project Completion Date	11/21/2016		
Partner(s)	Central Vermont Regional Planning Commission		
Town(s)	Northfield		
Inspection Date and Time	10/15/2019; 12:44 PM		
Inspector	Helen Carr, Rachel Wood, and Jordyn Geller		
Date of Last Rain Event	10/14/2019		
Does BMP Exist?	Yes		
Project Location	Lat: 44.15037 Lon: -72.65594		
BMP Photo			

Bioretention Report



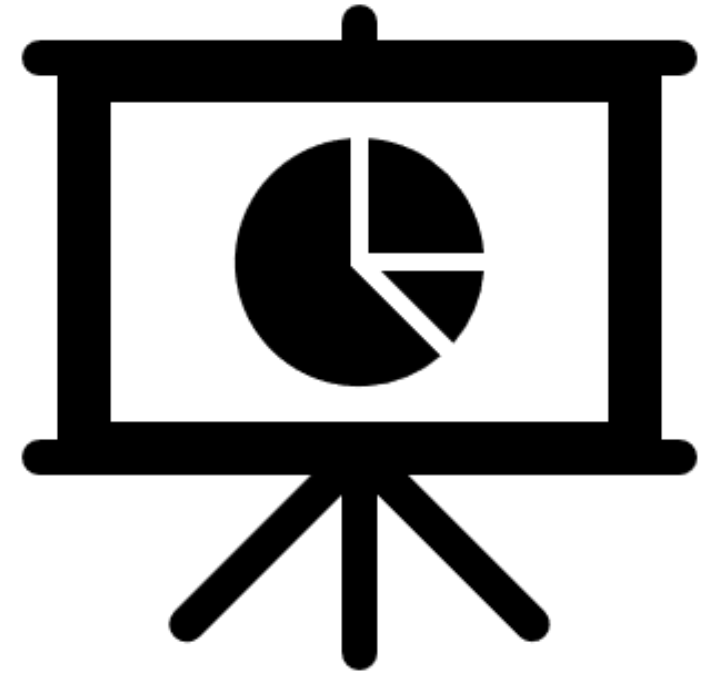
Inlet	Within the BMP
Inlet Photo	Within BMP Photo
	
Average Inlet Score	Average BMP Score
3.6	3.3
Outlet	BMP Photos
Outlet Photo	Extra Photos
	
Average Outlet Score	
3.7	

Scoring	
Average BMP Score	
	3.5
Average BMP Grade	
	4
Are there any concerns (i.e. sinking, woody growth where it shouldn't be, etc.)? Enter below.	
	None
Inspector Signature	
	Rachel Wood

Score	Grade Equivalent
4	Optimal (<i>above and beyond requirements</i>)
3	Functional (<i>meets requirements</i>)
2	Marginal (<i>one-two things may need maintenance to perform as it should</i>)
1	Compromised (<i>significant maintenance or replanting may need to occur</i>)
0	Failed (<i>not functional and needs larger repairs or does not exist</i>)

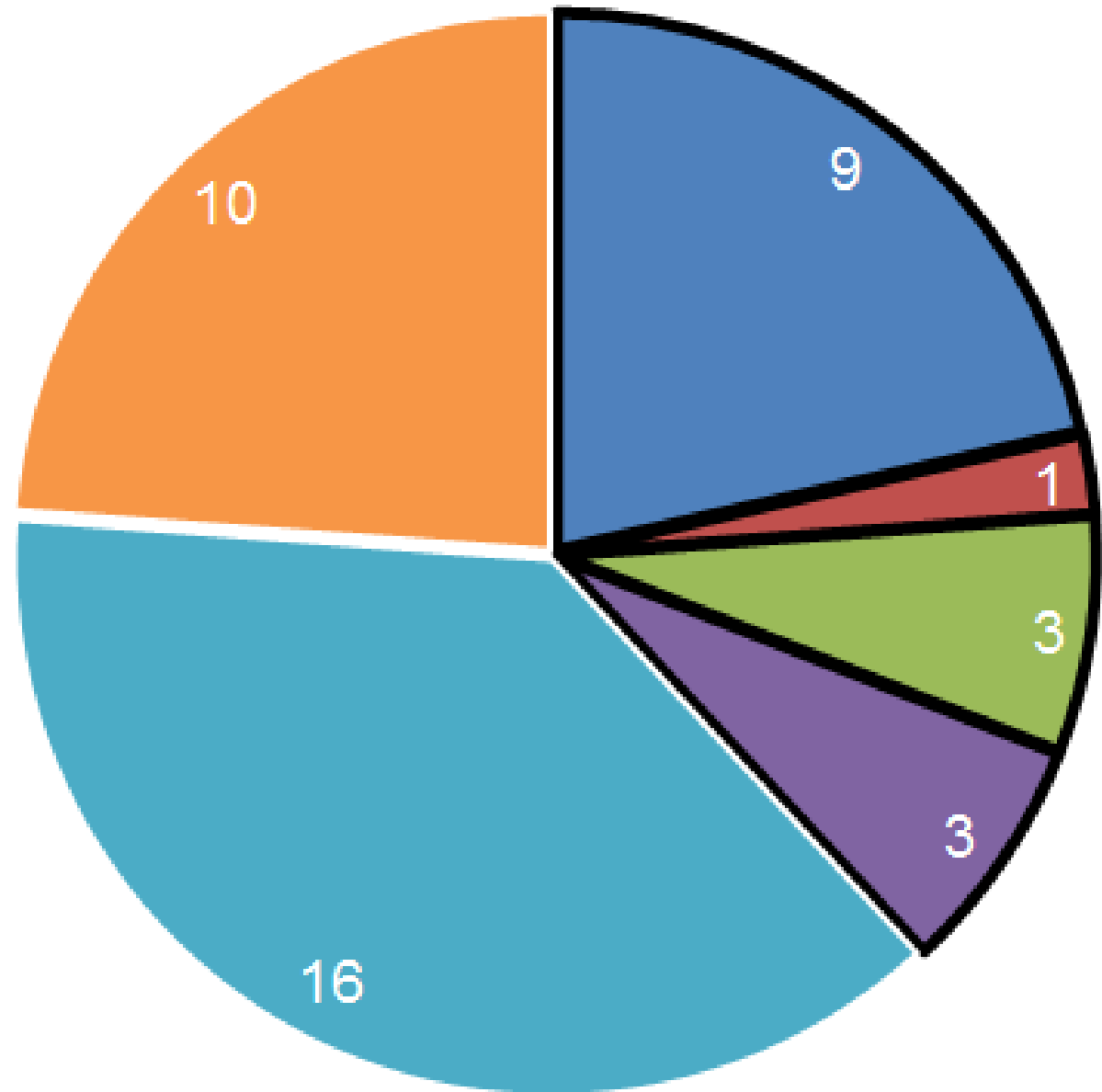
Results

2018 - 2020

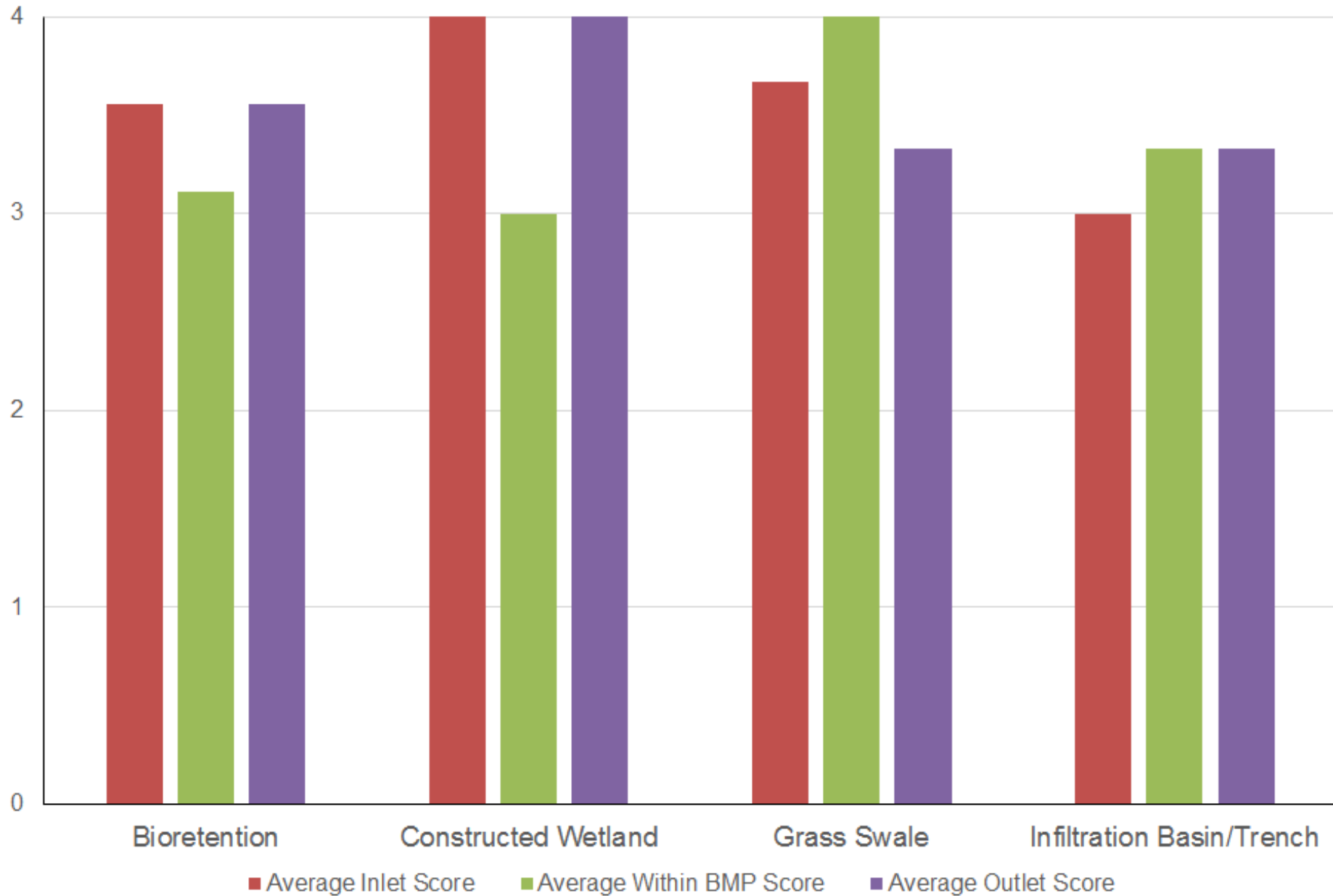


BMP Types Verified

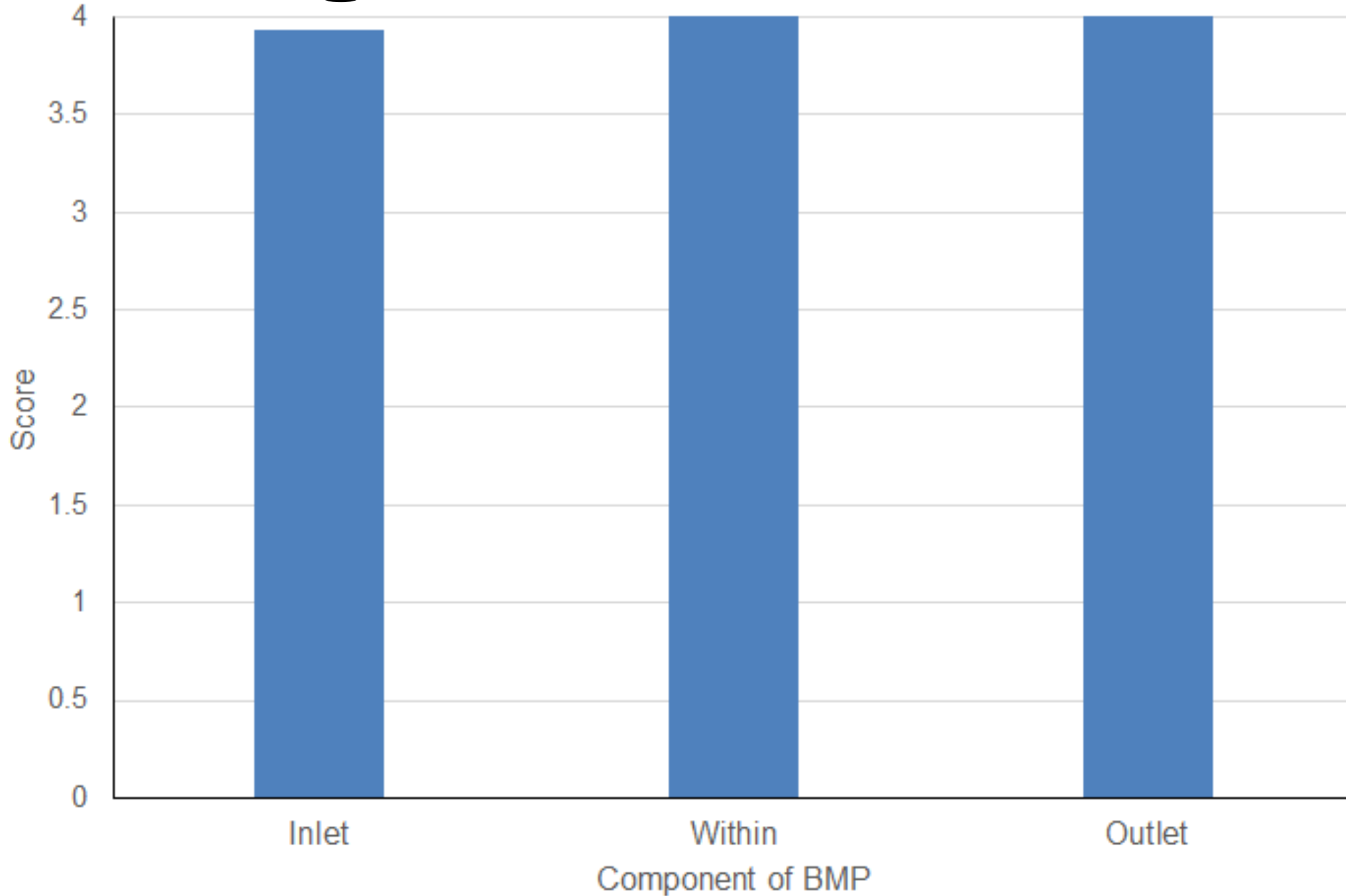
- Bioretention
- Constructed Wetland
- Grass Swale
- Infiltration Basin/Trench
- Riparian Buffer
- Road Projects



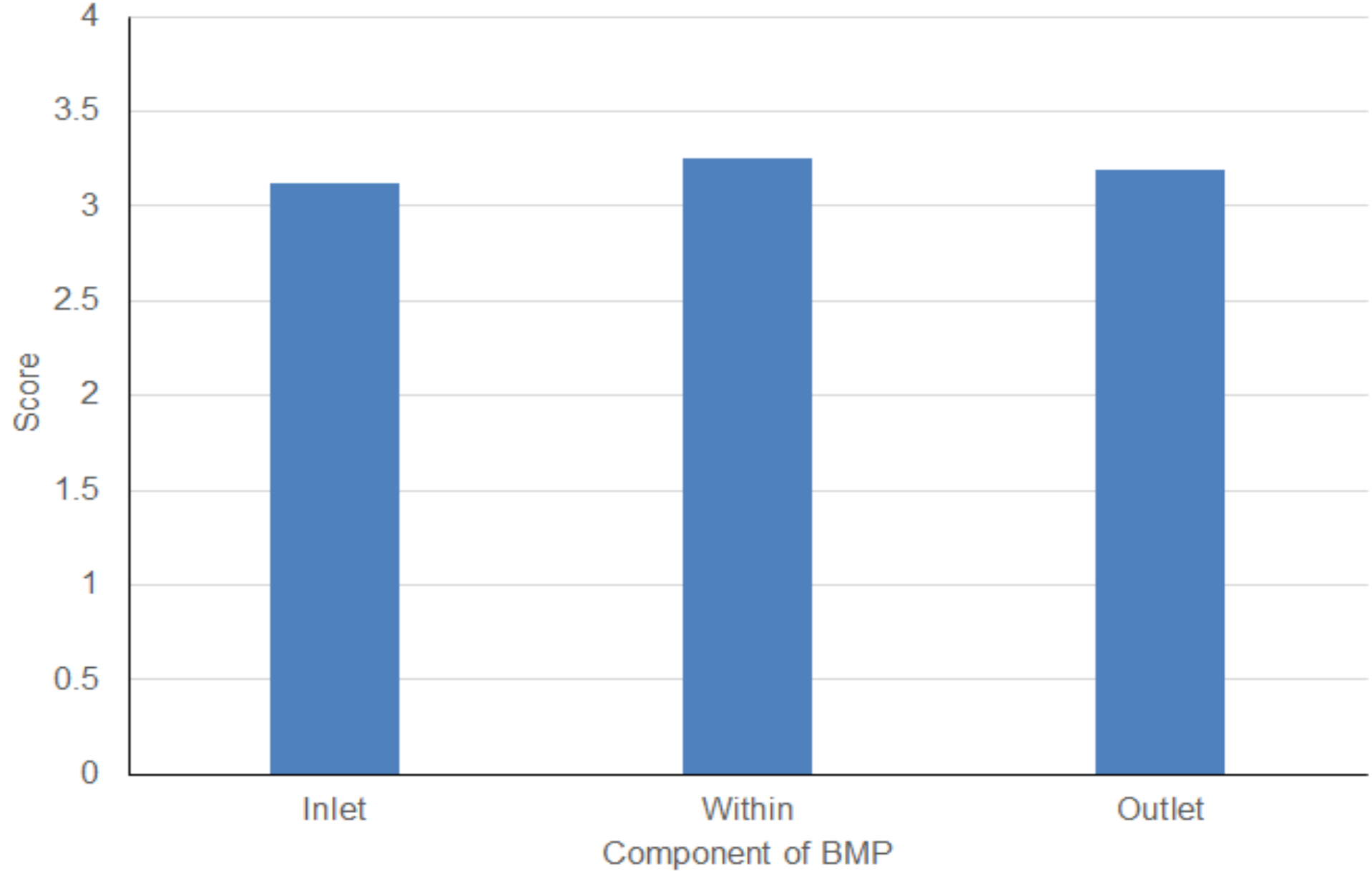
Average Scores by Stormwater BMP Type



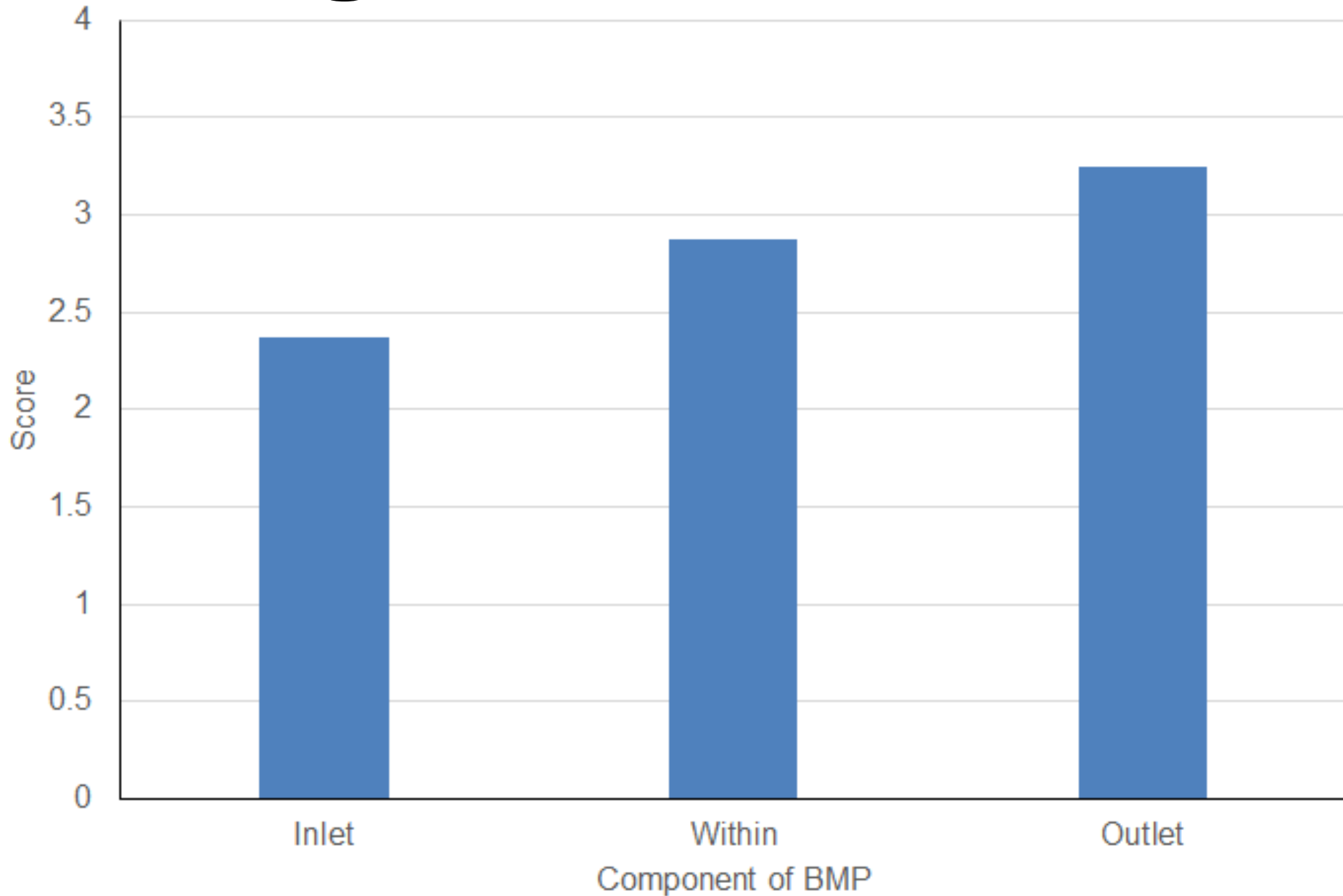
Average Scores of Erosion Questions



Average Scores of Trash/Natural Debris Questions



Average Scores of Sediment Questions





Summary

1. O&M is essential part of clean water projects, especially stormwater
2. BMP site visit observations
 - BMPs that were visited are in good shape
 - Excess sedimentation can be fixed with more attention and education
 - Erosion is less of an issue
3. Working to establish a network of O&M with our partners

Future of BMP Verification Program



Next Steps for CWIP

Finalizing protocols and user manual
More site visits in the field season
Develop training for more outside users

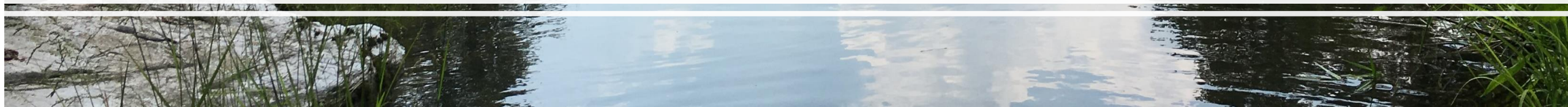


Bigger Picture

Develop O&M manual for Vermont-
due end of 2020
Adapt program to requirements of
Act 76



Thank you! Any questions?



Discussion Questions



What is the best way to roll out the O&M program?



Where are our blind spots?



Which entities would be most helpful to train first?

AmeriCorps?
Work crews?