

O&M Challenges and Solutions

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Environmental Services



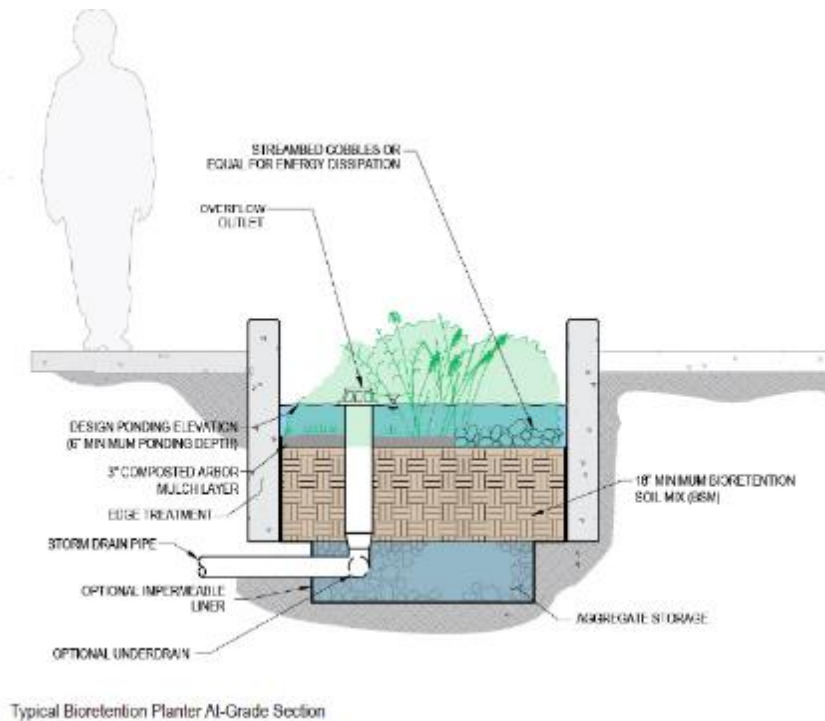
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GSI O&M Team Overview

- 4 Environmental Inspectors
- 1 Sr. Environmental Inspector
- Works Closely with Stormwater Management, Public Works, Parks, DOT etc.
- Inspects approx. 150 facilities, and 600 STMs annually
- Inventory of approx. 500 sites and 3,000 STMs



Common Issue – Design Standards



Common Issues – Single Family Homes



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Common Issues – Single Family Homes



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Common Issue – Site Changes Between Installation and O&M Inspections

The screenshot shows a web-based survey form titled "TCM Installation Survey". At the top, there are three tabs: "Form Preview" (selected), "Schema Preview", and "Settings". The form is divided into several sections, each with a title and a description. The sections are: "Survey Description" (Refer to the Public Works (PW) Enforcement Response Plan for issues observed onsite.), "Installation Date" (Date TCM Installed, with a date picker set to Wednesday, September 26, 2018, and a time picker set to 11:25 AM), "Inspector Name" (Type in your name, with a text input field), "Project Name" (Use the project name from the final plan set, with a text input field), "Project ID Number" (3-Number from City-issued permit, Example: 3-45678, with a text input field), "Project Phase" (Is this project scheduled to be completed in multiple phases?, with radio buttons for Yes and No), "Grading Permit Number" (Include grading permit number, Example: 12-3456789 GR, with a text input field), and "Plan Sheet Number" (Use the page number from the stormwater control plan sheet, Example: Page C3.1, C5.0, etc., with a text input field). A green sidebar on the left contains icons for a home, a document, a folder, a cloud, and a globe.

Form Preview Schema Preview Settings

TCM Installation Survey

Survey Description *
Refer to the Public Works (PW) Enforcement Response Plan for issues observed onsite.

Installation Date *
Date TCM Installed
Wednesday, September 26, 2018 11:25 AM

Inspector Name *
Type in your name

Project Name *
Use the project name from the final plan set

Project ID Number *
3-Number from City-issued permit
Example: 3-45678

Project Phase *
Is this project scheduled to be completed in multiple phases?
☐ Yes ☐ No

Grading Permit Number *
Include grading permit number
Example: 12-3456789 GR

Plan Sheet Number *
Use the page number from the stormwater control plan sheet
Example: Page C3.1, C5.0, etc.

Common Issue – Lack of Training on O&M



- GSI O&M Field Guide
 - Maintenance Checklists
 - Maintenance Standards
 - Maintenance Guidelines
- Training Programs
- Material Specifications

Common Issue – Lack of Training on O&M

Bioretention Planter Maintenance Inspection Checklist

How to Use This Form: Facility Maintenance Staff should perform maintenance inspections by following the checklist below. Refer to the "Bioretention Standards" section on pages 16-26 for guidance on condition assessments. For guidance on performing maintenance activities, refer to the "Bioretention Maintenance Guidance" section on pages 37-60.

Date & Time: _____ Project Name or Address: _____ Bioretention/Planter/Swale Served: _____

Supervisor Name: _____ Agency/Department or Entity Performing Inspection: _____

No. of staff at the facility: _____ Start Time: _____ End Time: _____ Latest Rainfall: ☐ 0 - 24 hrs ☐ 24 - 48 hrs ☐ 2 - 3 days ☐ > 3 days





Can you access the facility? ☐ Yes ☐ No. If not, why? _____

Section	Y	N	N/A
Trash & Debris Removal			
Is trash or debris present in the treatment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are one or more inlets, outlets, or overflow structures obstructed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weeds			
Are weeds present in the treatment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are invasive plants present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are weeds about to or currently going to seed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant Health			
Are all plants healthy, thriving, and aesthetically pleasing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there signs of diseased or distressed plants in the treatment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pruning, Trimming, Dead Heading, or Thinning			
Is the system well-maintained and properly pruned?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are plants over pruned or overgrown in the treatment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant Density			
Are plants overcrowded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there bare spots in the treatment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are plants obstructing one or more inlets, overflows, or irrigation system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mulch			
Is there full coverage of at least 3" of composted arbor mulch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the mulch free of sediment and not clumped together?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cobble & Flow Dissipation			
Is appropriately sized cobble placed at all inlets, outlets, and splash pads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cobble free of sediment, debris and clogging?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there signs of erosion at any inlets, outlets, or splash pads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments / Actions Taken: _____			
Materials/Tools Used: _____			



Common Issue – Lack of Training on O&M

Maintenance Standards

Plant Density			
			
4 Excellent Condition <ul style="list-style-type: none">» 100% plant coverage at plant maturity*» Plants are appropriately spaced» No obstruction of inlets, overflow, or irrigation infrastructure <small>*Newly planted systems may not have full coverage, but systems must have full coverage after plant establishment and maturity</small>	3 Good Condition <ul style="list-style-type: none">» At least 90% plant coverage at maturity*» Some sporadic bare spots present (0-10%)» Most plants are appropriately spaced» Partial obstruction of one or more inlet, overflow, or irrigation system	2 Moderate Condition <ul style="list-style-type: none">» At least 50% plant coverage at maturity*» Moderate number of small bare spots with no large, continuous bare spots (10-20%)» Significant obstruction of one or more inlets, overflows, or irrigation systems	1 Poor Condition <ul style="list-style-type: none">» Less than 50% plant coverage at maturity*» Significant number of bare spots or large, continuous bare spots (more than 20%)» Full obstruction of one or more inlets, overflows, or irrigation systems

Maintenance Guidelines



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Common Issues – Vendor Scheduling



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Common Issue – 3rd Party Vendor Reports



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Common Issue – Damage During Construction



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Thank you!



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