

INDIANA DEPARTMENT OF TRANSPORTATION



Stormwater Post-Construction Best Management Practice Operations and Maintenance Manual

For

Hydrodynamic Separators



Hydrodynamic Separators Overview

Hydrodynamic Separators can be utilized as a Stormwater Post-Construction Best Management Practice (PCBMP) to treat stormwater collected from INDOT project sites after construction is completed.

Hydrodynamic Separators are flow-through devices which typically utilize a swirl or vortex to remove settleable solids and floatable oils and debris from stormwater run-off.

Inspections

All hydrodynamic separators shall be inspected at a minimum one time per 5-year INDOT Stormwater permit cycle. Values below are typical indicators for the need of maintenance for the structure.

Inspections will use the form attached in Appendix A as an inspection checklist to note the following:

- Floatables
 - floatables covering 100% of water surface
 - inspector shall remove floatables if possible
 - refer to material disposal section
- Sediment
 - sediment buildup exceeds 75% of unit volume
- Visible pollution
 - presence of oily sheen on water surface
 - refer to material disposal section
- Odor
 - presence of any odor
- Inflow – should be able to convey flow
 - pipe is clogged
 - pipe is collapsed
- Outflow – should be able to convey flow
 - pipe is clogged
 - pipe is collapsed
- Access
 - access to unit blocked in any way
- Structural integrity
 - damage to manufactured device or diversion structure
 - damage to casting of manufactured device or diversion structure

Issues identified during inspections shall require maintenance as soon as possible, per noted rating condition.

Maintenance

Maintenance shall be performed on an as needed or directed basis from inspection observations. Typical corrective actions consist of:

- Floatables
 - remove remaining floatables from water surface after inspection
 - refer to material disposal section
- Sediment
 - sediment shall be removed
 - refer to materials disposal section
- Odor
 - refer to material disposal section
- Inflow
 - unclog pipe by removing debris
 - repair or replace collapsed pipe
- Outflow
 - unclog pipe by removing debris
 - repair or replace collapsed pipe
- Access
 - clear blockage to allow for access to unit
- Structural integrity
 - repair damage, or replace manufactured device or diversion structure
 - repair damage to casting, or replace manufactured device or diversion structure

As well as issues related to the inspection criteria, maintenance will be required to address any problem which does not fall into these categories that threatens the functionality of the hydrodynamic separator as a stormwater treatment device.

Material Disposal

All materials removed from maintenance and/or operation activities shall be disposed of according to all local, state, and federal requirements. If material observed in PCBMPs exhibits odor (petroleum, gas, oil, etc.), color, or other physical features that may indicate non-stormwater origins, do not remove this material, and contact the INDOT Stormwater Team for further investigation, identification, and proper disposal.

APPENDIX A – INSPECTION FORM



INDIANA DEPARTMENT OF TRANSPORTATION

INSPECTION REPORT

POST-CONSTRUCTION STORMWATER MEASURE

Structure Type	Hydrodynamic Separator	Asset ID	
Design Criteria		Location	Coordinates, Driving Directions
This hydrodynamic separator was designed to remove Total Suspended Solids (TSS) from stormwater runoff. The inspection and maintenance of this stormwater device should follow the manufacturer's guidelines and items outlined in this document.		Manufacturer, Model & Serial Number	
Information			
<p>Is a Diversion Structure present? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is there land use upstream with high probability of pollutants? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Can the unit be accessed directly from INDOT right-of-way? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Will traffic control be required for vac truck access? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>			
Inspection Criteria			
<u>Maintenance Issues:</u>			
Floatables – Does trash/debris buildup cover 100% of the water surface? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Sediment – Does sedimentation buildup exceed 75%? <input type="checkbox"/> Yes <input type="checkbox"/> No Depth: _____ inches			
Visible pollution – Is there an oil sheen, etc.? <input type="checkbox"/> Yes <input type="checkbox"/> No Depth: _____ inches			
Is there staining present on structures, pipes, or pavement? <input type="checkbox"/> Yes <input type="checkbox"/> No Description: _____			
Is there an odor present? <input type="checkbox"/> Yes <input type="checkbox"/> No Description: _____			
Is the inflow or outflow point blocked? <input type="checkbox"/> Yes <input type="checkbox"/> No Description: _____			
Is the Diversion structure blocked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Description: _____			
Is access to the unit blocked? <input type="checkbox"/> Yes <input type="checkbox"/> No Description: _____			
<u>Structural Issues:</u>			
Is there structural damage to the Manufactured Device? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Is the Manufactured Device casting broken or missing? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Is there structural damage to the Diversion Structure? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Is the Diversion Structure casting broken or missing? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<u>Comments:</u>			
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>			
Last Inspected		Current Inspection	



INSPECTION REPORT

POST-CONSTRUCTION STORMWATER MEASURE

Structure Type	Hydrodynamic Separator	Asset ID
Typical Corrective Actions	<ul style="list-style-type: none">• Floatables – Remove floatable trash and debris from unit• Sediment buildup – Remove sediment from unit per manufacture's guidelines• Visible pollution – Remove oil from unit• Inflow and outflow points – Remove blockages• Diversion structure – Remove any blockages, note if device has been installed inline, repair any damages• Inlets and manholes – Repair damages• Maintenance accessibility – Blocked or missing maintenance access	
Maintenance Recommendations		
Last Inspected		Current Inspection





INSPECTION REPORT

POST-CONSTRUCTION STORMWATER MEASURE

Structure Type	Hydrodynamic Separator	Asset ID	
Plans and Plan Cross Section(s)			
INSPECTED BY <div style="border: 1px solid black; height: 40px; margin-top: 10px;"></div>		APPROVED BY <div style="border: 1px solid black; height: 40px; margin-top: 10px;"></div>	
Printed Name/Title		Printed Name/Title	