



**Aqua-Swirl® XCELERATOR® High Performance
Stormwater Treatment System**

Inspection and Maintenance Manual



AquaShield™, Inc.
2733 Kanasita Drive
Suite 111
Chattanooga, TN 37343
Toll free (888) 344-9044
Phone: (423) 870-8888
Fax: (423) 826-2112
Email: info@aquashieldinc.com
www.aquashieldinc.com

August 2025



Aqua-Swirl[®] XCellerator[®] High Performance Stormwater Treatment System

The Aqua-Swirl[®] XCellerator[®] High Performance Stormwater Treatment System (XCellerator[®] XP) is a hydrodynamic separator designed and supplied by AquaShield[™], Inc. (AquaShield[™]). technology removes pollutants including suspended solids and debris from stormwater runoff. Both treatment and storage are accomplished in the single treatment chamber without the use of multiple or hidden blind access chambers.

System Operation

Operation begins when stormwater enters the treatment chamber, where sediment capture and storage are accomplished. Water initially flows downward from the inlet and is then forced upward through an array of inclined plates. This design encourages particles to settle onto the surfaces of the inclined plates and accumulate at the bottom of the chamber.

Aqua-Swirl[®] XCellerator[®] XP System Maintenance

The long-term performance of any stormwater treatment structure, including manufactured or land-based systems, depends on a consistent maintenance plan. Inspection and maintenance functions are simple and easy for the Aqua-Swirl[®] XCellerator[®] XP, allowing all maintenance actions to be performed from the surface. It is important that a routine inspection and maintenance program be established for each unit based on: (a) the volume or load of the contaminants of concern, (b) the frequency of releases of contaminants at the facility, and (c) the nature of the area being drained. In order to ensure that our systems are being maintained properly, AquaShield[™] offers a maintenance solution to all of our customers. We will arrange to have maintenance performed at the stakeholder's request.

Inspection

The XCellerator[®] XP can be inspected from the surface, eliminating the need to enter the system to determine when cleanout should be performed. In most cases, AquaShield[™] recommends a quarterly inspection during construction and, for the first year of operation, developing an appropriate schedule of maintenance. The XCellerator[®] XP should be inspected and cleaned at the end of construction, regardless of whether it has reached its pollutant storage capacity. Based on observation of the system's first year in operation, we recommend that the inspection schedule be

revised to reflect the site-specific conditions encountered. Typically, the inspection schedule for subsequent years is once per year.



Maintenance

The XCelerator[®] XP has been designed to minimize and simplify the inspection and maintenance process. The single-chamber system can be inspected and maintained entirely from the surface, thereby eliminating the need for confined space entry. Inspection of any floatable debris can be directly observed and maintained through the manhole access provided directly over the treatment chamber.

Inspection Procedure

To inspect the XCelerator[®] XP, a hook is typically needed to remove the manhole cover. AquaShield[™] provides a customized manhole cover with our distinctive logo to make it easy for maintenance crews to locate the system in the field. We also provide a permanent metal information plate affixed inside the access riser, which provides our contact information, the XCelerator[®] XP model size, and serial number.

The only tools needed to inspect the XCelerator[®] XP system are a flashlight and a measuring device, such as a stadia rod or pole. Given the easy and direct accessibility provided, any floating trash and debris can be observed directly from the surface. Sediment depths can easily be determined by lowering a measuring device around the internal components to the top of the sediment pile and to the surface of the water. AquaShield[™] recommends that the units be cleaned when sediment depth reaches 7.25 inches, representing 50% sediment storage capacity. The full sediment storage depth in the XCelerator[®] XP is 14.5 inches.

It should be noted that, to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the *top* of the sediment pile. Keep in mind that the finer sediment at the top of the pile may offer less resistance to the measuring device than the larger particles, which typically occur deeper within the sediment pile.

Aqua-Swirl® XCELERATOR® XP Cleanout Procedure

Cleaning the XCELERATOR® XP is simple and quick. Floatable debris, if present, can be observed and removed directly through the provided 30-inch service access riser. A vacuum truck is typically used to remove the accumulated sediment and debris. After water is evacuated from the system, a water jet can be used to clean the space between the plates from the outlet channel. Access to the outlet channel is provided through the riser. Since there are no multiple or limited (blind) access chambers in the XCELERATOR® XP, there are no restrictions to prohibit on-site maintenance tasks.



Sediment inspection using a stadia rod

Disposal of Recovered Materials

AquaShield™ recommends that all maintenance activities be performed in accordance with appropriate health and safety practices for the tasks and equipment being used. AquaShield™ also recommends that all materials removed from the XCELERATOR® XP and any external structures (e.g, bypass features for off-line configurations) be handled and disposed of in full accordance with any applicable local and state requirements.



Vacuum (vactor) truck quickly cleans the single open access swirl chamber

***Aqua-Swirl[®] XCelerator[®] XP Inspection and
Maintenance Work Sheets
on Following Pages***

Aqua-Swirl® XCELERATOR® XP Inspection and Maintenance Manual Work Sheets

SITE and OWNER INFORMATION

Site Name: _____

Site Location: _____

Date: _____ Time: _____

Inspector Name: _____

Inspector Company: _____ Phone #: _____

Owner Name: _____

Owner Address: _____

Owner Phone #: _____ Emergency Phone #: _____

INSPECTIONS

I. Trash and Debris

1. Remove manhole lid to expose liquid surface of the Aqua-Swirl® XCELERATOR® XP.
2. Remove floatable debris with basket or net, if any present.

II. Sediment Accumulation

1. Lower measuring device (e.g. stadia rod) into treatment chamber and around the internal components through service access until top of sediment pile is reached.
2. Record distance to top of sediment pile from top of standing water: _____ inches.
3. Maximum recommended sediment depth prior to cleanout is 7.25 inches for all models. Consult system shop drawing for treatment chamber depth as measured from the inlet pipe invert to base of the unit.

III. Diversion Structures (External Bypass Features)

If a diversion (external bypass) configuration is present, it should be inspected as follows:

1. Inspect weir or other bypass feature for structural decay or damage. Weirs are more susceptible to damage than offset piping and should be checked to confirm that they are not crumbling (concrete or brick) or decaying (steel).
2. Inspect diversion structure and bypass piping for signs of structural damage or blockage from debris or sediment accumulation.
3. When feasible, measure elevations on diversion weir or piping to ensure it is consistent with site plan designs.

4. Inspect downstream (convergence) structure(s) for sign of blockage or structural failure as noted above.

CLEANING

Schedule cleaning with local vacor company or AquaShield™ to remove sediment, trash, and other pollutants. The captured material generally does not require special treatment or handling for disposal. Site-specific conditions or the presence of known contaminants may necessitate appropriate actions be taken to clean and dispose of materials captured and retained by the XCelerator® XP. All cleaning activities should be performed in accordance with property health and safety procedures.

AquaShield™ always recommends that all materials removed from the XCelerator® XP during the maintenance process be handled and disposed of in accordance with local and state environmental or other regulatory requirements.

MAINTENANCE SCHEDULE

I. During Construction

Inspect the XCelerator® XP every three (3) months and clean the system as needed. The XCelerator® XP should be inspected and cleaned at the end of construction, regardless of whether it has reached its maintenance trigger.

II. First Year Post-Construction

Inspect the unit every three (3) months and clean the system as needed.

Inspect and clean the system once annually, regardless of whether it has reached its pollutant storage capacity.

III. Second and Subsequent Years Post-Construction

If the system did not reach full pollutant capacity in the First Year Post-Construction period, the system can be inspected and cleaned annually.

If the XCelerator® XP reached full pollutant capacity in less than 12 months in the First Year Post-Construction period, the system should be inspected once every six (6) months and cleaned as needed. The unit should be cleaned annually, regardless of whether it reaches its pollutant capacity.

IV. Bypass Structures

Bypass structures for off-line configurations should be inspected whenever the XCelerator® XP is inspected. Maintenance should be performed on bypass structures as needed.

MAINTENANCE COMPANY INFORMATION

Company Name: _____

Street Address: _____

City: _____ State/Prov.: _____ Zip/Postal Code: _____

Contact: _____ Title: _____

Office Phone: _____ Cell Phone: _____

ACTIVITY LOG

Date of Cleaning: _____ (Next inspection should be 3 months from this data for first year).

Time of Cleaning: Start: _____ End: _____

Date of Next Inspection: _____

Floatable debris present: Yes No

Notes: _____

STRUCTURAL CONDITIONS and OBSERVATIONS

Structural damage: Yes No Where: _____

Structural wear: Yes No Where: _____

Odors present: Yes No Describe: _____

Clogging: Yes No Describe: _____

Other Observations: _____

Aqua-Swirl® XCELERATOR® XP

TABULAR MAINTENANCE SCHEDULE

Date Construction Started: _____

Date Construction Ended: _____

During Construction

Activity	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Inspect and Clean as needed			X			X			X			X
Inspect Bypass and maintain as needed			X			X			X			X
Clean System*												X*

* The Aqua-Swirl® XCELERATOR® XP should be cleaned **once a year**, regardless of whether it has reached full pollutant storage capacity. In addition, the system should be cleaned at the **end of construction**, regardless of whether it has reached full pollutant storage capacity.

First Year Post-Construction

Activity	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Inspect and Clean as needed			X			X			X			X
Inspect Bypass and maintain as needed			X			X			X			X
Clean System*												X*

* The Aqua-Swirl® XCELERATOR® XP should be cleaned **once a year**, regardless of whether it has reached full pollutant storage capacity.

Second and Subsequent Years Post-Construction

Activity	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Inspect and Clean as needed												X*
Inspect Bypass, maintain as needed												X*
Clean System*												X*

* If the Aqua-Swirl® XCELERATOR® XP did **not** reach full pollutant capacity in the First Year Post-Construction period, the system can be inspected and cleaned once per year.

If the Aqua-Swirl® XCELERATOR® XP **reached** full pollutant capacity in less than 12 months in the First Year Post-Construction period, the system should be inspected once every six (6) months or more frequently if history warrants, and cleaned as needed. The system should be cleaned annually, regardless of whether it reaches its full pollutant capacity.