INSPECTION & MAINTENANCE

Regular inspection and maintenance of the XSTREAM Retention System is vital for the performance and service life of the stormwater management system.

All local and provincial permits and regulations must be followed for system compliance.

Most local regulations require that all stormwater facilities be inspected and maintained to ensure they are operating as designed and providing protection to receiving water bodies.

Standard maintenance hole (MH) access locations are provided on every XSTREAM Retention System for ease of routine inspection and maintenance activities.

First 12 Months

It is recommended that inspections be performed multiple times during the first 12 months of service to assess the site-specific conditions. Inspection after the first major storm event (>25mm) and at quarterly intervals is recommended. Pollutant loading and pollutant characteristics can vary greatly from site to site due to variables such as nearby soil erosion or construction sites, winter maintenance on roads, amount of daily traffic and land use.

The first 12 months of inspections can be used to set the inspection and maintenance frequency for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance the XSTREAM Retention System can exceed its storage capacity, become blocked, or damaged, which can negatively affect its continued performance.

Inspection Equipment

The following is a list of equipment to allow for simple and effective inspection:

- ☐ FORTERRA Inspection and Maintenance Report Form
- ☐ Personal protective equipment (PPE)
- ☐ Appropriate traffic control signage and procedures, for vehicles or pedestrians
- ☐ Appropriate tools to remove MH access covers
- ☐ Flashlight
- ☐ Measuring pole or tape measure

WARNING: Entering the XSTREAM Retention System is generally not required for routine inspections. Work procedures must comply with the Occupational Health and Safety Act (OHSA) and Confined Spaces Regulation (O.Reg. 632/05). Failure to observe the above warnings may lead to property damage, personnel injury or death.

Inspection Steps

The key to any successful stormwater facility maintenance program is routine inspections. The inspection steps required on the XSTREAM Retention System are quick and easy. As mentioned above, the first 12 months should be the site-specific maintenance frequency establishment phase. This

information can be used to establish a base for long term inspection and maintenance interval requirements.

The XSTREAM Retention System can typically be inspected though visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and nearby pedestrians from any dangers associated with an open access hatch or maintenance hole.

Once the MH access covers have been safely opened the inspection process can proceed:

- ☐ Prepare the *FORTERRA Inspection and Maintenance Report* form by writing in the necessary information including project name, location, date & time, and other information (see inspection form at end of this document).
- ☐ Observe the upstream drainage area and look for sources of sediment, trash and debris.
- ☐ Observe the inside of the system through the access openings. If vision into the unit is impaired, utilize a flashlight to see inside the system and all precast sections.
- ☐ Look for any out of the ordinary obstructions in the inlet and outlet pipes. Check pipes for movement or leakage. Write down any observations on the inspection form.
- ☐ Through observation and/or digital photographs, estimate the amount of floatable debris accumulated in the system. Record this information on the inspection form. Next, utilizing a tape measure or measuring stick, estimate the amount of sediment accumulated in the system. Sediment depth may vary throughout the system, depending on the flow path. Record this depth on the inspection form.
- ☐ Observe any movement of precast sections, or concrete cracks and signs of deterioration.
- ☐ For detention and retention systems, inspect for any signs of leakage.
- ☐ For infiltration systems, inspect for any signs of blockage or reasons that the stormwater is not infiltrating into the underlying soils.
- ☐ Finalize inspection report to determine if maintenance is required.

Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- ☐ Damaged inlet and outlet pipes.
- ☐ Obstructions in the system.
- ☐ Excessive accumulation of trash or debris.
- ☐ Excessive accumulation of sediment (more than 150mm in depth).
- ☐ Damaged concrete or joint sealant.

Maintenance Equipment

While maintenance can be done manually, it is recommended that a vacuum truck be utilized to minimize time requirements to maintain the XSTREAM Retention System.

The following is a list of equipment recommended for maintenance activities:

- ☐ FORTERRA Inspection and Maintenance Report Form
- ☐ Personal protective equipment (PPE)
- ☐ Appropriate traffic control signage and procedures, for vehicles or pedestrians
- ☐ Appropriate tools to remove MH access covers
- ☐ Flashlight
- ☐ Measuring pole or tape measure
- ☐ Trash can
- ☐ Pressure washer

WARNING: Entering the XSTREAM Retention System may be required for maintenance. Work procedures must comply with the Occupational Health and Safety Act (OHSA) and Confined Spaces Regulation (O.Reg. 632/05). Failure to observe the above warnings may lead to property damage, personnel injury or death.

Maintenance Procedures

It is recommended that maintenance occurs several days (typically 72 hours) after the most recent wet weather event to allow for drain down of the system and any upstream detention systems designed to drain down over an extended period. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance. Once all safety measures have been set up cleaning of the system can proceed as follows:

- ☐ Using an extension on a vacuum truck boom, position the hose over the access opening into the system. Remove all floating debris, standing water (as needed), and sediment from the system.
- ☐ A power washer can be used to assist if sediments have become hardened and stuck to the walls. Be sure not to pressure wash the infiltration area as it may scour.
- ☐ Repeat the same procedure at each access opening until the system has been fully maintained.

If maintenance requires entry into the system, refer to O.Reg. 632/05 Confined Spaces:

- ☐ Ensure acceptable atmospheric levels with a gas meter to detect the presence of any hazardous gases. If hazardous gases are present, do not enter the system. Follow appropriate confined space procedures to address any hazards, such as utilizing a venting system. Once it is determined to be safe, utilizing an adequate means for entering and exiting the system.
- ☐ The last step is to replace all MH covers and remove all traffic controls.
- ☐ All removed debris and pollutants must be disposed of following local regulations.

For additional information contact FORTERRA Pipe & Precast at 1-888-888-3222.

INSPECTION AND MAINTENANCE REPORT

Project Name: _____

Project Address: _____

Owner: _____

Contact: _____ **Phone:** _____

Inspector Name: _____

Inspection Date: _____ **Time:** _____

Inspection Type: ☐ Routine ☐ Follow-up ☐ Complaint ☐ Storm

Weather Condition: _____

Additional Notes:

GPS Coordinates	Model # or Box Size	Inspection of Inlet & Outlet Pipes, Joints, and Connections Between Cells	Trash Build-up (kg) and Sediment Depth (mm)	Structural Notes, Concrete Damage	Hydraulic Operation of the Facility
Latitude: Longitude:					

Recommended Action: