

Drainage System Maintenance Pollution Prevention Procedure

Targeted Constituents

| | |
|------------------|-------------------------------------|
| Sediment | <input checked="" type="checkbox"/> |
| Nutrients | <input checked="" type="checkbox"/> |
| Trash | <input checked="" type="checkbox"/> |
| Metals | <input checked="" type="checkbox"/> |
| Bacteria | <input checked="" type="checkbox"/> |
| Oil and Grease | <input checked="" type="checkbox"/> |
| Organics | <input checked="" type="checkbox"/> |
| Oxygen Demanding | <input checked="" type="checkbox"/> |



Description

As a consequence of its function, the storm water conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, storm water inlets, and other storm water conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
 - Immediate repair of any deterioration threatening structural integrity.
 - Catch basins should be cleaned as frequently as needed.
 - Stenciling of streets with an arrow to locate catch basins

- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system separate from other materials and in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
 - Is there evidence of spills such as paints, discoloring, etc.
 - Are there any odors associated with the drainage system
 - Record locations of apparent illegal discharges/illicit connections
 - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke

testing, fluorometric dye testing, physical inspection testing, or television camera inspection.

- Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- ❑ Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

Illegal Dumping

- ❑ Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- ❑ Establish a reporting system for the public to submit illegal dumping incidents either by phone or web submission. The system should be designed to identify the following:
 - Illegal dumping sites
 - Types and quantities (in some cases) of wastes
 - Patterns in time of occurrence (time of day/night, month, or year)
 - Responsible parties
- ❑ Post “No Dumping” signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.

Training

- ❑ Train crews in proper maintenance activities, including record keeping and disposal.
- ❑ Only properly trained individuals are allowed to handle hazardous materials/wastes.
- ❑ Inform municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection,

hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.

- Create awareness with municipal employees, businesses, contractors, and the general public in proper and consistent methods for disposal.
- Make municipal staff aware of non-storm water discharges

Spill Response and Prevention

- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting by the Conservation Commission.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Private property access rights may be needed to track illegal discharges up gradient.

Maintenance

- Two-person teams may be required to clean catch basins with vector trucks.

- ❑ Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.
- ❑ Arrangements must be made for proper disposal of collected wastes.
- ❑ Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

- ❑ Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events.
- ❑ Flushing prevents “plug flow” discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.
- ❑ Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.
- ❑ To further reduce the impacts of storm water pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the

sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

- It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65- 75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.