

**OPERATION AND MAINTENANCE PLAN
AND
LONG-TERM POLLUTION PREVENTION PLAN
ESSEX CROSSING
#232 ESSEX STREET
BEVERLY, MASSACHUSETTS**

June 19, 2014
Revised March 10, 2015

GENERAL

The management plan incorporates a combination of the following chain of structural best management practices to improve water quality of the stormwater runoff from the proposed roadway and other impervious surfaces, and control runoff to downgradient areas.

1. Deep Sump Catch Basins with Hoods, Oil and Gas Traps
2. STC 450i Stormceptors
3. Granite Curb Level Spreader
4. Cultec Subsurface Chambers
5. Infiltration Basin

These stormwater management facilities have unique characteristics, uses, planning considerations and maintenance requirements. The maintenance requirements, as suggested by the DEP in "Volume 2, Chapter 2: Structural BMP Specifications for the Massachusetts Stormwater Handbook", and the suggested schedules are summarized in the following sections. It is suggested that the following guidelines be adhered to following completion of the project and then adjusted, as necessary, based on the results of the required inspections and based on evidence of maintenance history. The owner can submit a revised maintenance schedule to the Engineering Division for review and approval. The maintenance and repair reports will be submitted to the Engineering Division and the Conservation Commission annually by January 15th. There will be an inspection conducted for all components of the stormwater management system for major storm events equal to or exceeding 2 inches.

Deep Sump Catch Basins with Hood, Oil and Gas Traps

The catch basins must be inspected, and if necessary, cleaned four (4) times a year including at the end of foliage and snow removal season. Inspections shall consist of two tasks: measuring and recording depth of sediment deposits contained within the basin, and inspecting structural basin, hood, gas trap, and sump components for damage. The inspection frequency may need to be increased if catch basins are regularly found to contain a significant amount of trash and sediment.

- Basins shall be cleaned at least annually using a vacuum truck or when they are found to contain a significant amount of deposits (whenever the deposit depth is greater than

or equal to one-half the depth from the bottom of the lowest invert) and there is a significant amount of trash, as specified in the MADEP Stormwater Handbook, Volume 2, Chapter 2, pages 3 through 5.

- Damaged basin components shall be repaired as soon after discovery as possible to ensure that the catch basin functions properly.
- Removed basin deposits must be handled as specified in the attached page (Structural BMPs – Volume 2, Chapter 2, page 5) from the MADEP Stormwater Handbook.

Stormceptor STC 450i Water Quality Chamber

Regulating the sediment and petroleum product input to the proposed subsurface water quality system is the priority maintenance activity. Sediments and any oil spillage should be trapped and removed before they reach the chambers.

- Stormceptor chamber maintenance shall be performed on a regular basis as recommended by the manufacturer (described in the attached excerpt from the Stormceptor Maintenance Brochure obtained from the Stormceptor website (www.stormceptor.com) and as summarized below.
- Sediment removal is recommended annually, but is likely to vary widely based on site conditions and loadings. Typical maintenance cleaning can be done with a vacuum truck. Inspection for each of the Stormceptor units will include a quantification of the sediment load and oil and grease volumes. This is easily made from the surface with a tube dipstick with ball valve inserted through the cleanout pipe or other access port. Depths of sediment indicating maintenance are presented in the following table for the various models. Inspection of the internal structure should be part of the routine inspection plan. The units are designed to accept 15% of their capacity in solids annually based on maximum drainage area loading. Removal of sediment, oils, and grease from the system will depend on rates of accumulation. All sediment and oil waste materials shall be disposed of in accordance with all Federal, State, and Local regulations.

REQUIRED MAINTENANCE *

<u>Model</u>	<u>Sediment Depth (in.)</u>
Stormceptor Model 450i	8*

* based on 15% of the interceptor's sediment storage

Cultec R-330XL Subsurface Chambers

Recharge systems are prone to failure due to clogging. Adherence to this aggressive maintenance plan and schedule preserves effectiveness of the system.

- Refer to the manufacture's "Operation and Maintenance Guidelines" brochure (attached) for maintenance description.
- The subsurface system will be inspected after every major storm for the first few months after construction to ensure that proper function has been achieved. Thereafter, the area will be inspected at least four times a year. Water levels in the chambers should be recorded over several days to check drainage.
- The inspection ports for the recharger system will be inspected after every major storm and the collected debris removed.
- Any required cleaning or other action will be documented and completed within seven business days.
- Ponded water inside the chambers (as visible from the inspection ports) after 24 hours or several days most likely indicates that the bottoms of the pipes are clogged.
- The inspection, cleaning, and maintenance responsibility for the site drainage system shall belong to the property owner, designated Homeowners Association (if any), and any designated Property Manager.
- If inspection indicates that replacement or major repair is required, a work plan will be submitted within 7 days to the Engineering Division for review and repair.

Infiltration Basin

- Inspect after every major storm for the first few months after construction to ensure proper stabilization and function. Thereafter, the basin should be inspected at least twice a year.
- Pretreatment structures should be inspected and the accumulated sediment removed at least twice a year, ideally after every major rainfall event or every other month.
- The grass in the basin, on the side slopes and in the buffer areas should be mowed, and grass clippings, organic matter, and accumulated trash and debris removed at least twice during the growing season.
- Eroded or barren spots should be reseeded immediately after inspection to prevent additional erosion and accumulation of sediment.

- Sediment should be removed from the basin as necessary. Removal procedures should not take place until the floor of the basin is thoroughly dry.

Granite Curb Level Spreader

The granite curb level spreader should be checked periodically after every major storm to determine if the berm has been damaged and to determine that the design conditions have not changed. Any detrimental sediment accumulation should be removed. If riling has taken place on the berm or adjacent to the level spreader, the damage should be repaired as soon as possible. Leaf litter shall be removed from the level spreader area. The vegetation in the vicinity downgradient of the spreader will be periodically inspected and fertilized to maintain healthy dense growth.

Removal of Siltation Controls

All siltation controls, including, but not limited to, hay bales and silt fence, shall be removed, with the approval of the Beverly City Engineering Department, as soon as practical after paving, re-vegetation and total stabilization of the site. Unvegetated areas remaining in the area of the siltation controls shall be loamed and seeded with the appropriate groundcover to insure re-vegetation as rapidly as possible after the removal of the siltation controls. In the case of all proposed stormwater management facilities, during construction of the proposed stormwater management system the developer shall be the owner and party responsible for maintenance.

Spill Emergency Response and Shutoff Plan

In the event of an accidental spill of gasoline or oil, there shall provided, and kept on site, 36" x 60" "Drain Protector II" rectangular catch basin covers and 10-foot long "Spill berm" to provide protection for the drainage system. Both items are available from "Supply Line Direct". These items will be stored on site in an easily accessible location and personnel will be instructed in their proper use. The City of Beverly shall be responsible for producing and enacting a Spill Emergency Response and Shutoff Plan for the Right-of-Way drainage system.

Ownership / Maintenance Responsibility

The developer and owner, DUC Residential, LLC, shall be the party responsible for maintenance of the stormwater management facilities during development construction. Once the roadway is accepted by the City of Beverly, both the City and Homeowners Association will be responsible for maintaining the drainage and stormwater BMP systems in the Essex Crossing subdivision. Specifically, the City shall maintain all drainage system pipes and structures within the Right-of-Way (Pond View Lane), except for the Stormceptor 450i unit located in the manhole at Station 3+45, and the Homeowners Association shall maintain all other subdivision drainage lines and stormwater BMP structures, including the two Stormceptor 450i units at Stations 1+05 and 3+45, the infiltration basin at the rear of lots #14 and #15, and

the subsurface Cultec infiltration system and associated level spreader located adjacent to Kelleher's Pond. The drainage and stormwater BMP systems are shown on the Hayes Engineering, Inc. plan titled "OSRD Site & Utility Plan, Essex Crossing, Beverly, Mass.", revised through 9/30/14.

Standard #4: Water Quality

The Long-Term Pollution Prevention Plan

- Good housekeeping practices: Prevent or reduce pollutant runoff from the project development through the use of street sweeping, erosion and catch basin cleaning. It should be noted that we are not seeking credit for TSS removal with street sweeping for this project.
- Provisions for storing materials and waste products inside or under cover: All materials stored on site shall be stored in a neat and orderly fashion in their appropriate containers and under a roof or other secure enclosure. Waste products should be placed in secure receptacles until they are emptied by a licensed solid waste management company in Massachusetts.
- Requirements for routine inspections and maintenance of stormwater BMPs: Follow the guidelines outlined above.
- Spill prevention and response plans:
 - o Prevention: All materials stored on site shall be stored in a neat and orderly fashion in their appropriate containers and under a roof or other secure enclosure. Products will be kept in their original containers with the original manufacturer's label. Products should not be mixed with one another unless recommended by the manufacturer. If possible, all of the product should be used up before disposing of the container. The manufacturer's recommendations for proper use and disposal should be followed.
 - o Response: Manufacturer's recommended methods for cleanup shall be followed. Spills should be cleaned up immediately after discovery. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance. Spills of toxic or hazardous material shall be reported to the appropriate State and/or local authority in accordance with local and/or State regulations.
- Provisions for maintenance of lawns, gardens, and other landscaped areas: Maintenance of the landscaped areas shall be scheduled and supervised by the developer/future owner and their designated property manager (if any).
- Requirements for storage and use of fertilizers, herbicides and pesticides will be in compliance with all applied laws:
 - o Fertilizers: Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizers shall be worked into the soil to limit

exposure to stormwater. Storage shall be under a roof or other secure enclosure. The contents of any partially-used bags of fertilizer shall be transferred to a sealable plastic bag or bin to avoid spills.

- o Herbicides and Pesticides: Store herbicides and pesticides in original containers that are closed and labeled, in a secure area out of reach of children and pets. Avoid storing in damp areas where containers may become moist or rusty. Herbicides and pesticides shall not be stored near food. Follow the label instructions strictly about where and how much to apply. Do not put herbicides and pesticides in the trash or down the drain. Use rubber gloves when handling, and use an appropriate cartridge mask if using products extensively.
- Provisions for solid waste management: Waste products shall be placed in secure receptacles until they are emptied by a licensed solid waste management company in Massachusetts.
- Pet waste management provisions: The responsibility of managing pet waste lies with the individual who own pets to perform the clean up and disposal of their pet waste.
- Provisions for operation and management of septic systems: Not applicable. This project will have sewer service.
- Snow disposal and plowing plans relative to Wetland Resource Areas: Snow disposal will be in accordance with the Department of Environmental Protection, Bureau of Resource Protection, Snow Disposal Guidelines, Guideline No. BRPG01-01, effective March 8, 2001. In general, snow will be plowed in accordance with standard operating procedures. During construction, snow will be plowed and stored in designated areas adjacent to the roadways.
- Winter road salt and/or sand use and storage restrictions:
 - o Salt/Sand: Whenever possible, use of environmentally friendly alternatives, i.e. calcium chloride and sand instead of salt for melting ice, will be considered.
- Street sweeping schedules: In order to minimize the Total Suspended Solids (TSS) load to the deep-sump catch basins and those BMPs down gradient, street sweeping will be performed at least four (4) times per year during construction. Upon acceptance of the road by the City of Beverly, street sweeping will be conducted at the scheduled frequency set by the Department of Public Services,

Standard #10: Illicit Discharge Statement

Provisions for prevention of illicit discharges to the stormwater management systems:

There are no proposed illicit discharges to the proposed stormwater management systems. However, by definition, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water-line flushing, landscape irrigation,

uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, water used for street washing and water used to clean buildings without detergents. See the information presented in the Hayes Engineering, Inc. "Essex Crossing" plan set for the proposed locations of the drainage system, stormwater management BMPs, and utilities. Upon review of said plans, it is evident that there are no entries of illicit discharges into the stormwater management system. **The current owner, City of Beverly and Homeowners Association** shall be responsible for verifying that there are no illicit discharges to the stormwater management system (discharges of water into the system other than stormwater) after the system has been constructed.

- Documentation that stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas, or from land uses with higher potential pollutant loads (LUHPPL): The project does not discharge to or near critical areas and is not a LUHPPL.
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan: The responsibility lies with the City of Beverly once the **road is accepted**, **the** Homeowners Association, and any designated Supervisor or Property Manager.
- List of emergency contacts for implementing Long-Term Pollution Prevention Plan for the subdivision road: The responsibility lies with the City of Beverly once the roads are accepted, any Homeowners Association, any designated Supervisor or Property Manager, and any designated Site Supervisor or Property Manager during construction and post construction pollution control.

Current Owner / Applicant / Developer:

**DUC Residential, LLC
c/o Paul DiBiase
P.O.Box780
Lynnfield, MA 01940
(781) 334-9899**

LONG TERM INSPECTION AND MAINTENANCE REPORT FORM

**ESSEX CROSSING
#232 ESSEX STREET
BEVERLY, MASSACHUSETTS**

INSPECTIONS TO BE CONDUCTED AT THE FREQUENCY SPECIFIED IN THE
OPERATION AND MAINTENANCE PLAN AND ORDER OF CONDITIONS
Maintenance and repair reports must be submitted to the Engineering Division and
Conservation Commission annually by January 15th.

Date: _____

Inspected By: _____

Days Since Last Rainfall: _____ Amount of Last Rainfall: _____

BMP	BMP Installed As Designed? (circle one)		BMP Maintenance Required? (circle one)		Depth Sediment Build-Up	Corrective Action Needed and Notes
Catch Basins (Inspect Grates, Basin Structure, Hood, and Gas Trap)	Yes	No	Yes	No		

Remarks:

LONG TERM INSPECTION AND MAINTENANCE REPORT FORM

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Days Since Last Rainfall: _____ Amount of Last Rainfall: _____

BMP	BMP Installed As Designed? (circle one)		BMP Maintenance Required? (circle one)		Depth Sediment Build-Up	Corrective Action Needed and Notes
	Yes	No	Yes	No		
Stormceptor STC 450i						

Remarks:

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Date: _____

Inspected By: _____

Days Since Last Rainfall: _____ Amount of Last Rainfall: _____

Cultec Subsurface Infiltration System Refer to Cultec O. & M. Manual For Maintenance Requirements and Sample Log		
Chamber Conditions	Maintenance Performed	Sediment Depth

Remarks:

LONG TERM INSPECTION AND MAINTENANCE REPORT FORM

**ESSEX CROSSING
#232 ESSEX STREET
BEVERLY, MASSACHUSETTS**

INSPECTIONS TO BE CONDUCTED AT THE FREQUENCY SPECIFIED IN THE
FACILITY OPERATION AND MAINTENANCE PLAN AND ORDER OF CONDITIONS
Maintenance and repair reports must be submitted to the Engineering Division and
Conservation Commission annually by January 15th

Date: _____

Inspected By: _____

Days Since Last Rainfall: _____ Amount of Last Rainfall: _____

Granite Curb Level Spreader		
Curb and Riprap Conditions	Maintenance Performed	Sediment Depth

Remarks:
