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Refer to File No. LYF-0934A

March 8, 2021

Emilie Cademartori
Conservation Commission
55 Summer Street
Lynnfield, MA 01940

RE: Stormwater Permit Application
160 Moulton Drive, Lynnfield, MA / Palumbo

Dear Emilie,

Accompanying this report, please find revised plans for the Bali Hai stormwater management. These plans contain additional information pursuant to the comments of the peer review letter from Linden Engineering Partners dated February 8, 2021 and updated on March 3, 2021. Additional information is provided relative to the paragraph numbers indicated in that report.

7. The erosion control plan was apparently previously not reviewed. We have submitted additional information on it consisting of a construction entrance.
13. We are submitting additional information on the infiltration system, including the test holes that are required as part of the review.
17. Additional information has been added to the erosion control plan and also the Detail Sheets.
18. The two test holes and elevations have been added, as well as a detail for the test well, although I do not think it is required for a infiltration system and is not 20 feet deep.
22. There has been no addition to the plan, but the soil evaluator test holes indicate that the characteristic of the soils are such that they support the 3.75 inches per hour infiltration rate.
31. The monitoring well has been added.
32. It is still our intention to use the proprietary device of a CDS-4. Information on its performance standards was provided in the additional submission after the first peer review. We believe the fact remains that this project does not represent a new point source discharge to a critical area.



To: Conservation Commission
RE: 160 Moulton Drive / Palumbo
Date: March 8, 2021

39, 40 & 42. The maintenance plans have been amended to comply with items 39, 40 and 42.

43. A stormwater maintenance plan showing the BMPs is provided with this submission.

44. This item has been added to the O&M Plan.

46. An Illicit Discharge Statement is provided with this submission.

I think it would be helpful if these additional items are included as it will limit conditions in the Order requiring future compliance.

Very truly yours,

Peter J. Ogren, P.E., P.L.S.
President

PJO/dab
Enclosures

**Standard 8: Construction Period Pollution Prevention and
Erosion and Sedimentation Control
#160 Moulton Drive, Lynnfield, MA
March 3, 2021**

SITE DESCRIPTION

Project Name and Location: (Latitude, Longitude, or Address)

Bali Hai Apartments
160 Moulton Drive
Lynnfield, MA 01940

Owner Name and Address

160 Moulton Drive, LLC
33 Maple Street
Malden, MA 02148

Applicant Name and Address

160 Moulton Drive, LLC
33 Maple Street
Malden, MA 02148

Description: (Purpose and Types of Soil Disturbing Activities)

The proposed project is the redevelopment of an existing restaurant site to accommodate a new luxury apartment building, parking and stormwater BMPs, and all appurtenant site work. Soil disturbing activities include installation of erosion and sediment control devices; excavation; drainage system and utility installation; stormwater BMP installation and construction; building construction; parking lot paving; and landscaping. Erosion control locations are shown on the Hayes Engineering, Inc. plan titled "Erosion & Sedimentation Control Plan, #160 Moulton Drive, Lynnfield, Mass." on file with the Conservation Commission as part of the Stormwater Management Permit plan set for this project.

Sequence of Major Activities

The order of activities shall be as follows:

1. Install erosion and sediment control devices.
2. Demolish existing restaurant building, remove existing pavement.
3. Stabilize stockpiles within 14 days of last construction activity in that area.
4. Stabilize exposed surfaces where the period of exposure shall be more than two months, but less than twelve months within 14 days of last construction activity in that area.
5. Commence grading and excavation activities.

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6. Commence building and stormwater management area, and parking lot construction (grade to subgrade elevations, install drainage structures; install utilities, install gravel to appropriate elevations, install binder coat of pavement followed by curbing).
7. Install binder coat of pavement followed by curbing.
8. Loam and seed all disturbed areas.
9. Install final pavement course and final inspection of all stormwater BMPs.

CONTROLS

Erosion and Sediment Control Stabilization Practices

The Site Contractor / Project Manager (“Manager”) is responsible for ensuring that erosion and sedimentation control practices and controls are followed upon commencement of, and during project construction.

A. Protecting and Minimizing Exposed Areas

The project will temporarily leave bare earth open to erosion. Steps shall be taken to minimize this area of exposure by preserving existing vegetation and providing soil stabilization. Equipment and trucks shall be routed only over the existing pavement or areas of proposed work and workers shall minimize foot traffic in vegetated areas adjacent to the work area as much as possible. During site work, utilization of stabilization techniques is necessary for controlling erosion on exposed areas, including grading, seeding and otherwise stabilizing the areas.

B. Sediment And Erosion Control / Soil Stabilization

- i) Prior to any construction occurring adjacent to identified resource areas (shown on the plan and/or marked in the field), proper erosion and siltation barriers shall be installed so that throughout and until completion of construction, those areas will be afforded maximum protection. Temporary stockpiles of soil shall be surrounded with an erosion control barrier to prevent sediments from exiting the subject property. All erosion control barriers must be maintained in functioning condition and periodically inspected until areas of bare soil are stabilized to ensure that they are in functioning condition. Any accumulations of sediments present along erosion control barriers shall be removed as soon as possible after deposition in order to ensure the effectiveness of all sedimentation controls.

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On sites where grading or other work will occur on moderately steep slopes (3:1 and greater) located immediately upgradient of wetlands, the contractor shall work on one portion of the slope at a time, ensuring the stability of the disturbed soil by immediately loaming and seeding the slope, or otherwise vegetating the slope as desired, and installing erosion control mats (straw or cocoanut fiber designed for the slope steepness). If work is interrupted and the slope is to be left bare or otherwise unstabilized for duration of a day or more, a series of erosion control fences oriented parallel to the slope.

Vegetational Covers

Temporary Vegetational Cover

Any area proposed for removal of vegetation where soil will be exposed for more than 10 days shall be mulched or otherwise treated to prevent erosion. On sediment-producing areas in the buffer zone, where the period of exposure will be more than 30 days, the following procedures should be followed for a cover of annual rye. When bare soils are not completely graded and vegetated by September 30 of any year, winter rye shall be planted as specified in table and mulched with three (3) inches of hay or straw.

- a. Install needed surface water control measures.
- b. Perform all cultural operations at right angles to the slope.
- c. Establish grass or other ground cover species as recommended in the attached excerpt (pgs 144 -146) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas, 2003.

1. Permanent Vegetational Cover

To reduce damages from the potential incidence of sedimentation and runoff to other properties, and to avoid erosion on the site itself, a permanent type cover shall be established in disturbed areas located adjacent to resource areas immediately upon completion of grading. Seeding herbaceous cover is usually the most economical and practical way to stabilize any large area. For this site, all disturbed areas where lawns are desired will be seeded in fall during the period of August 1 to October 1; or in spring by May 15 with a commercial lawn mixture utilizing standard landscape methods and as recommended by the seed manufacturer. Grass sod or landscape plantings may be used instead of seed, if preferred.

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In upland/ buffer zone areas, outside of lawn locations, where an erosion control - wildlife seed mixture is desired, prepare soil and use one of grass seed mixes #1 through #6 as recommended in the attached excerpts (pgs 136 -139) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas 2003, to establish a stable, permanent cover.

REFERENCES

Department of Environmental Protection, Bureau of Resource Protection and U.S. Environmental Protection Agency, Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials. Massachusetts Executive Office of Environmental Affairs, Boston, Massachusetts, Reprint: May 2003.

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Seeding Dates

Seeding operations should be performed as an early spring seeding (April 1-May 15) with the use of cold treated seed. A late fall early winter dormant seeding (November 1 - December 15) can also be made, however the seeding rate will need to be increased by 50%.

Seeding Methods

Seeding should be performed by one of the following methods:

- ☞ Drill seedings (de-awned or de-bearded seed should be used unless the drill is equipped with special features to accept awned seed).
- ☞ Broadcast seeding with subsequent rolling, cultipacking or tracking the seeding with small track construction equipment. Tracking should be oriented up and down the slope.
- ☞ Hydroseeding with subsequent tracking. If wood fiber mulch is used, it should be applied as a separate operation after seeding and tracking to assure good seed to soil contact.

Mulch

Mulch the seedings with straw applied at the rate of ½ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas.

Seed Mixtures for Permanent Cover

Recommended mixtures for permanent seeding are provided on the following pages. Select plant species which are suited to the site conditions and planned use. Soil moisture conditions, often the major limiting site factor, are usually classified as follows:

Dry - Sands and gravels to sandy loams. No effective moisture supply from seepage or a high water table.

Moist - Well drained to moderately well drained sandy loams, loams, and finer; or coarser textured material with moderate influence on root zone from seepage or a high water table.

Wet - All textures with a water table at or very near the soil surface, or with enduring seepage.

When other factors strongly influence site conditions, the plants selected must also be tolerant of these conditions.

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Permanent Seeding Mixtures					
Mix	Site	Seed Mixture	Seed, Pounds per:		Remarks
			Acre	1,000 sf	
1	Dry	Little Bluestem	10	0.25	<ul style="list-style-type: none"> * Use Warm Season planting procedure. * Roadsides * Sand and Gravel Stabilization * Clover requires inoculation with nitrogen-fixing bacteria * Rates for this mix are for PLS.
		or Broomsedge	1	0.10	
		Tumble Lovegrass*	10	0.25	
		Switchgrass	2	0.10	
		Bush Clover*	1	0.10	
2	Dry	Deertongue	15	0.35	<ul style="list-style-type: none"> * Use Warm Season planting procedures. * Acid sites/Mine spoil * Clover requires inoculation with nitrogen-fixing bacteria. * Rates for this mix are for PLS.
		Broomsedge	10	0.25	
		Bush Clover*	2	0.10	
		Red Top	1	0.10	
3	Dry	Big Bluestem	10	0.25	<ul style="list-style-type: none"> * Rates for this mix are for PLS. * Use Warm Season planting procedures. * Eastern Prairie appearance * Sand and Gravel pits. * Golf Course Wild Areas * Sanitary Landfill Cover seeding * Wildlife Areas * OK to substitute Poverty Dropseed in place of Red Top/Ryegrass. * Rates for this mix are for PLS.
		Indian Grass	10	0.25	
		Switchgrass	10	0.25	
		Little Bluestem	10	0.25	
		Red Top or	1	0.10	
		Perennial Ryegrass	10	0.25	
4	Dry	Flat Pea	25	0.60	<ul style="list-style-type: none"> * Use Cool Season planting procedures * Utility Rights-of-Ways (tends to suppress woody growth)
		Red Top or	2	0.10	
		Perennial Ryegrass	15	0.35	
5	Dry	Little Bluestem	5	0.10	<ul style="list-style-type: none"> * Use Warm Season planting procedures. * Coastal sites * Rates for Bluestem and Switchgrass are for PLS.
		Switchgrass	10	0.25	
		Beach Pea*	20	0.45	
		Perennial Ryegrass	10	0.25	
6	Dry - Moist	Red Fescue	10	0.25	<ul style="list-style-type: none"> * Use Cool Season planting procedure. * Provides quick cover but is non-aggressive; will tend to allow indigenous plant colonization. * General erosion control on variety of sites, including forest roads, skid trails and landings.
		Canada Bluegrass	10	0.25	
		Perennial Ryegrass	10	0.25	
		Red Top	1	0.10	
7	Moist-Wet	Switchgrass	10	0.25	<ul style="list-style-type: none"> * Use Warm Season planting procedure. * Coastal plain/flood plain * Rates for Bluestem and Switchgrass are for PLS.
		Virginia Wild Rye	5	0.10	
		Big Bluestem	15	0.35	
		Red Top	1	0.10	

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Permanent Seeding Mixtures					
Seed, Pounds per:					
Mix	Site	Seed Mixture	Acre	1,000 sf	Remarks
8	Molst	Creeping Bentgrass	5	0.10	* Use Cool Season planting procedures.
	Wet	Fringed Bromegrass	5	0.10	* Pond Banks
		Fowl Meadowgrass	5	0.10	* Waterways/ditch banks
		Bluejoint Reedgrass or Rice Cutgrass	2	0.10	
		Perennial Ryegrass	10	0.25	
9	Molst	Red Fescue	5	0.10	*Salt Tolerant
	Wet	Creeping Bentgrass	2	0.10	* Fescue and Bentgrass provide low growing appearance, while Switchgrass provides tall cover for wildlife.
		Switchgrass	8	0.20	
		Perennial Ryegrass	10	0.25	
10	Molst	Red Fescue	5	0.10	* Use Cool Season planting procedure.
	Wet	Creeping Bentgrass	5	0.10	* Trefoil requires inoculation with nitrogen fixing bacteria.
		Virginia Wild Rye	8	0.20	
		Wood Reed Grass*	1	0.10	* Suitable for forest access roads, skid trails and other partial shade situations.
		Showy Tick Trefoil*	1	0.10	
11	Molst	Creeping Bentgrass	5	0.10	* Use Cool Season planting procedure.
	Wet	Bluejoint Reed Grass	1	0.10	* Suitable for waterways, pond or ditch banks.
		Virginia Wild Rye	3	0.10	* Trefoil requires inoculation with nitrogen fixing bacteria.
		Fowl Meadow Grass	10	0.25	
		Showy Tick Trefoil*	1	0.10	
		Red Top	1	0.10	
12	Wet	Blue Joint Reed Grass	1	0.10	* Use Cool Season planting procedure.
		Canada Manna Grass	1	0.10	* OK to seed in saturated soil conditions, but not in standing water.
		Rice Cut Grass	1	0.10	
		Creeping Bent Grass	5	0.10	* Suitable as stabilization seeding for created wetland.
		Fowl Meadow Grass	5	0.10	* All species in this mix are native to Massachusetts.
13	Dry-	American Beachgrass	18"	18'	*Vegetative planting with dormant culms, 3-5 culms per planting centers
	Molst			centers	
14	Inter-	Smooth Cordgrass	12-18"	12-18"	* Vegetative planting with transplants.
	Tidal	Saltmeadow Cordgrass		centers	centers

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Notes:

* Species such as Tumble Lovegrass, Fringed Bromegrass, Wood Reedgrass, Bush Clover and Beach Pea, while known to be commercially available from specific seed suppliers, may not always be available from your particular seed suppliers. The local Natural Resources Conservation Service office may be able to help with a source of supply. In the event a particular species listed in a mix can not be obtained, however, it may be possible to substitute another species.

Seed mixtures by courtesy of Natural Resources Conservation Service, Amherst, MA.

(PLS) Pure Live Seed

Warm Season grass seed is sold and planted on the basis of pure live seed. An adjustment is made to the bulk rate of the seed to compensate for inert material and non-viable seed. Percent of pure live seed is calculated by multiplying the percent purity by the percent germination; (% purity) x (% germination) = percent PLS.

For example, if the seeding rate calls for 10 lbs./acre PLS and the seed lot has a purity of 70% and germination of 75%, the PLS factor is:

$$(.70 \times .75) = .53$$

$$10 \text{ lbs. divided by } .53 = \text{approx. } 19 \text{ lbs.}$$

Therefore, 19 lbs of seed from the particular lot will need to be applied to obtain 10 lbs. of pure live seed.

Special Note

Tall Fescue, Reed Canary Grass, Crownvetch and Birdsfoot Trefoil are no longer recommended for general erosion control use in Massachusetts due to the invasive characteristics of each. If these species are used, it is recommended that the ecosystem of the site be analyzed for the effects species invasiveness may impose. The mixes listed in the above mixtures include either species native to Massachusetts or non-native species that are not perceived to be invasive, as per the Massachusetts Native Plant Advisory Committee.

Wetlands Seed Mixtures

For newly created wetlands, a wetlands specialist should design plantings to provide the best chance of success. Do not use introduced, invasive plants like reed canarygrass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Using plants such as these will cause many more problems than they will solve.

The following grasses all thrive in wetland situations:

- ☞ Fresh Water Cordgrass (*Spartina pectinata*)
- ☞ Marsh/Creeping Bentgrass (*Agrostis stolonifera*, var. *Palustris*)
- ☞ Broomsedge (*Andropogon virginicus*)
- ☞ Fringed Bromegrass (*Bromus ciliatus*)
- ☞ Blue Joint Reed Grass (*Calamagrostis canadensis*)
- ☞ Fowl Meadow Grass (*Glyceria striata*)
- ☞ Riverbank Wild Rye (*Elymus riparius*)
- ☞ Rice Cutgrass (*Leersia oryzoides*)
- ☞ Stout Wood Reed (*Cinna arundinacea*)
- ☞ Canada Manna Grass (*Glyceria canadensis*)

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A sample wetlands seed mix developed by The New England Environmental Wetland Plant Nursery is shown on the following page.

Wetland Seed Mixture

The New England Environmental Wetland Plant Nursery has developed a seed mixture which is specifically designed to be used in wetland replication projects and stormwater detention basins. It is composed of seeds from a variety of indigenous wetland species. Establishing a native wetland plant understory in these areas provides quick erosion control, wildlife food and cover, and helps to reduce the establishment of undesirable invasive species such as Phragmites and purple loosestrife (*Lythrum salicaria*). The species have been selected to represent varying degrees of drought tolerance, and will establish themselves based upon microtopography and the resulting variation in soil moisture.

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Common Name (Scientific Name)	% in Mix	Comments
Lurid Sedge (<i>Carex lurida</i>)	30	A low ground cover that tolerates mesic sites in addition to saturated areas; prolific seeder in second growing season.
Fowl Meadow Grass (<i>Glyceria Canadensis</i>)	25	Prolific seed producer that is a valuable wildlife food source.
Fringed Sedge (<i>Carex crinita</i>)	10	A medium to large sedge that tolerates saturated areas; good seed producer.
Joe-Pye Weed (<i>Eupatoriadelphus maculatus</i>)	10	Flowering plant that is valuable for wildlife cover. Grows to 4 feet.
Brook Sedge (<i>Carex spp., Ovales group</i>)	10	Tolerates a wide range of hydrologic conditions.
Woolgrass (<i>Scirpus cyperinus</i>)	5	Tolerates fluctuating hydrology.
Boneset (<i>Eupatorium perfoliatum</i>)	5	Flowering Plant that is valuable for wildlife cover. Grows to 3 feet.
Tussock Sedge (<i>Carex stricta</i>)	<5	Grows in elevated hummocks on wet sites, may grow rhizomonously on drier sites.
Blue Vervain (<i>Verbena hastata</i>)	<5	A native plant that bears attractive, blue flowers.

The recommended application rate is one pound per 5,000 square feet when used as an understory cover. This rate should be increased to one pound per 2,500 square feet for detention basins and other sites which require a very dense cover. For best results, a late fall application is recommended. This mix is not recommended for standing water.

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Maintenance

Inspect seeded areas for failure and make necessary repairs and reseed immediately. Conduct or follow-up survey after one year and replace failed plants where necessary.

If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results.

If a stand has less than 40% cover, reevaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand following seedbed preparation and seeding recommendations, omitting lime and fertilizer in the absence of soil test results. If the season prevents reseeding, mulch or jute netting is an effective temporary cover.

Seeded areas should be fertilized during the second growing season. Lime and fertilize thereafter at periodic intervals, as needed.

References

North Carolina Department of Environment, Health, and Natural Resources, *Erosion and Sediment Control Field Manual*, Raleigh, NC, February 1991.

Personal communication, Richard J. DeVergilio, USDA, Natural Resources Conservation Service, Amherst, MA.

U.S. Environmental Protection Agency, *Storm Water Management For Construction Activities*, EPA-832-R-92-005, Washington, DC, September, 1992.

Washington State Department of Ecology, *Stormwater Management Manual for the Puget Sound Basin*, Olympia, WA, February, 1992.

Seeding, Temporary

Planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.

Purpose

To temporarily stabilize areas that will not be brought to final grade for a period of more than 30 working days.

To stabilize disturbed areas before final grading or in a season not suitable for permanent seeding.

Temporary seeding controls runoff and erosion until permanent vegetation or other erosion control measures can be established.

Root systems hold down the soils so that they are less apt to be carried offsite by storm water runoff or wind.

Temporary seeding also reduces the problems associated with mud and dust from bare soil surfaces during construction.

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Where Practice Applies

On any cleared, unvegetated, or sparsely vegetated soil surface where vegetative cover is needed for less than one year. Applications of this practice include diversions, dams, temporary sediment basins, temporary road banks, and topsoil stockpiles.

Where permanent structures are to be installed or extensive re-grading of the area will occur prior to the establishment of permanent vegetation.

Areas which will not be subjected to heavy wear by construction traffic.

Areas sloping up to 10% for 100 feet or less, where temporary seeding is the only practice used.

Advantages

This is a relatively inexpensive form of erosion control but should only be used on sites awaiting permanent planting or grading. Those sites should have permanent measures used.

Vegetation will not only prevent erosion from occurring, but will also trap sediment in runoff from other parts of the site.

Temporary seeding offers fairly rapid protection to exposed areas.

Disadvantages/Problems

Temporary seeding is only viable when there is a sufficient window in time for plants to grow and establish cover. It depends heavily on the season and rainfall rate for success.

If sown on subsoil, growth will be poor unless heavily fertilized and limed. Because overfertilization can cause pollution of stormwater runoff, other practices such as mulching alone may be more appropriate. The potential for over-fertilization is an even worse problem in or near aquatic systems.

Once seeded, areas should not be travelled over.

Irrigation may be needed for successful growth. Regular irrigation is not encouraged because of the expense and the potential for erosion in areas that are not regularly inspected.

Planning Considerations

Temporary seedings provide protective cover for less than one year. Areas must be reseeded annual or planted with perennial vegetation.

Temporary seeding is used to protect earthen sediment control practices and to stabilize denuded areas that will not be brought into final grade for several weeks or months. Temporary seeding can provide a nurse crop for permanent vegetation, provide residue for soil protection and seedbed preparation, and help prevent dust production during construction.

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Use low-maintenance native species wherever possible.

Planting should be timed to minimize the need for irrigation.

Sheet erosion, caused by the impact of rain on bare soil, is the source of most fine particles in sediment. To reduce this sediment load in runoff, the soil surface itself should be protected. The most efficient and economical means of controlling sheet and rill erosion is to establish vegetative cover. Annual plants which sprout rapidly and survive for only one growing season are suitable for establishing temporary vegetative cover. Temporary seeding is effective when combined with construction phasing so bare areas of the site are minimized at all times.

Temporary seeding may prevent costly maintenance operations on other erosion control systems. For example, sediment basin clean-outs will be reduced if the drainage area of the basin is seeded where grading and construction are not taking place. Perimeter dikes will be more effective if not choked with sediment.

Proper seedbed preparation and the use of quality seed are important in this practice just as in permanent seeding. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.

Soil that has been compacted by heavy traffic or machinery may need to be loosened. Successful growth usually requires that the soil be tilled before the seed is applied. Topsoiling is not necessary for temporary seeding; however, it may improve the chances of establishing temporary vegetation in an area.

Planting Procedures

Time of Planting

Planting should preferably be done between April 1 and June 30, and September 1 through September 30. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1 and March 31, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.

Site Preparation

Before seeding, install needed surface runoff control measures such as gradient terraces, interceptor dike/swales, level spreaders, and sediment basins.

Seedbed Preparation

The seedbed should be firm with a fairly fine surface.

Perform all cultural operations across or at right angles to the slope. See **Topsoiling and Surface Roughening** for more information on seedbed preparation. A minimum of 2 to 4 inches of tilled topsoil is required.

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Liming and Fertilization

Apply uniformly 2 tons of ground limestone per acre (100 lbs. per 1,000 Sq. Ft.) or according to soil test.

Apply uniformly 10-10-10 analysis fertilizer at the rate of 400 lbs. per acre (14 lbs. per 1,000 Sq. Ft.) or as indicated by soil test. Forty percent of the nitrogen should be in organic form.

Work in lime and fertilizer to a depth of 4 inches using any suitable equipment.

Species	Seedings for Temporary Cover		Recommended Seeding Dates
	Seeding Rates lbs/sq.ft. 1,000 Sq.Ft.	Acres	
Annual Ryegrass	1	40	April 1 to June 1 Aug. 15 to Sept. 15
Foxtail Millet	0.7	30	May 1 to June 30
Oats	2	80	April 1 to July 1 August 15 to Sept. 15
Winter Rye	3	120	Aug. 15 to Oct. 15

"Hydro-seeding" applications with appropriate seed-mulch-fertilizer mixtures may also be used.

Seeding

Select adapted species from the accompanying table.

Apply seed uniformly according to the rate indicated in the table by broadcasting, drilling or hydraulic application.

Cover seeds with suitable equipment as follows:

- ..Rye grass ¼ inch
- ..Millet ½ to ¾ inch
- ..Oats 1 to 1-1/2 inches
- ..Winter rye 1 to 1-1/2 inches.

Mulch

Use an effective mulch, such as clean grain straw; tacked and/or tied down with netting to protect seedbed and encourage plant growth.

Common Trouble Points

Lime and fertilizer not incorporated to at least 4 inches

May be lost to runoff or remain concentrated near the surface where they may inhibit germination.

Mulch rate inadequate or straw mulch not tacked down

Results in poor germination or failure, and erosion damage. Repair damaged areas, reseed and mulch.

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Annual ryegrass used for temporary seeding

Ryegrass reseeds itself and makes it difficult to establish a good cover of permanent vegetation.

Seed not broadcast evenly or rate too low

Results in patchy growth and erosion.

Maintenance

Inspect within 6 weeks of planting to see if stands are adequate. Check for damage after heavy rains. Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.

Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather or on adverse sites. Water application rates should be controlled to prevent runoff.

References

Massachusetts Department of Environmental Protection, Office of Watershed Management, Nonpoint Source Program, Massachusetts *Nonpoint Source Management Manual*, Boston, Massachusetts, June, 1993.

North Carolina Department of Environment, Health, and Natural Resources, *Erosion and Sediment Control Field Manual*, Raleigh, NC, February 1991.

U.S. Environmental Protection Agency, *Storm Water Management For Construction Activities*, EPA-832-R-92-005, Washington, DC, September, 1992.

Washington State Department of Ecology, *Stormwater Management Manual for the Puget Sound Basin*, Olympia, WA, February, 1992.

Silt Curtain

A temporary sediment barrier installed parallel to the bank of a stream or lake. Used to contain the sediment produced by construction operations on the bank of a stream or lake and allow for its removal.

Where Practice Applies

The silt curtain is used along the banks of streams or lakes where sediment could pollute or degrade the stream or lake.

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#160 Moulton Drive, Lynnfield, MA
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Structural Practices

Straw Wattle/Compost sock – shall be installed as shown on the approved plans to help prevent erosion and sedimentation to the downstream wetland resources on the project.

Catch Basin – shall be fitted with “silt sack”-type devices during construction to prevent the accumulation of sediments in the catch basin sumps. Catch basin silt sacks are to be replaced if damaged and cleaned as needed during construction using a truck-mounted vacuum device.

Tracking Pad - shall be installed in the initial stage of construction as shown on the approved plans to reduce deposition of sediments on the existing paved road.

Stormwater Management

The proposed stormwater management plan in the drainage analysis outlines the impacts of stormwater runoff for the project as it related to the downstream areas of comparison. Elements incorporated in the design of the stormwater management plan include the following best management practices (BMPs):

1. StormTech DC-780 Subsurface Detention Chambers.
2. Deep sump Catch basin fitted with “Snout” gas and trash hood.
3. Contech CDS hydrodynamic separator.
4. Paved surface sweeping.

Utilization of these BMPs as part of the overall watershed management plan will be instrumental in reducing the peak rate of runoff from the site into the wetland.

OTHER CONTROLS

Waste Disposal:

Waste Materials: all waste material shall be collected and stored in secure metal dumpsters rented from a licensed solid waste management company in Massachusetts. The dumpsters shall meet all local and State solid waste management regulations as outlined in 310 CMR 19.00. All trash and construction debris generated on site shall be disposed of in the dumpsters. The dumpsters shall be emptied as often as necessary during construction and transferred to an approved solid waste facility licensed to accept municipal solid waste and/or construction and demolition debris. No construction waste shall be buried on site. All personnel shall be instructed regarding the correct procedure for waste disposal.

Hazardous Waste: All hazardous waste materials shall be disposed of in a manner specified by local or State regulation or by the manufacturer. Site personnel shall be instructed in these practices.

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#160 Moulton Drive, Lynnfield, MA
March 3, 2021

Sanitary Waste: All sanitary waste shall be collected from portable units, as needed, by a septage hauler licensed in Massachusetts, in accordance with the requirements of the local Board of Health.

Offsite Vehicle Tracking:

Construction entrance and exit shall be via Moulton Drive and shall include a stone tracking pad to reduce sedimentation from tires of exiting vehicles until all areas are paved or otherwise stabilized. Accumulated sediments must be swept and removed on a regular basis from the site entrance and adjacent roadways via mechanical street sweeping or hand sweeping operations as necessary.

TIMING OF CONTROLS/MEASURES

As indicated in the Sequence of Major Activities, the installation of erosion and sediment control devices and installation of stabilized construction entrances shall be in place prior to major earth excavation activities. Areas where construction activities are exposed more than two months, but less than 12 months shall be stabilized with the temporary stabilization practices referred to above. Once construction activity has been completed in a particular area, that area shall then be stabilized with permanent seed and mulch.

MAINTENANCE/INSPECTION PROCEDURES

Erosion and Sediment Control Inspection and Maintenance Practices

The following items represent the inspection and maintenance practices that shall be used to maintain sediment and erosion control for the project.

1. All control measures shall be inspected at least once every seven (7) days and following any storm event of 0.25 inches or greater.
2. All measures shall be maintained in good working order; if a repair is necessary, it shall be initiated within 24 hours of the report.
3. Built up sediment shall be removed from erosion control when it has reached one-third the height of the fence.
4. Siltation Control shall be inspected for depth of sediment and tears.
5. The catch basin grate shall be inspected for grate elevation relative to current surface condition; condition of silt sacks, and degree to which sediment has accumulated on the grate and in the sump of the catch basin.
6. Temporary and permanent seeding and any plantings shall be inspected for bare spots, washouts, and healthy growth.

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7. A maintenance inspection report shall be prepared following each inspection. A copy of the report form to be completed by the inspector is attached with this document.
8. The Site Contractor/ Project Manager (“Manager”) shall select three individuals who will be responsible for inspections, maintenance and repair activities. The “Manager” shall be responsible for filling out the inspection and maintenance report.
9. Personnel selected for inspections and maintenance responsibilities shall receive training from the “Manager”. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment control devices used on site in good working order.

Non-Stormwater Discharges

It is expected that the following non-stormwater discharges will occur from the site during the construction period:

1. Pavement wash waters
2. No non-stormwater discharges shall be directed to unstabilized earth surfaces.

INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be present on site during construction:

- Bituminous Concrete
- Concrete
- Petroleum Based Products
- Cleaning Solvents
- Adhesives
- Grout
- Masonry Block
- Fertilizers

**Standard 8: Construction Period Pollution Prevention and
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#160 Moulton Drive, Lynnfield, MA
March 3, 2021**

SPILL PREVENTION

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

Equipment fueling and Storage:

Equipment and associated fuels and lubricants shall be stored in designated locations.

Good Housekeeping:

The following good housekeeping practices must be followed on site during the construction project.

1. A concerted effort shall be made to store only enough product required to complete a particular task
2. All materials stored on site shall be stored in a neat and orderly fashion in their appropriate containers and, if possible, under a roof or other secure enclosure
3. Products shall be kept in their original containers with the original manufacture's label
4. Substances shall not be mixed with one another unless recommended by the manufacturer
5. Whenever possible, all of a product shall be used up before disposing of the container
6. Manufacture's recommendations for proper use and disposal shall be followed
7. The site superintendent shall inspect daily to ensure proper use and disposal of materials on site.

Hazardous Products:

Then following practices are intended to reduce the risks associated with hazardous materials.

1. Products shall be kept in original containers unless they are not re-sealable
2. Where feasible, the original labels and material safety data shall be retained, whereas they contain important product information
3. If surplus product must be disposed, follow manufacturer's or local and State recommended methods for proper disposal.

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#160 Moulton Drive, Lynnfield, MA
March 3, 2021**

PRODUCT SPECIFIC PRACTICES

The following product specific practices shall be followed on site:

Petroleum Products:

All on site vehicles shall be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. A Spill Kit rated for petroleum shall be kept on site and utilized immediately to clean up any spills or leaks. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any bituminous concrete or asphalt substances used on site shall be applied according to the manufacturer's recommendations.

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 in a covered shed or trailer. The contents of any partially used bags of fertilizers shall be transferred to a sealable plastic bag or bin to avoid spills.

Paints:

All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged into any catch basin, drain manhole, or any portion of the stormwater management system. Excess paint shall be properly disposed of according to manufacturer's recommendations or State and local regulations.

Concrete Trucks:

Concrete trucks shall not be allowed to wash out or discharge surplus concrete or drum wash water on site.

SPILL CONTROL PRACTICES

The Site Contractor / Project Manager ("Manager") is responsible for ensuring that materials spill control practices are followed upon commencement of, and during project construction.

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices must be followed for spill prevention and cleanup:

**Standard 8: Construction Period Pollution Prevention and
Erosion and Sedimentation Control
#160 Moulton Drive, Lynnfield, MA
March 3, 2021**

Spill Kit

A petroleum and chemical universal spill kit such as those offered by ENPAC® (e.g., “Speedy Duffel Spill Kit-Universal” or “Job Site & Contractor Universal Kit”) shall be kept on-site at all times for the duration of construction on the property. The Property Owner, Homeowner’s Association (if any) and any designated on-site construction manager shall be responsible for training site personnel in the use of the kit and ensuring immediate utilization of the kit during spill emergencies.

Spill Cleanup

1. Manufacturer’s recommended methods for cleanup for on-site materials must be readily available at the construction office, and site personnel shall be made aware of the procedures and the location of the information.
2. Materials and equipment necessary for spill cleanup shall be kept in the material storage area on site. Equipment and materials shall include, but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand sawdust, and plastic and metal trash containers specifically for this purpose.
3. All spills shall be cleaned up immediately after discovery.
4. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with hazardous substance.
5. 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.
6. The spill prevention plan shall be adjusted to include measures to prevent a particular type of spill from reoccurring and how to clean up the spill if there is another occurrence. A description of the spill, what caused it, and the clean up measures shall also be included.
7. The “Manager” shall be the spill preventions and cleanup coordinator. The “Manager” shall designate at least three other site personnel who will be trained in the spill control practices identified above.

CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN

**RESIDENTIAL DEVELOPMENT
160 MOULTON DRIVE
LYNNFIELD, MASSACHUSETTS**

INSPECTION AND MAINTENANCE REPORT FORM

TO BE COMPLETED EVERY 7 DAYS AND WITHIN 24 HOURS OF
A RAINFALL EVENT OF 0.25 INCHES OR GREATER

Date: _____

Inspector: _____

Inspector's Title: _____

Days Since Last Rainfall: _____

Amount of Last Rainfall _____

1	BMP	BMP Installed? (circle one)		BMP Maintenance Required or Performed? (circle one)		Corrective Action Needed And Notes
		Yes	No	Yes	No	
1	Erosion Control Barrier	Yes	No	Yes	No	
2	Subsurface Chambers	Yes	No	Yes	No	
3	Catch Basin Siltsack Inserts	Yes	No	Yes	No	
4	Tracking Pad	Yes	No	Yes	No	
5		Yes	No	Yes	No	
6						
7						

Additional Comments: _____

**OPERATION AND MAINTENANCE PLAN AND
LONG-TERM POLLUTION PREVENTION PLAN**

**160 MOULTON DRIVE
LYNNFIELD, MASSACHUSETTS**

Date: July 6, 2018
Revised March 3, 2021



Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax : (781) 246-7596

**OPERATION AND MAINTENANCE PLAN AND
LONG-TERM POLLUTION PREVENTION PLAN
160 MOULTON DRIVE
LYNNFIELD, MASSACHUSETTS**

July 6, 2018
Revised March 3, 2021

GENERAL

The management plan incorporates the following structural Best Management Practices to infiltrate stormwater runoff from the proposed residential development.

1. Deep Sump Catch Basins with Gas Trap
2. Stormwater Infiltration Chambers (StormTech DC-780)
3. Hydrodynamic Particle Separator (Contech CDS-4 Unit)
4. Street & Parking Lot Sweeping

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 for a one-year cycle following completion of the project, then adjusted, as necessary, based on the results of the required inspections, unless otherwise stated. Locations of the catch basin, particle separator, and subsurface chamber treatment BMPs installed at this residential development are shown on the accompanying Hayes Engineering, Inc. plan titled "Stormwater Maintenance Plan, #160 Moulton Drive, Lynnfield, Mass." dated March 4, 2021.

Deep Sump Catch Basin

- Inspect catch basins at least 4 times yearly to identify presence of component damage, clogs, and trash and sediment accumulations.
- Inlets should be cleaned with a vacuum truck to remove sediment, trash, and petroleum at least four (4) times per year, including in April and November, after heavy rain and petroleum or chemical spills, and when sediment level is at least ½ depth from the invert of the lowest pipe in the basin to the bottom of the basin.
- Damaged grates, basin, and hood components noted during inspections shall be promptly repaired or replaced to ensure full function of these pre-treatment devices.
- All sediments and hydrocarbons should be properly handled and disposed, in accordance with local, state and federal guidelines and regulations.

Stormwater Management Area (StormTech DC-780 Subsurface Chambers)

Chamber manufacturer StormTech recommends that inspection be conducted every six (6) months for the first year and at least annually thereafter, and if significant sediment accumulation is found, cleaning with a JetVac machine should be performed, as outlined in their "O & M Isolator® Row Manual". The Manual is attached hereon and further found at: (https://www.stormtech.com/download_files/pdf/11011_StormTechIsolatorOMManual.pdf).

Subsurface chamber systems are prone to failure due to clogging. Regulating the sediment and petroleum product input to the proposed system is the priority maintenance activity. Sediments and any oil spillage should be trapped and removed before they reach the chambers. Catch basin and proprietary particle separator pre-treatment devices which flow into the infiltration system shall be regularly cleaned according to the maintenance schedules provided herein to prevent fine sediments and debris from entering and clogging the subsurface system. Hayes Engineering, Inc. recommends the following inspection schedule in addition to that provided in the above-referenced StormTech O & M Manual to ensure that the chambers function well into the future.

- The Contractor shall verify that the required crushed stone and geotechnical fabric materials are clean and free of sediments and petroleum residue prior to, during and after the chamber system installation.
- Inspections of the chamber system shall be made by a registered profession engineer after every major storm for the first few months after construction to verify that proper function has been achieved. During these initial inspections, water levels in the chambers should be measured and recorded in a permanent log over several days to check the drainage duration and verify that sediments are not accumulating. If ponded water is present after 24 hours or an accumulation of sediment or debris is noted within the chambers, the Homeowners Association (or designated property manager) and engineer shall determine the cause for this condition and devise an action plan to improve system functionality. Any required maintenance or major repair will be documented in the permanent logbook and be completed within seven business days, with a report of such to the Lynnfield Town Engineer and Conservation Commission.
- Once the chamber system has been verified to perform as designed, interior chamber conditions shall be inspected at least annually. Post construction inspections (to be conducted through inspection ports) shall consist of documenting interior chamber and bed conditions, measured water depth, and presence of sediment. If inspection indicates that the system is clogged (ponding water present after 24 hours or sediment accumulations present), replacement or major repair actions may be required as determined by a professional engineer. In this case, the Homeowners Association (or designated property manager) and engineer shall determine the cause for this condition and devise an action plan. Any required maintenance or major repair will be documented in the permanent log book and be completed within seven business days, with a report of such to the Lynnfield Town Engineer and Conservation Commission.
- The inspection and maintenance responsibility for the subsurface system shall belong to the Property Owner, Homeowner's Association, and designated property manager.

Contech CDS Hydrodynamic Separator

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

- CDS units should be inspected least twice a year (i.e. spring and fall) and cleaned at least once a year, adjusting frequency based on evaluations of sediment and pollutant accumulation as recommended by the manufacturer (further described in the attached Contech “CDS® Inspection and Maintenance Guide” obtained from the Contech website (<https://www.conteches.com/technical-guides/search?filter=08DV04355M>) and as summarized below).
- CDS unit cleaning shall occur when the isolated sump is filled with sediment, trash, and other pollutants to 75% capacity and at least on an annual basis but is likely to vary widely based on site conditions. Typical maintenance cleaning is done with a commercial vacuum truck. Inspection for the CDS unit will include both visual inspection of components and quantification of the sediment load and oil and grease volumes. Access is gained through designated manhole covers and sediment measurement is easily made from the surface with a tube dipstick with ball valve, tape measure, or other measuring device inserted through the open manhole. Sample log sheets for recording observation and maintenance is provided in the Maintenance Guide and attached hereon. All sediment and oil waste materials shall be disposed of in accordance with all Federal, State, and Local regulations.
- The inspection and maintenance responsibility for the CDS hydrodynamic separator unit shall belong to the Property Owner, Homeowner’s Association, and designated property manager.

Sweeping

Parking areas and driveways shall be cleaned with a mechanical sweeper at least annually to control pollutant loading within the stormwater treatment devices. Sweeping frequency may need to be increased based upon evaluation of sediment accumulations within the treatment devices.

Removal of Siltation Controls

All siltation controls, including, but not limited to catch basin silt sacks, compost socks, bales, and silt fence shall be removed, with the approval of the Town Engineer, 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 ensure re-vegetation as rapidly as possible after the removal of the siltation controls.

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Owner and Maintenance Responsibilities

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. Once the development is complete, the Property Owner or Homeowner's Association (if any) will assume the responsibility of on-going maintenance, as well as the long-term pollution prevention plan, unless other legally-binding agreements are established with another entity.

O&M / LPPP
 160 Moulton Drive
 Lynnfield, MA 01940
 July 6, 2018, Revised March 3, 2021

**INSPECTION AND MAINTENANCE REPORT FORM
 160 MOULTON DRIVE
 LYNNFIELD, MASSACHUSETTS**

TO BE COMPLETED FOR REQUIRED INSPECTIONS AND MAINTENANCE
 AT THE FREQUENCY SPECIFIED IN THE OPERATION AND MAINTENANCE PLAN

Inspector: _____ Date: _____

Inspector's Title: _____

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

	Treatment BMP	BMP Installed at Grade? (circle one)		BMP Maintenance Required or performed? (circle one)		Corrective Action Needed And Notes
		Yes	No	Yes	No	
1	StormTech DC-780 Subsurface Chambers	Yes	No	Yes	No	
2	Catch Basins-	Yes	No	Yes	No	
3	Contech CDS-4 Unit	Yes	No	Yes	No	
4		Yes	No	Yes	No	
5		Yes	No	Yes	No	
6		Yes	No	Yes	No	
7		Yes	No	Yes	No	

Additional Comments:

**LONG TERM POLLUTION PREVENTION PLAN
160 MOULTON DRIVE
LYNNFIELD, MASSACHUSETTS**

- Good housekeeping practices: Prevent or reduce pollutant runoff from the project development through the use of street sweeping, erosion control and catch basin cleaning.
- Provisions for storing materials and waste products inside or under cover: All materials stored on site should be stored in a neat and orderly fashion in their appropriate containers and, if possible, 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.
- Vehicle washing controls: The project is comprised of an apartment building; therefore, it is not anticipated that vehicles will be washed on site.
- Requirements for routine inspections and maintenance of stormwater BMPs: Follow the guidelines outlined above.
- Spill prevention and response plans:

Prevention: All materials stored on site should be stored in a neat and orderly fashion in their appropriate containers and, if possible, under a roof or other secure enclosure. Products should 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.

Response: Manufacturer's recommended methods for cleanup should 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: The project is comprised of single family house lots, therefore, these activities should be left up the individual homeowners to schedule and perform.
- Requirements for storage and use of fertilizers, herbicides, and pesticides (Should any questions arise about these materials the Order of Conditions for this project should be consulted if applicable):

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 stored under a roof or other secure enclosure. The contents of any partially used bags of fertilizers shall be transferred to a sealable plastic bag or bin to avoid spills.

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 should 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.

- Pet waste management provisions: The project is comprised of an apartment building, the property manager will require individual tenants who own pets to perform the clean up and disposal of their pet waste.
- Provisions for operation and management of septic systems: The project is comprised of an apartment building; therefore, the septic system is privately owned and the responsibility for these activities lies with property manager to schedule and perform.
- Provisions for solid waste management: Waste products should be placed in secure receptacles until they are emptied by a licensed solid waste management company in Massachusetts.
- Snow disposal and plowing plans relative to Wetland Resource Areas: Snow disposal should be in accordance with the Bureau of Resource Protection Snow Disposal Guidelines, Guideline No. BRPG01-01 effective December 21, 2015.
- Winter Road Salt and/or Sand Use and Storage restrictions:

Road Salt: Use and storage should be in accordance with the Bureau of Resource Protection Drinking Water Program Guidelines on Deicing Chemical (Road Salt) Storage, Guideline No. DWSG97-1 effective December 19, 1997, a copy of which is attached.

Sand: Whenever possible, use of environmentally friendly alternatives, i.e. calcium chloride and sand instead of salt for melting ice should be considered.

- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan: The responsibility lies with the property manager.

Effective Date: March 8, 2001

Guideline No. BRPG01-01

Applicability: Applies to all federal, state, regional and local agencies, as well as to private businesses.

Supersedes: BRP Snow Disposal Guideline BRPG97-1 issued 12/19/97, and all previous snow disposal guidance

Approved by: Glenn Haas, Assistant Commissioner for Resource Protection

PURPOSE: To provide guidelines to all government agencies and private businesses regarding snow disposal site selection, site preparation and maintenance, and emergency snow disposal options that are acceptable to the Department of Environmental Protection, Bureau of Resource Protection.

APPLICABILITY: These Guidelines are issued by the Bureau of Resource Protection on behalf of all Bureau Programs (including Drinking Water Supply, Wetlands and Waterways, Wastewater Management, and Watershed Planning and Permitting). They apply to public agencies and private businesses disposing of snow in the Commonwealth of Massachusetts.

INTRODUCTION

Finding a place to dispose of collected snow poses a challenge to municipalities and businesses as they clear roads, parking lots, bridges, and sidewalks. While we are all aware of the threats to public safety caused by snow, collected snow that is contaminated with road salt, sand, litter, and automotive pollutants such as oil also threatens public health and the environment.

As snow melts, road salt, sand, litter, and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. Road salt and other pollutants can contaminate water supplies and are toxic to aquatic life at certain levels. Sand washed into waterbodies can create sand bars or fill in wetlands and ponds, impacting aquatic life, causing flooding, and affecting our use of these resources.

There are several steps that communities can take to minimize the impacts of snow disposal on public health and the environment. These steps will help communities avoid the costs of a contaminated water supply, degraded waterbodies, and flooding. Everything we do on the land has the potential to impact our water resources. Given the authority of local government over the use of the land, municipal officials and staff have a critically important role to play in protecting our water resources.

The purpose of these guidelines is to help municipalities and businesses select, prepare, and maintain appropriate snow disposal sites before the snow begins to accumulate through the winter.

RECOMMENDED GUIDELINES

These snow disposal guidelines address: (1) site selection; (2) site preparation and maintenance; and (3) emergency snow disposal.

1. SITE SELECTION

The key to selecting effective snow disposal sites is to locate them adjacent to or on pervious surfaces in upland areas away from water resources and wells. At these locations, the snow meltwater can filter in to the soil, leaving behind sand and debris which can be removed in the springtime. The following areas should be avoided:

- Avoid dumping of snow into any waterbody, including rivers, the ocean, reservoirs, ponds, or wetlands. In addition to water quality impacts and flooding, snow disposed of in open water can cause navigational hazards when it freezes into ice blocks.
- Do not dump snow within a Zone II or Interim Wellhead Protection Area (IWPA) of a public water supply well or within 75 feet of a private well, where road salt may contaminate water supplies.
- Avoid dumping snow on MassDEP-designated high and medium-yield aquifers where it may contaminate groundwater (see the next page for information on ordering maps from MassGIS showing the locations of aquifers, Zone II's, and IWPAs in your community).
- Avoid dumping snow in sanitary landfills and gravel pits. Snow meltwater will create more contaminated leachate in landfills posing a greater risk to groundwater, and in gravel pits, there is little opportunity for pollutants to be filtered out of the meltwater because groundwater is close to the land surface.
- Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

Site Selection Procedures

1. It is important that the municipal Department of Public Works or Highway Department, Conservation Commission, and Board of Health work together to select appropriate snow disposal sites. The following steps should be taken:
 2. Estimate how much snow disposal capacity is needed for the season so that an adequate number of disposal sites can be selected and prepared.

3. Identify sites that could potentially be used for snow disposal such as municipal open space (e.g., parking lots or parks).
4. Sites located in upland locations that are not likely to impact sensitive environmental resources should be selected first.
5. If more storage space is still needed, prioritize the sites with the least environmental impact (using the site selection criteria, and local or MassGIS maps as a guide).

MassGIS Maps of Open Space and Water Resources

If local maps do not show the information you need to select appropriate snow disposal sites, you may order maps from MassGIS (Massachusetts Geographic Information System) which show publicly owned open spaces and approximate locations of sensitive environmental resources (locations should be field-verified where possible). Different coverages or map themes depicting sensitive environmental resources are available from MassGIS on the map you order. At a minimum, you should order the Priority Resources Map. The Priority Resources Map includes aquifers, public water supplies, MassDEP-approved Zone II's, Interim Wellhead Protection Areas, Wetlands, Open Space, Areas of Critical Environmental Concern, NHESP Wetlands Habitats, MassDEP Permitted Solid Waste facilities, Surface Water Protection areas (Zone A's) and base map features. The cost of this map is \$25.00. Other coverages or map themes you may consider, depending on the location of your city or town, include Outstanding Resource Waters and MassDEP Eelgrass Resources. These are available at \$25.00 each, with each map theme being depicted on a separate map. Maps should be ordered from [MassGIS](#). Maps may also be ordered by fax at 617-626-1249 (order form available from the MassGIS web site) or mail. For further information, contact MassGIS at 617-626-1189.

2. SITE PREPARATION AND MAINTENANCE

In addition to carefully selecting disposal sites before the winter begins, it is important to prepare and maintain these sites to maximize their effectiveness. The following maintenance measures should be undertaken for all snow disposal sites:

- A silt fence or equivalent barrier should be placed securely on the downgradient side of the snow disposal site.
- To filter pollutants out of the meltwater, a 50-foot vegetative buffer strip should be maintained during the growth season between the disposal site and adjacent waterbodies.
- Debris should be cleared from the site prior to using the site for snow disposal.
- Debris should be cleared from the site and properly disposed of at the end of the snow season and no later than May 15.

3. EMERGENCY SNOW DISPOSAL

As mentioned earlier, it is important to estimate the amount of snow disposal capacity you will need so that an adequate number of upland disposal sites can be selected and prepared.

If despite your planning, upland disposal sites have been exhausted, snow may be disposed of near waterbodies. A vegetated buffer of at least 50 feet should still be maintained between the site and the waterbody in these situations. Furthermore, it is essential that the other guidelines for preparing and maintaining snow disposal sites be followed to minimize the threat to adjacent waterbodies.

Under extraordinary conditions, when all land-based snow disposal options are exhausted, disposal of snow that is not obviously contaminated with road salt, sand, and other pollutants may be allowed in certain waterbodies under certain conditions. In these dire situations, notify your Conservation Commission and the appropriate MassDEP Regional Service Center before disposing of snow in a waterbody.

Use the following guidelines in these emergency situations:

- Dispose of snow in open water with adequate flow and mixing to prevent ice dams from forming.
- Do not dispose of snow in saltmarshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, Zone IIs or IWPA's of public water supply wells, Outstanding Resource Waters, or Areas of Critical Environmental Concern.
- Do not dispose of snow where trucks may cause shoreline damage or erosion.
- Consult with the municipal Conservation Commission to ensure that snow disposal in open water complies with local ordinances and bylaws.

FOR MORE INFORMATION

If you need more information, contact one of MassDEP's Regional Service Centers:

Northeast Regional Office, Wilmington, 978-694-3200
Southeast Regional Office, Lakeville, 508-946-2714
Central Regional Office, Worcester, 508-792-7683
Western Regional Office, Springfield, 413-755-2214

or

Call Thomas Maguire of DEP's Bureau of Resource Protection in Boston at 617-292-5602.

O&M / LPPP
160 Moulton Drive
Lynnfield, MA 01940
July 6, 2018, Revised March 3, 2021

Effective Date: December 19, 1997

Guideline No. DWSG97-1

Applicability: Applies to all parties storing road salt or other chemical deicing agents.

Supersedes: Fact Sheet: DEICING CHEMICAL (ROAD SALT) STORAGE (January 1996)

Approved by: Arleen O'Donnell, Asst. Commissioner for Resource Protection

PURPOSE: To summarize salt storage prohibition standards around drinking water supplies and current salt storage practices.

APPLICABILITY: These guidelines are issued on behalf of the Bureau of Resource Protection's Drinking Water Program. They apply to all parties storing road salt or other chemical deicing agents.

I. The Road Salt Problem:

Historically, there have been incidents in Massachusetts where improperly stored road salt has polluted public and private drinking water supplies. Recognizing the problem, state and local governments have taken steps in recent years to remediate impacted water supplies and to protect water supplies from future contamination. As a result of properly designing storage sheds, new incidents are uncommon. These guidelines summarize salt storage prohibition standards around drinking water supplies and current salt storage practices.

II. Salt Pile Restrictions in Water Supply Protection Areas:

Uncovered storage of salt is forbidden by Massachusetts General Law Chapter 85, section 7A in areas that would threaten water supplies. The Drinking Water Regulations, 310 CMR 22.21(2)(b), also restrict deicing chemical storage within wellhead protection areas (Zone I and Zone II) for public water supply wells, as follows: "storage of sodium chloride, chemically treated abrasives or other chemicals used for the removal of ice and snow on roads [are prohibited], unless such storage is within a structure designed to prevent the generation and escape of contaminated runoff or leachate." For drinking water reservoirs, 310 CMR 22.20C prohibits, through local bylaw, uncovered or uncontained storage of road or parking lot de-icing and sanding materials within Zone A at new reservoirs and at those reservoirs increasing their withdrawals under MGL Chapter 21G, the Water Management Act.

For people on a low-sodium diet, 20 mg/L of sodium in drinking water is consistent with the bottled water regulations' meaning of "sodium free." At 20 mg/L, sodium contributes 10% or less to the sodium level in people on a sodium-restricted diet. For more information contact: Catherine Sarafinas at 617-556-1070 or catherine.sarafinas@state.ma.us, or Suzanne Robert at 617-292-5620 or suzanne.robert@state.ma.us.

III. Salt Storage Best Management Practices (BMP):

Components of an "environment-friendly" roadway deicing salt storage facility include:

- the right site = a flat site;
- adequate space for salt piles;
- storage on a pad (impervious/paved area);
- storage under a roof; and
- runoff collection/containment.

For more information, see The Salt Storage Handbook, 6th ed. Virginia: Salt Institute, 2006 (phone 703-549-4648 or <http://www.saltinstitute.org/publication/safe-and-sustainable-snowfighting/>).

IV. Salt Storage Practices of the Massachusetts Highway Department:

The Massachusetts Highway Department (MHD) has 216 permanent salt storage sheds at 109 locations in the state. On leased land and state land under arteries and ramps, where the MHD cannot build sheds, salt piles are stored under impermeable material. This accounts for an additional 15 sites. The MHD also administers a program to assist municipalities with the construction of salt storage sheds. Of 351 communities, 201 municipalities have used state funds for salt storage facilities.

For more information about MHD's salt storage facilities, contact Paul Brown at the Massachusetts Highway Department, 10 Park Plaza, Boston, MA 02116 (phone 617-973-7792).

CDS[®] Inspection and Maintenance Guide



Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allow both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine whether the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

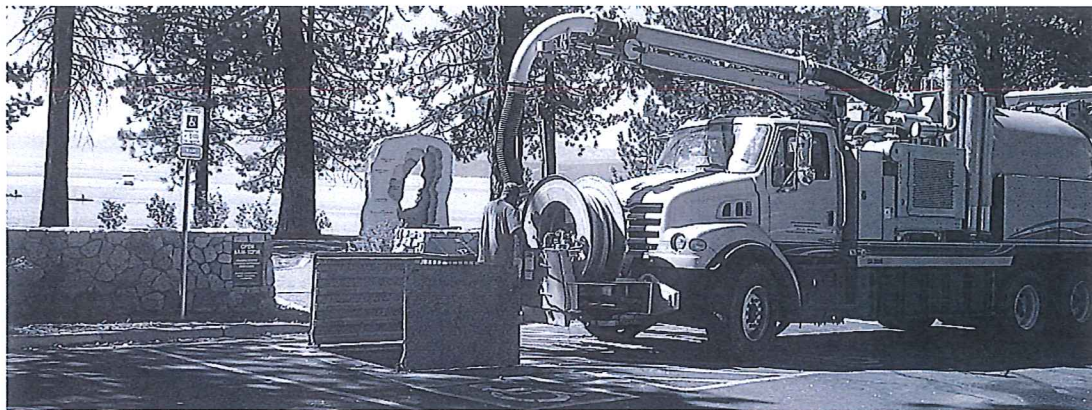
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.



CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y ³	m ³
	CDS1515	3	0.9	3.0	0.9	0.5
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.3	3.0	0.9	1.3	1.0
CDS2020	5	1.3	3.5	1.1	1.3	1.0
CDS2025	5	1.3	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities



Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

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The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; 7,517,450 related foreign patents or other patents pending.

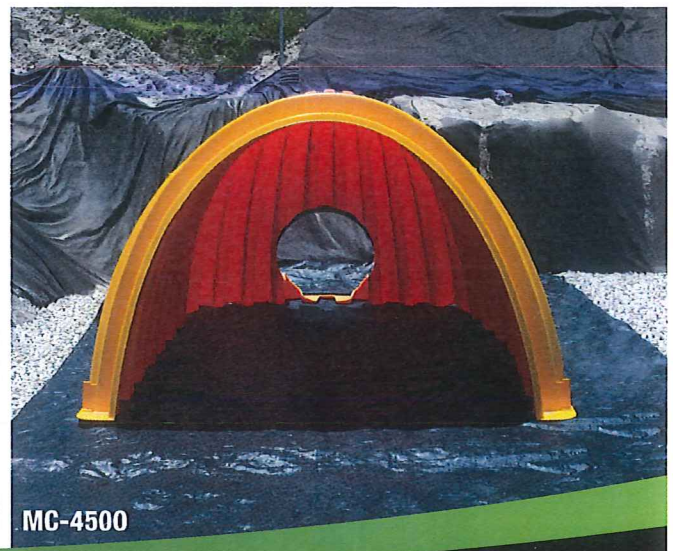
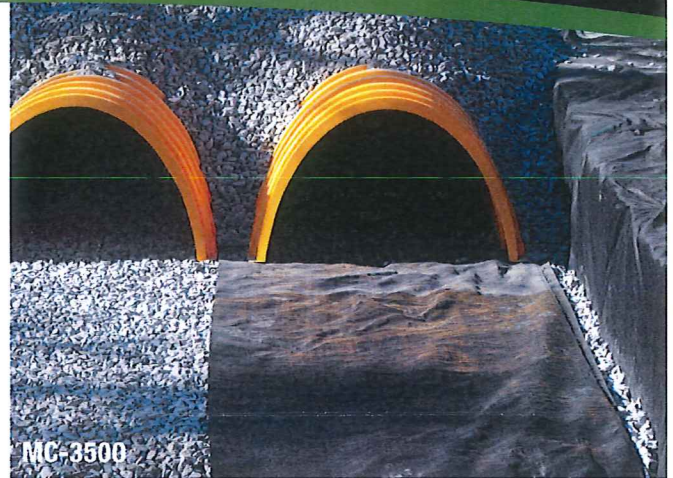
CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment ¹	Floatable Layer Thickness ²	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

Isolator[®] Row O&M Manual



THE ISOLATOR[®] ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the overflow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

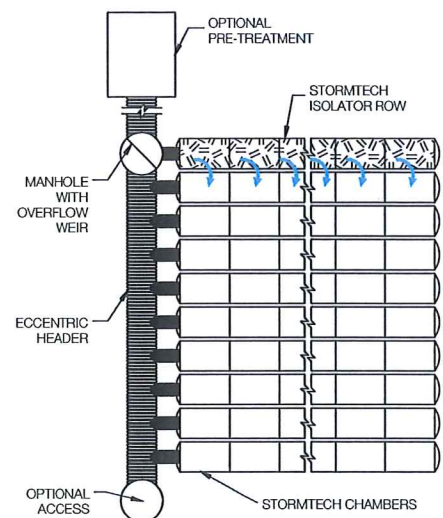
Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)





ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

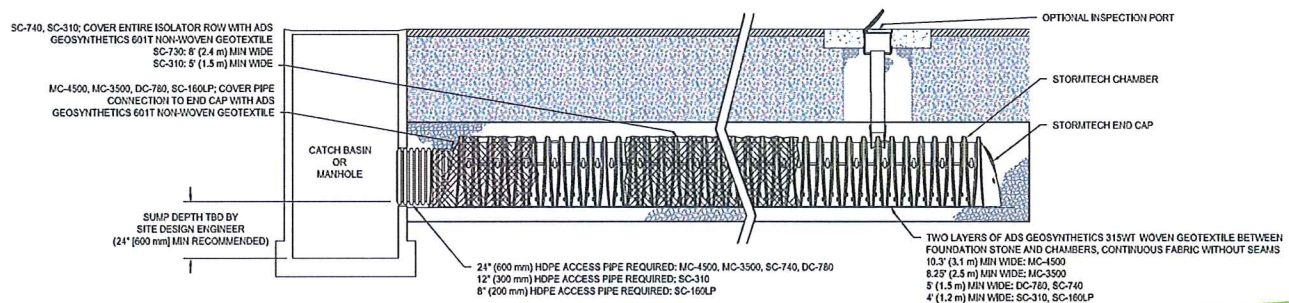
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)

- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
- iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Rows

- i. Remove cover from manhole at upstream end of Isolator Row
- ii. Using a flashlight, inspect down Isolator Row through outlet pipe
 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

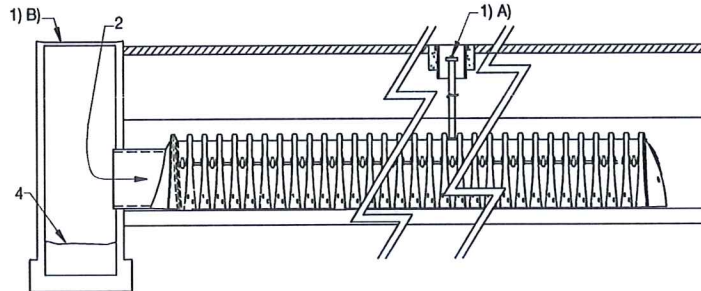
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

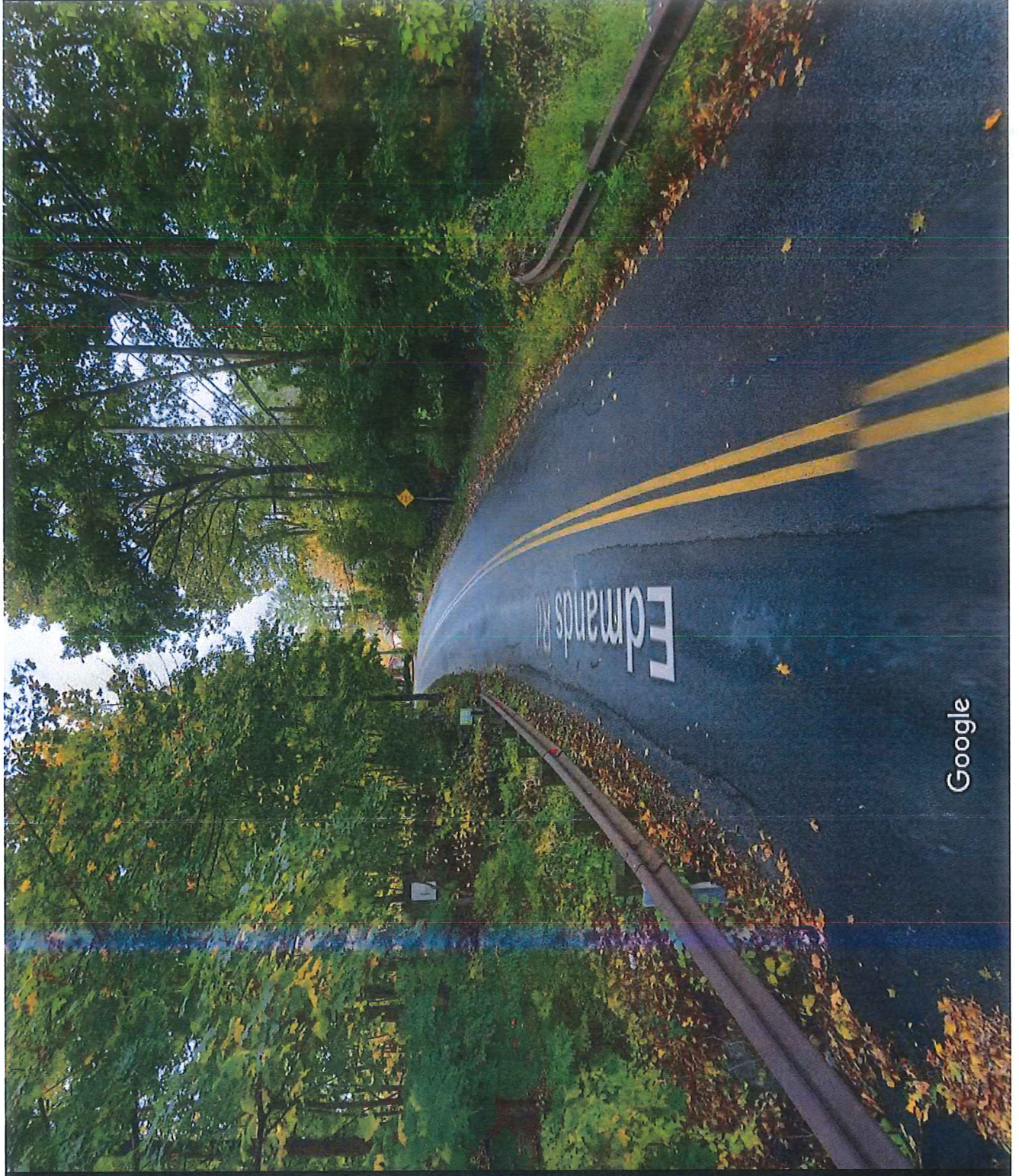
Date	Stadia Rod Readings		Sediment Depth (1)-(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		6.8	0.6 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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 4640 Trueman Blvd., Hilliard, OH 43026
 1-800-821-6710 www.ads-pipe.com



Illicit Discharge Compliance Statement

Responsibility:

The Owner is responsible for ultimate compliance with all provisions of the Lynnfield Stormwater Management Permit, Massachusetts Stormwater Management Policy, the USEPA NPDES Construction General Permit and responsible for identifying and eliminating illicit discharges (as defined by the USEPA).

OWNER'S NAME: 160 Moulton Drive, LLC

ADDRESS: 33 Maple Street
Malden, MA 02148

PHONE: (781) 321-1122

OWNER'S SIGNATURE:


David A. Palumbo

03/05/21
DATE


Engineer's Compliance Statement:

To the best of my knowledge, the attached plans, computations and specifications meet the requirements of Standard 10 of the Massachusetts Stormwater Handbook regarding illicit discharges to the stormwater management system and that no detectable illicit discharges exist on the site. All documents and attachments were prepared under my direction and qualified personnel properly gathered and evaluated the information submitted, to the best of my knowledge.

Included with this statement are site plans, drawn to scale, that identify the location of systems for conveying stormwater on the site and show that these systems do not allow the entry of any illicit discharges into the stormwater management system. The plans also show any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater systems.

For a redevelopment project (if applicable), all actions taken to identify and remove illicit discharges, including, without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system are documented and included with this statement.

ENGINEER'S SIGNATURE:


Hayes Engineering, Inc.
Peter J. Quinn PE

3/3/21
DATE