



December 15, 2023  
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**Reference: Comprehensive Permit Application (40B)  
149 Main Street (Route 140)**

### **STORMWATER MANAGEMENT SYSTEM**

The Comprehensive Permit Preliminary Residential Development Plans submittal provides a layout of the proposed open and closed storm drainage system facilities, including drain manholes, catch basins, piping, stormwater basins, and subsurface infiltration chamber system.

**We offer the following comments on the proposed stormwater management system, specifically for compliance with the ten performance standards as outlined in the MassDEP Stormwater Management Standards.**

1. No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

**The project is designed with no untreated stormwater discharge. We recommend the applicant provide rip-rap sizing calculations to confirm no erosion or scouring occurs at the drainage pipe outfalls and subsurface infiltration chambers. The design storm peak flow should be indicated on the calculations and in agreement with the HydroCAD analysis.**

**As shown on the Sheet No. C-5.0 the proposed footprint and rip rap outfall of Settling Basin #3 is located within the 30-foot No Disturbance Line from Wetland. We recommend this layout be reviewed by the Conservation Commission.**

2. Standard 2 – Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development discharge rates.

**We recommend the existing culvert located on Main Street adjacent to the proposed access drive be identified (pipe size and inverts) on the drainage area maps and request the design engineer confirm no stormwater runoff the project site flows to the culvert.**

**The Hydraulic/Hydrologic Report includes a pre- and post-development condition site hydrology analysis for the 2-, 10-, 25- and 100-year storm events at two points of interest areas (POI). Review of the peak flows as shown on the summary table and the HydroCAD peak flow analysis for POI No. 2 are not in agreement for the 2 thru 100-year storm events.**

**As per the Hydraulic/Hydrologic calculations, proposed infiltration basins and subsurface infiltration chamber systems are designed for the 2 through 100-year storm events. We recommend design engineer provide hydraulic calculations of the closed drainage system identifying the drainage areas and system capacities for the 25 through 100-year storm events.**

3. Loss of annual recharge to groundwater should be eliminated or minimized using infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum

(20) *Parking – We recommend location of proposed loading areas, fire lanes, compact, visitor spaces and parking calculations showing the required and proposed number of parking spaces.*

**Response:** See Site Plan. Fire Lane and Load Area have been added to the Site Plan. No compact spaces are being proposed and visitor parking have not been determined. The application has gone with 1.5 spaces per unit for the proposed development.

(21) *Rubbish Collection – We recommend detail of screening and type of container be added to the site plan.*

**Response:** See Detail Sheet for proposed dumpster detail.

(23) *Note - Proposed note "The Contractor shall give twenty-four notice to pertinent Town Departments before commencing any work in the field "should be added to the site plan.*

**Response:** Note added to the Site Plan.

### **STORMWATER MANAGEMENT SYSTEM**

*The project is designed with no untreated stormwater discharge. We recommend the applicant provide rip-rap sizing calculations to confirm no erosion or scouring occurs at the drainage pipe outfalls and subsurface infiltration chambers. The design storm peak flow should be indicated on the calculations and in agreement with the HydroCAD analysis.*

**Response:** riprap sizing has been calculated and added to the drainage report.

*As shown on the Sheet No. C-5.0 the proposed footprint and rip rap outfall of Settling Basin #3 is located within the 30-foot No Disturbance Line from Wetland. We recommend this layout be reviewed by the Conservation Commission.*

**Response:** Project will be submitted to the Upton Conservation Commission for review.

*We recommend the existing culvert located on Main Street adjacent to the proposed access drive be identified (pipe size and inverts) on the drainage area maps and request the design engineer confirm no stormwater runoff the project site flows to the culvert.*

**Response:** Drainage Area 3 has been added to the pre & post development maps. No increase runoff or volume is being proposed toward the existing 18" culvert that is located at the entrance at Route 140 Main Street

*The Hydraulic/Hydrologic Report includes a pre- and post-development condition site hydrology analysis for the 2-, 10-, 25- and 100-year storm events at two points of interest areas (POI). Review of the peak flows as shown on the summary table and the HydroCAD peak flow analysis for POI No.2 are not in agreement for the 2 thru 100-year storm events.*

**Response:** HydroCad calculations have been done again taking into account the new drainage area#3 and summary table has been updated

*As per the Hydraulic/Hydrologic calculations, proposed infiltration basins and subsurface infiltration chamber systems are designed for the 2 through 100-year storm events. We*



MAP 202, PARCEL 107  
51 MAIN STREET

MAIN STREET

C.B.O.

30' NO DISTURB ZONE  
LINE FROM WETLAND

FORBIDDEN WOLF  
EL=331.00 TO 333.00  
VOL=468 C.F.  
SETTLING BASIN#3  
100YR PEAK ELEVATION  
EL=332.73  
VOL=468 C.F.

100' BUFFER ZONE LINE  
33' FROM WETLAND

DMH4

DMH3

DMH2

DMH1

GCA35-3

GCA35-1

GCA35-2

GCA36

GCA37

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GCA39

GCA40

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# PRE-POST DEVELOPMENT

Prepared by D&L Design Group Inc

HydroCAD® 10.20-3c s/n 13057 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=7.85"

Printed 8/29/2023

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## Summary for Pond PND3: BASIN3

Inflow Area = 1.306 ac, 7.39% Impervious, Inflow Depth > 4.49" for 100YR event  
 Inflow = 7.25 cfs @ 12.08 hrs, Volume= 0.488 af  
 Outflow = 7.24 cfs @ 12.10 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.6 min  
 Discarded = 0.09 cfs @ 12.10 hrs, Volume= 0.070 af  
 Primary = 7.16 cfs @ 12.10 hrs, Volume= 0.387 af  
 Routed to Reach IP-P1 : 45 MAIN ST

185<sub>0.17</sub>  
 PDF  
 File

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 333.71' @ 12.10 hrs Surf.Area= 1,536 sf Storage= 3,267 cf

Plug-Flow detention time= 54.2 min calculated for 0.455 af (93% of Inflow)  
 Center-of-Mass det. time= 31.2 min ( 813.9 - 782.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	331.00'	5,380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
331.00	510	0	0
332.00	1,250	880	880
335.00	1,750	4,500	5,380

336' →

329.5  
 18' of elevation NOT accounted for  
 State Catch basin is

Device	Routing	Invert	Outlet Devices
#1	Discarded	331.00'	2.400 in/hr Exfiltration over Surface area
#2	Primary	332.25'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	333.50'	25.0' long x 1.0' breadth Broad-Crested Rectangular Weir

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00  
 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

330' center of Rt 140 actual height of catch basin on Rt 140 lower



## Deep Sump Catch Basin



**Description:** Deep sump catch basins, also known as oil and grease or hooded catch basins, are underground retention systems designed to remove trash, debris, and coarse sediment from stormwater runoff, and serve as temporary spill containment devices for floatables such as oils and greases.

### Ability to meet specific standards

Standard	Description
2 - Peak Flow	Provides no peak flow attenuation
3 - Recharge	Provides no groundwater recharge
4 - TSS Removal	25% TSS removal credit when used for pretreatment. Because of their limited effectiveness and storage capacity, deep sump catch basins receive credit for removing TSS only if they are used for pretreatment and designed as off-line systems.
5 - Higher Pollutant Loading	Recommended as pretreatment BMP. Although provides some spill control capability, a deep sump catch basin may not be used in place of an oil grit separator or sand filter for land uses that have the potential to generate runoff with high concentrations of oil and grease such as: high-intensity-use parking lots, gas stations, fleet storage areas, vehicle and/or equipment maintenance and service areas.
6 - Discharges near or to Critical Areas	May be used as pretreatment BMP. not an adequate spill control device for discharges near or to critical areas.
7 - Redevelopment	Highly suitable.

### Advantages/Benefits:

- Located underground, so limited lot size is not a deterrent.
- Compatible with subsurface storm drain systems.
- Can be used for retrofitting small urban lots where larger BMPs are not feasible.
- Provide pretreatment of runoff before it is delivered to other BMPs.
- Easily accessed for maintenance.
- Longevity is high with proper maintenance.

### Disadvantages/Limitations:

- Limited pollutant removal.
- Expensive to install and maintain, resulting in high cost per unit area treated.
- No ability to control volume of stormwater
- Frequent maintenance is essential
- Requires proper disposal of trapped sediment and oil and grease
- Entrapment hazard for amphibians and other small animals

### Pollutant Removal Efficiencies

- Total Suspended Solids (TSS) - 25% (for regulatory purposes)
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data



AFFIDAVIT  
B. 16589  
P. 113

WE, CHARLOTTE M. FAY, of Washington, D.C., and HELEN A. FAY

of Upton Worcester County, Massachusetts

being unmarried, for consideration paid, and in full consideration of

-----SIXTY THOUSAND (\$60,000.00) DOLLARS-----

grants to RICHARD A. McLAUGHLIN and LISA McLAUGHLIN, husband and wife,  
as tenants by the entirety,

of 52 Main Street, Upton, Massachusetts, with quitclaim covenants

theland with the buildings thereon in Upton, Worcester County, Massachu-  
setts, consisting of two parcels on the southerly side of Main Street,  
[Description and encumbrances, if any]State Highway Route #140, shown on plan entitled "Land in Upton, Mass.,  
Helen A. & Charlotte M. Fay, Scale 1" = 40' - July 21, 1983, Paul V.  
Swanson, RLS" recorded herewith in Plan Book 510 Plan 18.PARCEL ONE: Containing about nine tenths (0.9) of an acre, described as follows:BEGINNING on the southerly sideline of Route #140 at the northeasterly  
corner of this parcel and the northwesterly corner of land of Howard  
Spencer et ux;THENCE running westerly along two consecutive curves to the left along  
the southerly sideline of Route #140 two hundred and fifty-two hundredths  
(240.52) feet to a point on the northwesterly corner of this parcel and  
the northeasterly corner of land of Lewis Wilcock et ux;THENCE running along said Wilcock land S. 19° 16' 45" E. one hundred  
forty-two and 40/100 (142.40) feet to a transverse stone wall at south-  
easterly corner of said Wilcock;THENCE along stone wall and Parcel Two N. 57° 47' 40" E. sixty and six-  
hundredths (60.06) feet to corner of wall;THENCE along stone wall partly along Parcel Two and partly along land now  
or formerly of Horsey S. 24° 05' E. seventy-four and ninety-six hundredths  
(74.96) feet to a point on the wall, said point being the northwesterly  
corner of land now or formerly of Ernest Bentley;THENCE along the remains of a fence and land of said Bentley N. 63°  
37' E. one hundred eighty-five and sixteen hundredths (185.16) feet to  
corner of fence, being the southwesterly corner of land of said Spencer;THENCE along fence and said Spencer land N. 25° W. seventy-one and  
fifty-eight hundredths (71.58) feet to end of fence;THENCE along stone wall and said Spencer land N. 24° 08' W. seventy and  
ten hundredths (70.10) feet to point of beginning.PARCEL TWO: Containing about 4,400 square feet of land, located at the  
southwesterly corner of Parcel One, described as follows:BEGINNING at the southeasterly corner of said Wilcock land and at trans-  
verse wall mentioned in description of Parcel One;THENCE two courses running along walls and Parcel One, the first N. 57°  
47' 40" E. sixty and six hundredths (60.06) feet, and the second S. 24°  
05' E. fifty (50) feet to a point on stone wall, being the northeasterly  
corner of land now or formerly of Horsey, formerly Forbush;THENCE along Horsey land S. 66° 16' W. one hundred two (102) feet to a  
tee wall, the northwest corner of Horsey land;THENCE along land now or formerly of Lambert along stone wall N. 32° W.  
thirty-four (34) feet to transverse wall;THENCE along stone wall N. 57° 55' 50" E. and Wilcock land forty-nine  
(49) feet to point of beginning.Sellers derive their title by virtue of the Estate of their father John  
B. Fay, Worcester Probate No. 127984.

Main Street, UPTON