



COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

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June 14, 2021

Mary Ellen Schloss, Administrator
Weymouth Conservation Commission
75 Middle Street, 3rd Floor
Weymouth, MA 02189

Re: Hanover Weymouth Residential Development, Review of Notice of Intent (NOI)

Dear Ms. Schloss:

As requested by the Weymouth Conservation Commission, Comprehensive Environmental Inc. (CEI) has provided a technical review of the Notice of Intent (NOI) submitted by Crocker Design Group (the Applicant) for the Hanover Weymouth development at 1325 Washington Street in Weymouth (the Site). CEI's review focuses on environmental, civil site design, and stormwater management aspects of the project.

A site visit was conducted by CEI staff on June 3, 2021. In addition to information gathered during the site visit, CEI's review comments below are based on the following information provided by the Applicant:

1. "Site Development Plans for Hanover Weymouth Residential Development" plans, dated 4/8/2021 by Crocker Design Group (CDG).
2. Stormwater Management Report, dated 4/8/2021 by CDG.
3. "Notice of Intent for Hanover Weymouth Residential Development", dated 4/8/2021 by CDG.
4. Environmental Notification Form (ENF) for Project #16372, dated 6/9/2021 by the Executive Office of Energy and Environmental Affairs (EEA).

I. Compliance with Stormwater Management Standards and Good Engineering Practice

Based on our review, CEI believes the project design addresses the Massachusetts Stormwater Standards and good engineering practice, as follows:

Standard 1: No New Untreated Stormwater Discharges

Standard 1 is partially met, provided the Applicant revises the proposed design to meet the treatment requirements set by Standards 4, 5, and 6 (see comments below).

The current design proposes comingling new impervious discharges from the Site with the existing drain manhole and catch basin series of structures along Washington Street (Route 53) to convey to the wetlands directly across Route 53 (Point of Discharge WD [PD WD]). CEI understands that the existing structures are within the jurisdiction of MassDOT and cannot be modified by any other party without permission and by permit. The MA Stormwater Handbook states that new discharges that tie into existing structures/systems require an Applicant to bring all components of the system, including outfalls, up to performance standards. The Applicant must confirm that the existing system has the capacity to accept increasing flows from new discharges or modify the conveyance in coordination with MassDOT. During the site visit, CEI was unable to visually inspect PD WD outfalls, as they appear to be partially or fully submerged in sediment. See comment for Standard 2, below, for additional observations.

Standard 2: Peak Rate Control

Based on Table 1.7.1 of the Stormwater Report, it appears that the site meets Standard 2. However, CEI notes that while Peak Rates are reduced from Pre to Post conditions, stormwater volumes flowing to PD WD effectively double in the 2-year storm from 22,383 c.f. to 41,324 c.f. Due to the conditions of the existing downstream system and outfalls below PD WD, CEI recommends that the Applicant confirm that this increase in volume will not result in both localized roadway and downstream flooding during storm events.

In order to provide the most recent rainfall data and peak flow modeling for the site, CEI recommends that the Applicant revise their peak rate calculations and other required stormwater modeling with more recent precipitation data provided in NOAA Atlas 14 (https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14_Volume10.pdf). NOAA Atlas 14 data reflects recent observable climate trends and ensures that the proposed

subsurface detention basins are sized to attenuate and slow the more frequent and intense storm events associated with the changing climate. The 2, 10, 25, and 100-year 24-hour duration rainfall depths are provided in the table below.

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.302 (0.231-0.392)	0.376 (0.287-0.488)	0.497 (0.378-0.648)	0.597 (0.462-0.780)	0.735 (0.543-1.00)	0.837 (0.608-1.16)	0.948 (0.674-1.36)	1.08 (0.723-1.56)	1.28 (0.828-1.90)	1.46 (0.921-2.19)
10-min	0.428 (0.327-0.555)	0.533 (0.407-0.691)	0.704 (0.536-0.916)	0.847 (0.641-1.11)	1.04 (0.769-1.42)	1.19 (0.862-1.65)	1.34 (0.955-1.93)	1.53 (1.02-2.21)	1.82 (1.17-2.70)	2.06 (1.31-3.11)
15-min	0.504 (0.385-0.653)	0.627 (0.479-0.813)	0.829 (0.630-1.08)	0.996 (0.754-1.30)	1.23 (0.904-1.67)	1.40 (1.01-1.94)	1.58 (1.12-2.27)	1.80 (1.21-2.60)	2.14 (1.38-3.17)	2.43 (1.54-3.65)
30-min	0.700 (0.535-0.907)	0.872 (0.685-1.13)	1.15 (0.877-1.50)	1.39 (1.05-1.81)	1.71 (1.28-2.32)	1.94 (1.41-2.69)	2.20 (1.58-3.16)	2.51 (1.68-3.62)	2.98 (1.92-4.42)	3.38 (2.14-5.09)
60-min	0.896 (0.685-1.16)	1.12 (0.852-1.45)	1.48 (1.12-1.92)	1.77 (1.34-2.32)	2.19 (1.61-2.97)	2.49 (1.81-3.45)	2.82 (2.00-4.05)	3.22 (2.15-4.64)	3.82 (2.47-5.66)	4.33 (2.74-6.53)
2-hr	1.14 (0.872-1.46)	1.44 (1.10-1.85)	1.92 (1.47-2.48)	2.33 (1.77-3.02)	2.88 (2.14-3.90)	3.29 (2.40-4.54)	3.74 (2.68-5.34)	4.29 (2.88-6.13)	5.13 (3.33-7.54)	5.86 (3.72-8.74)
3-hr	1.32 (1.01-1.69)	1.66 (1.28-2.13)	2.23 (1.71-2.86)	2.69 (2.05-3.48)	3.34 (2.48-4.50)	3.81 (2.79-5.24)	4.33 (3.11-6.17)	4.97 (3.34-7.07)	5.96 (3.87-8.70)	6.81 (4.33-10.1)
6-hr	1.73 (1.33-2.20)	2.15 (1.66-2.73)	2.83 (2.18-3.62)	3.40 (2.61-4.36)	4.19 (3.13-5.59)	4.77 (3.50-6.49)	5.40 (3.88-7.60)	6.17 (4.16-8.69)	7.36 (4.79-10.6)	8.38 (5.35-12.3)
12-hr	2.26 (1.76-2.86)	2.75 (2.13-3.48)	3.55 (2.74-4.50)	4.21 (3.24-5.36)	5.12 (3.83-6.77)	5.79 (4.26-7.79)	6.52 (4.70-9.07)	7.40 (5.01-10.3)	8.73 (5.71-12.5)	9.86 (6.31-14.3)
24-hr	2.77 (2.16-3.48)	3.35 (2.61-4.21)	4.31 (3.35-5.43)	5.10 (3.94-6.45)	6.19 (4.65-8.12)	7.00 (5.17-9.34)	7.87 (5.69-10.8)	8.92 (6.06-12.3)	10.5 (6.88-14.8)	11.8 (7.59-17.0)
2-day	3.16 (2.47-3.94)	3.88 (3.04-4.84)	5.06 (3.94-6.33)	6.04 (4.68-7.58)	7.38 (5.58-9.61)	8.38 (6.22-11.1)	9.46 (6.87-12.9)	10.8 (7.34-14.7)	12.7 (8.38-17.9)	14.4 (9.30-20.5)
3-day	3.46 (2.71-4.29)	4.23 (3.32-5.26)	5.50 (4.30-6.85)	6.55 (5.09-8.19)	7.99 (6.05-10.4)	9.06 (6.74-11.9)	10.2 (7.44-13.9)	11.6 (7.94-15.8)	13.7 (9.06-19.1)	15.6 (10.0-22.0)
4-day	3.73 (2.94-4.63)	4.53 (3.56-5.62)	5.83 (4.57-7.25)	6.92 (5.39-8.82)	8.40 (6.37-10.9)	9.51 (7.08-12.5)	10.7 (7.79-14.5)	12.1 (8.31-16.4)	14.3 (9.46-19.9)	16.2 (10.5-22.7)
7-day	4.50 (3.55-5.54)	5.32 (4.20-6.56)	6.67 (5.25-8.24)	7.79 (6.09-9.66)	9.34 (7.10-12.0)	10.5 (7.83-13.6)	11.7 (8.54-15.7)	13.2 (9.05-17.7)	15.4 (10.2-21.1)	17.3 (11.2-24.0)
10-day	5.21 (4.12-6.39)	6.05 (4.79-7.44)	7.44 (5.86-9.16)	8.59 (6.73-10.6)	10.2 (7.75-13.0)	11.4 (8.49-14.7)	12.6 (9.19-16.7)	14.1 (9.70-18.8)	16.2 (10.8-22.2)	18.1 (11.7-25.0)
20-day	7.27 (5.78-8.86)	8.20 (6.51-10.0)	9.73 (7.70-11.9)	11.0 (8.65-13.5)	12.7 (9.71-16.0)	14.1 (10.5-17.9)	15.4 (11.2-20.0)	16.9 (11.7-22.3)	18.8 (12.9-25.4)	20.4 (13.3-27.9)
30-day	8.99 (7.16-10.9)	9.99 (7.95-12.1)	11.6 (9.22-14.1)	13.0 (10.2-15.8)	14.8 (11.3-18.5)	16.3 (12.2-20.5)	17.7 (12.8-22.7)	19.1 (13.3-25.1)	21.0 (14.0-28.1)	22.3 (14.6-30.4)
45-day	11.1 (8.91-13.5)	12.2 (9.76-14.8)	14.0 (11.1-17.0)	15.4 (12.2-18.8)	17.5 (13.3-21.6)	19.0 (14.2-23.8)	20.6 (14.8-26.1)	22.0 (15.3-28.6)	23.7 (15.9-31.5)	24.8 (16.2-33.6)
60-day	13.0 (10.4-15.6)	14.1 (11.3-17.0)	16.0 (12.7-19.3)	17.5 (13.9-21.2)	19.6 (15.0-24.2)	21.3 (15.9-26.5)	22.9 (16.5-28.9)	24.3 (17.0-31.5)	25.9 (17.4-34.4)	27.0 (17.7-36.3)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

NOAA Atlas 14 Point Precipitation Frequency Estimates: MA; South Weymouth NAS Station:
https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ma

Standard 3: Groundwater Recharge

Due to the presence of D soils and bedrock on-site, the Applicant is requesting a waiver to meet Standard 3 to the maximum extent practicable. Subsurface infiltration system UG-5 provides 6,858 c.f. of recharge. The calculations provided in section 4.1 of the Stormwater Report state that the total recharge volume required for the Site is 9,914 c.f.

Based on the information provided, CEI believes that subsurface systems UG-6, UG-1, and UG-2 have access to groundwater and are not limited by bedrock. However, there are

resource area setbacks and groundwater depth setbacks that may prohibit one or more of these structures from infiltrating. No alternatives analyses were provided.

Standard 4: Water Quality

a. Water Quality Volume Calculations

The Applicant did not provide a water quality volume (WQV) calculation. Section 4.3 of the Stormwater Report provides a table with water quality unit (WQU) and isolator row (IR) removal rates and flows to prove appropriate sizing. CEI notes that treatment BMPs are sized by volumes, not expected runoff flows. The 1-inch rule applies to this site because it is a LUHPPL (see Standard 5).

b. TSS Removal

The project site was incorrectly excluded from Standard 5. As a result, none of the proposed treatment trains are receiving 44% pretreatment and no oil/grit separators are in use. While each treatment train is expected to meet the required 80% TSS removal, based on the provided documentation, this Standard is not met.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPL)

This Site will see an excess of 1,000 vehicle trips per day, which requires the Site to be treated as a LUHPPL. Stormwater runoff requires 44% TSS pretreatment. Standard 5 is not met.

Standard 6: Critical Areas

Although the vernal pool on-site has not been certified through the Massachusetts Natural Heritage and Endangered Species Program (NHESP), CEI's understands that the vernal pool is potentially certifiable based on Conservation Commission observations and photographs of obligate species which meet the NHESP biological criteria. CEI recommends that the performance standards for Standard 6 should be applied to the extent practicable with regard to the vernal pool, pending potential future certification. CEI notes that submittal of a Vernal Pool Observation Form to NHESP requires a property owner signature.

Standard 7: Redevelopment

Standard 7 is not applicable.

Standard 8: Construction Phase Erosion and Sediment Controls

Soil stockpile locations should occur outside of resource area buffer zones. Sheet C-6 of the plan set shows numerous proposed soil stockpiles up to the 25-foot buffer for wetland resource areas.

Standard 9: Operation and Maintenance

The Operations and Maintenance (O&M) Plan should provide information about the intended use and storage of road salt and other de-icers, including areas where salt and de-icers will not be used to minimize pollutant loads to wetlands.

CEI notes that a Stormwater Pollution Prevention Plan (SWPPP) will be required for this site, as land disturbances (including grading and fill) will exceed 1-acre.

Standard 10: Prohibition of Illicit Discharges

Standard 10 is met.

II. Stormwater Management Design

1. Upon reviewing the provided table, CEI notes that the contributing drainage areas and percent impervious coverage did not all match the values provided in the HydroCAD model. For example:

Basin/Isolator Row	Section 4.3 Table		HydroCAD	
	Drainage Area (acres)	% Impervious	Drainage Area (acres)	% Impervious
UG-1/IR-1	0.65	36%	1.14	58%
UG-2/IR-2	0.38	71%	0.38	69%
UG-3/IR-3A+3B	0.79	3A: 61%; 3B: 76%	1.08	88%
UG-4/IR-4	0.39	90%	0.59	92%
UG-5/IR-5	1.48	77%	1.48	78%
UG-6/IR-6	1.00	62%	1.00	79%
UG-7/IR-7	1.16	86%	1.17	81%
WQ	0.45	93%	0.45	92%

2. The observed existing stormwater structures on Washington Street were approximately 90% full of water/potentially sediment, the cause of which was unclear. CEI recommends that the Applicant inquire with MassDOT for permission to inspect, clean, and map these structures accurately and as noted before ensure that the system has adequate capacity to handle the runoff from the proposed development without adversely impacting the resource area or exacerbating historic downstream flooding.

3. The Applicant does not discuss proposed onsite usage of pesticides and/or herbicides for landscaped areas, other than the “First-Line Defense” to be organic-based chemicals

provided by the party responsible for maintenance. Due to close proximity to resource areas, CEI recommends that use and storage of pesticides and/or herbicides be clearly outlined in the O&M manual and restricted within buffer zones.

4. The following subsurface detention structures and the associated test pit (SHTP), while proposed to be lined, have less than 2 feet of separation to estimated seasonal high groundwater (ESHGW):

- a. UG-1 → bottom of stone EL:83, ESHGW EL: 82.5 [SHTP-113]
- b. UG-2 → bottom of stone EL:82, ESHGW EL: 81.5 [SHTP-112]
- c. UG-6 → bottom of stone EL:111.8, ESHGW EL: 113.5 [SHTP-10]

5. The Applicant proposes grading for a plunge pool/level spreader stormwater outlet within the 25-foot “no disturb” buffer zone for Wetland Series “E”. CEI recommends that this grading and outlet be moved outside the 25-foot buffer, with additional natural outlet protection down-gradient of the proposed discharge.

6. The Applicant proposes tying into an existing stormwater conveyance system on Washington Street that is actively culverting the intermittent stream leaving the site. This stream/wetland channel has hydrologic connection with Wetland Series “E”. Approximately 41,324 cf of runoff (in a 2-year storm) is proposed to be discharged to these hydrologically connected areas and, ultimately, flow to the wetlands across Washington Street, which eventually converge with the Plymouth River. For this design to be feasible the Applicant should:

- a. Coordinate with MassDOT to ensure the existing system has the capacity and performance capability to accept the proposed runoff without surcharging or causing further damage to the resource(s).
- b. Ensure that the proposed runoff to the existing downstream wetlands are not resulting in increased flooding to areas outside the limit of study.
- c. Ensure that sedimentation from the project into downstream wetlands does not occur.
- d. Provide aquatic organism passage, to promote continuous connectivity between resource areas.

III. Construction Phase Pollution Controls

1. The stormwater report and site plans should specify the final destination of any stockpiled material. If the stockpiled material will not be used onsite, the applicant should remove the material according to regulations. The plan should also specify any proposed practices to stabilize temporary soil stockpiles. If the practices do not provide for routine covering of soils stockpiles with tarps, we recommend a condition of approval that, in the event the specified practices do not adequately control wind and water-borne erosion of the stockpiles, the Town may require the applicant to cover stockpiles at the end of each working day with anchored tarps which should remain in place when the stockpiles are not being actively used.
2. This site will require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) and a Stormwater Pollution Prevention Plan (SWPPP).
3. CEI notes that a portion of the proposed constructed sloped areas onsite may prohibit the sole usage of silt fencing, and may require additional control measures, such as Erosion Control Blankets (ECBs). This includes areas where the grade within the Limit of Work of the proposed retaining wall technically sits lower in elevation than the existing grade on the outside.
4. The Applicant does not provide details in the stormwater prevent to prevent ledge blasting debris from entering on-site resource areas, particularly near Wetland Series "E".

IV. Miscellaneous

Bordering Vegetated Wetlands (BVW) and Isolated Vegetated Wetlands (IVW):

The proposed project includes filling 4,400 square feet of IVW and proposes grading and construction up to the 25-foot buffer to on-site BVW. CEI notes the following:

- The original plan set includes sheets W-1 through W-3, detailing wetland mitigation proposals and buffer enhancement areas. The Applicant proposes a wetland replication area of 5,100 square feet and an adjacent buffer enhancement area of 3,000 square feet. CEI notes that during the Site Walk, conversation between the Applicant and the Town expressed a potential alternative to waive replication requirements in lieu of more comprehensive buffer enhancement activities. CEI recommends that the Applicant provide more a detailed buffer enhancement narrative, included phasing, restoration monitoring, and protective measures to prevent residents from interfering with ongoing enhancements.

- Any temporary impacts to BVW should be restored in-place and in-kind. This should include (1) re-grading and raking of any BVW areas where soils have been disturbed and/or compacted during construction activities and (2) re-establishment of native wetland vegetation in any areas where BVW vegetation has been damaged. At minimum, re-vegetation should include seeding with a native wetland seed mixture such as New England Wetmix from New England Wetland Plants, Inc. Temporary impacts to the 25-foot “no disturb” buffer zone soils should also be restored and reseeded with a native upland grass mix to minimize sediment runoff into resource areas.
- A small culvert (~10 to 12-inch diameter) exists on-site at the convergence of Wetland Series “E” and “F”. CEI observed the culvert to be concrete on the downstream end and ductile iron on the upstream end and was approximately 50% full of standing water. CEI recommends that this culvert be replaced with an 18-inch or greater diameter culvert of uniform material.

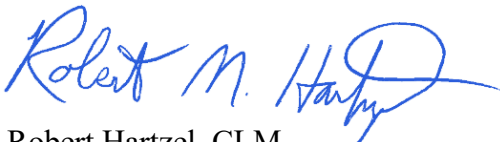
Planting Plan: The Landscape Planting Plan presented on Sheets C-4 and C-4.1 of the Site Development Plans references the following comments:

- **Non-Native and Invasive Species:** Much of the upland landscaped area is within the resource area buffer zones. The following species are not native to the region and/or have potentially invasive characteristics, and CEI recommends either eliminating them from the planting plan or replacing with native species:
 - *Miscanthus sinensis* ‘Yaku Jima’: invasive ornamental grass species.
 - *Pachysandra terminalis*: invasive groundcover species.
 - *Catharanthus roseus*: invasive groundcover species.

If you have any questions or comments regarding this report, please contact Bob Hartzel or Matt Lundsted at 508-281-5160.

Sincerely,

Comprehensive Environmental, Inc.



Robert Hartzel, CLM
Principal



Matthew Lundsted., P.E.
Principal