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Via Certified Mail and Email

October 16, 2024

Michael McHugh, Wetlands Section Chief
Massachusetts Department of Environmental Protection
Western Regional Office
436 Dwight Street
Springfield, MA 01103
Michael.McHugh3@mass.gov

RE: Request for Superseding Order of Conditions
DEP File No. 246-0785
Applicant: Sovereign Builders, Inc.
Location: 8 View Avenue and 56 Northern Avenue, Northampton, MA

Dear Mr. McHugh:

This Firm represents more than ten residents of Northampton, Massachusetts (the "Petitioners")[1] with regard to the proposed development of 12 single-family "efficiency" dwellings, two covered bicycle parking structures, parking, roadway, sidewalk, and construction infrastructure (the "Project") at 8 View Avenue and 56 Northern Avenue in Northampton, MA (Assessor's Map 25C, Lots 12 and 17) (the "Property"). Sovereign Builders, Inc. (the "Applicant") submitted a Notice of Intent (the "NOI") for the Project to the Northampton Conservation Commission (the "Commission") on or about April 11, 2024. The Commission voted to approve the Project on September 26, 2024 and issued an Order of Conditions (the "Order") under the Wetlands Protection Act (the "Act") on October 3, 2024 approving the Project.

On behalf of our clients, we hereby submit this Request for Superseding Order of Conditions (the "Request"). The Petitioners specifically request that the Department overturn the Order and issue a Superseding Order of Conditions denying the Applicant's Project since it fails to protect the interests

[1] Specifically, Petitioners are: Jacqueline McCreanor of 124 North Street; Svetlana Speyer of 124 North Street; Michael Kane of 12 Garfield Avenue; Jackie Ballance of 35 Warner Street; Leah Gregg of 1 View Avenue; James Scott Jackson of 1 View Avenue; Joanne Sickles of 1 View Avenue; Stephen Sireci of 50 Union Street, Apt. #22; Dennis Helmus of 174-176 North Street; Arnold Levinson of 14 Hancock Street; Adam Cohen of 134 North Street, Unit #2; Jendi Reiter of 134 North Street, Unit #2; Lawrence Tatro of 188 Bridge Street and 154 North Street; Tom Riddell of 33 Aldrich Street; Meg Robbins of 33 Aldrich Street; Christina Ryan of 13 Highland Avenue; and Paige Bridgens of 12 Northern Avenue.

of the Act or meet the requirements of the Act's implementing Regulations (310 CMR 10.00) (the "Regulations"). A copy of the Order is attached hereto as Exhibit A.

This Request is filed in a timely manner, within ten business days after the issuance of the Order. It is filed in accordance with the provisions of 310 CMR 10.03(7)(a)(2) and 310 CMR10.05(7)(a–d). Copies of the filing fee and filing fee transmittal form, which have been sent to the DEP Lockbox, are attached hereto as Exhibit B.

Petitioners have standing to make this Request as ten residents of Northampton, the city in which the Property is situated, who are aggrieved by the Order approving the Project, pursuant to 310 CMR 10.05(7)(a)(3 and 5). In addition, a subgroup of the Petitioners also independently have standing as owners of land abutting the Property, who also would be aggrieved by the Project, pursuant to 310 CMR 10.05(7)(a)(3 and 4).[2] The Petitioners participated in writing and orally in the Commission's public hearing on the NOI.

BACKGROUND

The Property is approximately 5.25 acres and is largely wooded. The Project proposes a dense, compacted subdivision on a parcel with significant natural constraints including poorly draining soils, extremely high ground water levels and extensive wetlands. The jurisdictional Resource Areas on the Property are: Bordering Vegetated Wetlands ("BVW"), Riverfront Area ("RFA"), Bank, Land Under Water ("LUW"), and Bordering Land Subject to Flooding ("BLSF").

The majority of the Project—including all 12 dwelling units—is proposed within the 100-foot Buffer Zone to BVW on the Property. The Project as approved by the Commission would alter 338 square feet of BVW[3], while replacing only 151 square feet.

The Property also contains 135,950 square feet of RFA. The Applicant proposes to alter 364 feet of RFA and replace or restore only 241 square feet.[4]

The Applicant filed a NOI for the Project on or about April 11, 2024.

The Department's "technical comments" on the NOI recognized that:

(1) the Applicant omitted any mention or delineation of the perennial stream or 200-foot RFA on the Property;
(2) the Applicant should consider how to discourage use of the bike path through the BVW;
(3) no information on wetlands delineation was included in the NOI;
(4) there appears to be an outstanding Order of Conditions for the Property without a Certificate of Compliance issued;
(5) the new impervious area proposed is considered new development and requires full compliance with the state Stormwater Standards;

[2] Lawrence Tatro of 154 North Street and Dennis Helmus of 174-176 North Street.
[3] Order of Conditions.
[4] Order of Conditions.

(6) an infiltration basin can only receive up to 80% TSS removal regardless of the amount of pre-treatment proposed;
(7) the Commission should review if there is a need for construction period sediment basins as well as whether the Project needs to be phased so that the entirety of the Buffer Zone is not cleared of all vegetation at the same time;
(7a) the Commission needed to confirm there was at least 2 feet of separation between the bottom of the basin and the seasonal high ground water; and
(8) the Applicant should include in its stormwater report each BMP and maintenance requirements.

The Commission also received two letters submitted by MetroWest Engineering, Inc. ("MetroWest") on behalf of the Petitioners dated August 23, 2024 and September 25, 2024, which raised a host of issues and shortcomings with respect to the Applicant's stormwater design. Copies of MetroWest's letters to the Commission are attached as Exhibits C and D.

In spite of the extensive comments received from the Department and MetroWest, the Commission did not hire a peer-review consultant to review and confirm the nature and extent of jurisdictional wetland Resource Areas on the Property, the Project's impacts to those Resource Areas and the interests they protect, or the Project's compliance with the Stormwater Standards.

In response to MetroWest's comments on August 23, 2024, the Applicant significantly revised its stormwater design—changing the main mechanism to control peak flow rates from infiltration to detention. The Applicant submitted its revised plans to the Commission on September 20, 2024. MetroWest again reviewed the Applicant's new stormwater design only to find that the Applicant failed to include the HydroCad Analysis for the existing conditions model. As such, MetroWest was unable to review and verify the input data used in the existing conditions model, as was the Commission. It was important for MetroWest and the Commission to verify the Applicant's input data because the Applicant previously used the wrong Hydrologic Soil Group in determining the pre-development runoff curve numbers. The Applicant purportedly corrected this omission on September 26, 2024—the same day of the public hearing and the date on which the Commission voted to approve the Project. The Commission should have sought a continuance in order to review the Applicant's completely revised stormwater design for the proposed Project.

THE ORDER FAILS TO PROTECT THE INTERESTS OF THE ACT

The Order found that the areas in which work is proposed to be significant to the following interests of the Act: public water supply, private water supply, ground water supply, fisheries, storm damage prevention, prevention of pollution, protection of wildlife habitat, and flood control.

I. Wetland Resource Areas

The Project plans approved by the Order do not accurately depict the nature and extent of all jurisdictional Resource Areas on the Property. The Applicant initially did not delineate the perennial stream located on the Property or the associated mean annual high water ("MAHW") line. Further, the NOI only lists two jurisdictional Resource Areas—BVW and RFA. There is no

mention in the NOI or Order of Bank, LUW, or BLSF. All Resource Areas need to be reviewed and properly delineated by the Department, as this was not done by the Commission.

The Order indicated that the Project will alter RFA. It is alarming that the Applicant failed to identify the perennial stream in its initial NOI submittal. The Applicant did not attempt to overcome the presumption set forth at 310 CMR 10.58(3) that RFA on the Property is significant to protecting the Act's interests of private and/or public water supply, groundwater, flood control, storm damage prevention, prevention of pollution, wildlife habitat, and fisheries. The Commission found that the Property is significant to all of those interests.

The Project's proposed alteration to BVW and RFA comes into play for the re-routing and widening of a footpath. The Applicant seeks the re-routing of the existing footpath in order to make room to allow for its maximum-build Project. The footpath relocation will alter approximately 364 square feet of RFA.[5] The alteration of the RFA is entirely avoidable and fails to meet the performance standards set forth in 310 CMR 10.58.

The proposed work necessary for the Project does not meet the performance standards set forth in 310 CMR 10.58(5)(a–h). The Applicant failed to demonstrate how the proposed work will result in an improvement over existing conditions of the capacity of the RFA to protect the interests of the Act. 310 CMR 10.58(a). The Applicant concludes, without supporting documentation, that stormwater management will not be impacted by the footpath.[6] The proposed footpath is located closer to the river than existing conditions, in violation of 310 CMR 10.58(c) and (d).[7] The Applicant's proposed mitigation by way of invasive species removal is not sufficient to meet the minimum regulatory requirement that the ratio of mitigation area to alteration area be 2:1, as set forth in 310 CMR 10.58(g).

The relocation of the footpath will also alter 338 square feet of BVW.[8] The Applicant has not overcome the presumption that this BVW is significant to the interests of the Act. The alteration of BVW fails to meet the performance standards set forth in 310 CMR 10.55. Specifically, the Project destroys or impairs BVW in violation of 310 CMR 10.55(4)(a). The Act allows the alteration of up to 5,000 square feet of BVW only if the criteria in 310 CMR 10.55(4)(b) are met. The Applicant does not meet the performance standards of 310 CMR 10.55(4)(b). The Regulations require that the replacement area be equal to the BVW that will be lost. 310 CMR 10.55(4)(b)(1). The Applicant proposes to replace only 151 square feet, less than half of the 338 square feet to be altered.[9] The proposed Project also does not meet the criteria of 310 CMR 10.55(4)(c), which might otherwise allow alteration of BVW up to 500 square feet. Thus, the proposed alteration of BVW fails to meet the performance standards set forth in 310 CMR 10.55(4).

[5] Order of Conditions.
[6] See Berkshire Design Group letter to the Commission dated May 14, 2024.
[7] See Berkshire Design Group letter to the Commission dated May 14, 2024.
[8] Order of Conditions.
[9] Order of Conditions.

II. Stormwater Design

As mentioned above, the landscape and topography of the Property poses significant stormwater challenges that are exacerbated by the proposed dense development. The Commission did not require a peer review of the proposed stormwater design, which was critical to ensuring that the Project's proposed stormwater management system would function as designed.

The stormwater design for the Project was flawed from the start, and the last-minute revisions were never vetted. The Commission erred in approving the proposed stormwater design without first evaluating or confirming its accuracy and satisfaction of the Stormwater Standards. In fact, the current stormwater design does not meet the requirements of the Act or its Regulations.

First, the Project fails to comply with Stormwater Standard #2. As designed, the total volume of stormwater proposed to be discharged into the BVW (and eventually the perennial stream) will increase from pre- to post-development by approximately 35% during a 2-year storm and 15% during the 100-year storm.[10] The actual discharge will likely be higher due to design flaws in the hydrologic model. The Applicant did not use the lowest point of discharge at the downgradient property boundary when analyzing the 2-year and 10-year storm events. Instead, the Applicant used the southwesterly wetland boundary as the design point. This is an important distinction.

The intent of Stormwater Standard #2 is to ensure that downgradient properties do not experience flooding or drainage damage because of the Project. This includes ensuring that downstream conveyance structures such as culverts and bridges are not impacted by peak flows. When a stream picks up contributing flows from offsite, it is important to understand the timing in the hydrographs both from the project and the upgradient contributing watershed. This is an issue for this Project because the drainage design indicated a substantial increase in stormwater volume produced in the post-development scenario. Volumes will increase by as much as 30%, and this water will be temporarily stored in the BVW on site. The flows will be gradually released from the wetland into the stream before traveling downstream. There is a high possibility that stream flows will increase and worsen downstream flooding. In any event, the Applicant did not evaluate this very real possibility, and, thus, its analysis does not satisfy Stormwater Standard #2. The Applicant's model fails to represent the entire contributing area that sends flow to the stream where the stream leaves the Property and, therefore, does not demonstrate that peak flow rates do not increase or worsen downstream flooding. Further, Stormwater Standard #2 requires the Applicant to assess whether the 100-year storm event worsens downstream flooding; the Applicant did not provide this required analysis.

This increase in water volume discharged to the BVW will alter the BVW. The Applicant's proposed design will overwhelm the BVW on the Property, which will adversely affect the BVW's ability to contribute to the protection of one or more of the interests of the Act. The BVW on the Property are part of a larger wetland system, and directing stormwater to them will decrease the wetlands' ability to protect the Petitioners' properties against flooding and storm damage.

[10] Ex. D, p. 3.

The BVW will become "wetter", with water standing in the BVW for longer periods of time and at a greater depth. This increase of water to the BVW will eventually discharge to the perennial stream on the Property. Additionally, since the drainage system relies on detention of water, water quality characteristics of the water will change, thus further altering the BVW. In particular, water temperatures will increase due to heat retention within impervious surfaces and chemical properties will change due to dissolvable constituents such as sodium that cannot be removed by the stormwater system. These environmental changes will destroy or impair wetland hydrology over time. Plants species—like Japanese Knotweed—that can tolerate wetter conditions and warmer water will thrive over species less tolerant of changes in the hydrology.[11]

The model for Stormwater Infiltration System #1 ("SIS #1") assumes SIS #1 is present for the 2-year storm event, but absent for the 10- and 100-year storm events. This methodology is at odds with accepted engineering practice. The post-development model should account for its presence in all storm events, which is the post-development reality.[12]

SIS #1, which is used to satisfy minimum stormwater recharge volume under Stormwater Management Standard #3, fails to satisfy the minimum offset requirement of two feet between seasonal high water table and the bottom of the infiltration system. The Department also noted this issue in its Technical Comments. The Applicant reports the seasonal high-water table at 134.83 feet.[13] The bottom of SIS #1 is proposed at 136.33 feet, only 1.5 feet above the seasonal high groundwater table.[14]

The proposed Stormwater Detention System #1 ("SDS #1") consists of 224 plastic chambers that are set on a bed of stone and covered with a bed of stone. In order to provide for flood water storage and detention, these chambers, including the stone above and along the sides of the chambers, must be empty and not holding water before a storm event begins. Thus, the system of chambers and stones must be impermeable to groundwater that may be present under or along the sides of the system. To achieve this impermeability, the Applicant proposes a poly-vinyl barrier to be wrapped around SDS #1 to prevent groundwater from getting into it. MetroWest doubts the ability to achieve 100% impenetrability. Further, SDS #1 will be just barely above groundwater levels in some areas and below groundwater levels in other areas. This uneven hydrostatic pressure will likely lead to a breach in SDS #1's impermeable barrier, which will put SDS #1 out of compliance with Stormwater Standard #2.[15]

No soil evaluations or testing were conducted within the footprint of Subsurface Infiltration System #2 ("SIS #2"). This is a clear violation of the Massachusetts Stormwater Handbook. Instead, the Applicant relied on the reported groundwater level observed at Test Pit-1 when designing SIS #2. Test Pit-1, however, is located approximately 15 feet away and down gradient from SIS #2. There is a high likelihood that the groundwater under SIS #2 is higher than reported

[11] Ex. D, p. 3.
[12] Ex. D, p. 4.
[13] Plan Set, View Ave, Northampton, Massachusetts, final rev. September 20, 2024, prepared by Berkshire Design Group, Sheet LC-130.
[14] Ex. D, p. 4.
[15] Ex. D, p. 4.

and would put SIS #2 within 2 feet of groundwater levels and in violation of the Stormwater Standards.[16]

The groundwater mounding analysis for SIS #2 is based on incorrect data. First, the recharge rate should be based on the total infiltration volume of 823 cubic feet that occurs during the 100-year storm event and applied over the footprint of the infiltration areas, which is 480 square feet. This would result in a recharge rate of 1.71 feet per day, not .54 feet per day as used in the Applicant's report. Second, the SIS #2 basin dimensions should equate to the actual surface area of the infiltration system, which is 480 square feet. The Applicant's dimensional inputs result in an area of 549 square feet, which overestimates the infiltration footprint by 22%. Third, the infiltration duration period should be set to one day as the model is simulating the response to a 24-hour storm event. The Applicant uses 1.7 days.[17]

If these errors in data are corrected, the groundwater mounding analysis would predict a mound at the center of the infiltration system of 3.3 feet. The Applicant's model only shows a mound of 1.5 feet. This mound of 3.3 feet will extend into the infiltration system. If a mound of 3.3 develops, SIS #2 will cease to function for a period of time.[18]

MetroWest was unable to assess the Applicant's analysis of its roof drainage conveyance system because no map or diagram was provided that identified which pipes serving which buildings were analyzed by the Applicant. It appears that the proposed Project does not provide the minimum sufficient 1-foot ground cover over the top of several drainage pipes.[19]

The submitted Stormwater Operation and Maintenance Plan ("O & M Plan") makes no mention of the roof gutter and piping conveyance network, despite the fact that the entire hydrologic analysis is predicated on the collection and conveyance of roof storm water to the disposal systems. If the roof water is not collected and conveyed for all design storm events, then the analysis as presented will not represent the actual site conditions and downstream flooding will occur.

Maintenance of the gutters, downspouts and sub-surface conveyance conduits is critical to the performance of the storm water management system. As it is presently designed, the collection and conveyance system cannot be inspected, cleaned, or maintained. The current plans provide for no mechanism to inspect and clean the pipes, and the O & M Plan does not even require inspection or maintenance of the system. The Department requested that such maintenance be included in the Applicant's O & M Plan.[20]

With such poorly draining soils and the water table close to the ground surface, there is no room for error in the Applicant's stormwater design. As approved, the stormwater design does not meet the performance standards of the Act and its regulations. It follows that the Applicant did not demonstrate compliance with the performance standards for work within these Resource Areas

[16] Ex. D, p. 5–6.
[17] Ex. D, p. 6–7.
[18] Ex. D, p. 7.
[19] Ex. D, p. 7.
[20] Ex. D, p. 8.

under the Regulations. Such failure will result in alteration of jurisdictional Resource Areas and damage to nearby residents' properties, including the Petitioners.

For the foregoing reasons, the Petitioners request that the Department overturn the Order and issue a Superseding Order of Conditions denying the Project. The Order approves work that would harm the interests of the Act and causes manifest injustice to the Petitioners as residents and abutters.

Thank you for considering this Request.

Sincerely,

Caroline E. Smith

Caroline E. Smith

Enclosures

cc: Sovereign Builders, Inc. (via certified mail and email)
City of Northampton Conservation Commission (via certified mail and email)

EXHIBIT A

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:246-0785
eDEP Transaction #:1804109
City/Town:NORTHAMPTON

A. General Information

1. Conservation Commission: NORTHAMPTON
2. Issuance: a. ☑ OOC b. ☐ Amended OOC

3. Applicant Details

a. First Name	TODD		b. Last Name	CELLURA	
c. Organization	SOVEREIGN BUILDERS, INC.				
d. Mailing Address	710 SOUTHAMPTON RD				
e. City/Town	WESTFIELD	f. State	MA	g. Zip Code	01085

4. Property Owner

a. First Name	TODD		b. Last Name	CELLURA	
c. Organization	SOVEREIGN BUILDERS, INC.				
d. Mailing Address	710 SOUTHAMPTON RD				
e. City/Town	WESTFIELD	f. State	MA	g. Zip Code	01085

5. Project Location

a.Street Address	8 VIEW AVE, 56 NORTHERN AVE		
b.City/Town	NORTHAMPTON	c. Zip Code	01060
d. Assessors Map/Plat#	25C	e. Parcel/Lot#	012, 017
f. Latitude	42.32877N	g. Longitude	72.62962W

6. Property recorded at the Registry of Deed for:

a. County	b. Certificate	c. Book	d. Page
HAMPSHIRE		14874	111, 129

7.Dates

a. Date NOI Filed : 4/11/2024 b. Date Public Hearing Closed: 9/26/2024 c. Date Of Issuance: 10/3/2024

8.Final Approved Plans and Other Documents

a. Plan Title:	b. Plan Prepared by:	c. Plan Signed/Stamped by:	d. Revised Final Date:	e. Scale:
PLAN SET, VIEW AVE, NORTHAMPTON MASSACHUSETTS	BERKSHIRE DESIGN GROUP	CHRISTOPHER M. CHAMBERLAND	09.20.2024	VARIED
STORMWATER DRAINAGE REPORT FOR SOVEREIGN BUILDERS INC RESIDENTIAL DEVELOPMENT, 8 VIEW AVENUE	BERKSHIRE DESIGN GROUP	CHRISTOPHER M. CHAMBERLAND	September 20, 2024	NA

PROPOSED LAND PROTECTION, CR-01	BERIKSHIRE DESIGN GROUP	NA	August 23, 2024	1"=40'
WETLAND DELINEATION SKETCH AND DATA FORMS	SWCA ASSOCIATES	NA	07.20.2023	NA

B. Findings

1.Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☑ Public Water Supply	b. ☐ Land Containing Shellfish	c. ☑ Prevention of Pollution
d. ☑ Private Water Supply	e. ☑ Fisheries	f. ☑ Protection of Wildlife Habitat
g. ☑ Ground Water Supply	h. ☑ Storm Damage Prevention	i. ☑ Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

a. ☑ The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. ☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act , and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts:Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a). _____ a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:246-0785
eDEP Transaction #:1804109
City/Town:NORTHAMPTON

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☑ Bordering Vegetated Wetland	338 a. square feet	338 b. square feet	151 c. square feet	151 d. square feet
6. ☐ Land under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☑ Riverfront Area	364 a. total sq. feet	364 b. total sq. feet		
Sq ft within 100 ft	0 c. square feet	0 d. square feet	0 e. square feet	0 f. square feet
Sq ft between 100-200 ft	364 g. square feet	364 h. square feet	241 i. square feet	241 j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		

16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	c. c/y dredged	d. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		

22.

☐ Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

23.

☐ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the

extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.

5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"
[or 'MassDEP"]
File Number :"246-0785"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to

require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☑ is not (2)☐ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.*. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving

more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

PLEASE SEE ATTACHMENT A

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1.Is a municipal wetlands bylaw or ordinance applicable? ☑ Yes ☐ No

2.The Conservation Commission hereby(check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☑ APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw: NORTHAMPTON WETLANDS ORDINANCE
2. Citation: CHAPTER 337 OF THE GENERAL CODE

3.The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:
PLEASE SEE ATTACHMENT A

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
246-0785
MassDEP File #
1804109
eDEP Transaction #
Northampton
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

10/03/2024
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

5
2. Number of Signers

Signatures are made in accordance with M.G.L. c.110G and pursuant to the Commission's electronic signature authorization vote recorded on June 5, 2020 in Book 13653, page 165 at the Hampshire Registry of Deeds.

Signatures:

Elizabeth Spriggs

Kevin Lake

Paul Foster-Moore

C. Mason Maronn

Melissa Curtin

☐ by hand delivery on

Date

☒ by electronic delivery

October 3, 2024
Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

"ATTACHMENT A"

20. Prior to the initiation of any work, the applicant/owner shall submit a letter of understanding to the Commission stating that he/she has received, read, understands and shall comply with these Orders. The applicant, and, his or her contractor, foreman and/or construction manager shall sign the letter of understanding.

21. Prior to the initiation of any work, the applicant shall submit to the Commission a sequencing plan for construction, and erosion and sedimentation control installation.

22. Prior to the start of any site work, excavation or construction, a pre-construction conference shall be held on the site, between the contractor conducting the work, the site/project engineer, the applicant, and a member or agent of the Conservation Commission, in order to ensure that the requirements of this Order are understood by all parties. Prior to the pre-construction meeting, all erosion control devices must be installed.

23. All required permits must be obtained from federal, state and municipal agencies and departments prior to the start of any project.

24. A copy of this Order and associated plans shall remain on site during all construction and/or building activities. The project manager and all equipment operators shall be familiar with the approved plans, and shall be informed of their location on the site. This location shall be accessible to all contractors whenever work is occurring on site.

25. Prior to the preconstruction meeting, the applicant shall submit a full stamped planset in digital and hard copy(one), including detail sheets. All revised plans, referenced within this Order of Conditions, shall be approved by the Conservation Commission and incorporated into the permit by reference and shall be followed during the course of construction.

26. The areas of construction shall remain in a stable condition at the close of each construction day. Erosion control measures shall be inspected at this time, and maintained or reinforced as necessary. All such devices shall be inspected, cleaned or replaced during construction and shall remain in place until such time as stabilization of all areas that may impact resource areas is permanent. These devices shall also be inspected to assure that the maximum control has been provided. Any entrapped silt shall be removed to an area outside the buffer zone and resource areas, and maintained or reinforced as necessary. Erosion controls shall be inspected after every rainfall to assure that maximum control has been provided.

27. An adequate stockpile of erosion control materials shall be on site at all times for emergency or routine replacement and shall include materials to repair or replace silt fences, straw bales, erosion control blankets, riprap, filter berms or other devices planned for use during construction.

28. Soils exposed for periods greater than two months shall be stabilized with erosion control blankets and netting, a covering of straw mulch, or a temporary vegetative cover to prevent erosion and sedimentation. Drainage ditches shall be stabilized and seeded with a native perennial grass mixture. Any stabilization materials such as jute netting shall be firmly anchored to prevent them from being washed from slopes by rain or flooding. Preference should be given to biodegradable materials.

29. All disturbed areas shall be graded, loamed and seeded, or stabilized with erosion control blankets or netting, and a covering of straw mulch prior to November 30, of each year. No disturbed areas or stockpiled materials will be left unprotected or without erosion control after this date.

30. No disposal of soils or other materials shall be allowed within: a 100-year floodplain; 40 feet of the 100-year floodplain elevation; any wetland; any area within 100-feet of a wetland; any area within 200 feet of a perennial stream; a vernal pool, or any area within 200 feet of a vernal pool unless such areas are specifically approved by the Commission, in accordance with 310 CMR 10.00, and City of Northampton Ordinances - Chapter 337

31. Ongoing conditions that shall not expire with the issuance of a Certificate of Compliance are as follows: 35, 38, 41

32. Upon completion of the work covered by this Order, the applicant shall submit an as-built plan, signed and stamped by a registered professional engineer or land surveyor, together with a written request for a Certificate of Compliance.

    The plan and written request shall specify any ways that the completed project differs from the plans referenced in the Order. The as-built plan shall include, at a minimum, and as applicable to the project: elevations of all pipe inverts and outlets, pipe sizes, materials, and slopes; all other drainage structures; limits of clearing, grading, and fill; all structures, pavement, and contours within 100 feet of wetland boundaries; all alterations within the wetland resource areas; and all dates of fieldwork.

33. A detailed planting plan and operations and maintenance plan for buffer areas, including ongoing invasive species management, must be submitted for review and approval prior to the preconstruction meeting. Such plan shall be incorporated by reference.

34. Prior to or concurrent with a request for certificate of compliance, the applicant shall conduct an assessment of plantings and invasive species within the 35-100 foot buffer zone after no less than three growing seasons. The report shall be submitted to the Commission concurrently with a request for certificate of compliance. Any plantings not surviving at that time shall be replaced.

35. Application of commercial lawn fertilizers or pesticides within the buffer zone is prohibited. Salt products shall not be used on roadways.

36. Planting and pedestrian trail work shall be initiated and completed prior to or concurrently with any other site work, and shall be incorporated into the construction sequencing plan.

37. All conditions of the July 25 Decision Stormwater Management Permit Decision, and any additional conditions included in subsequent amendments are hereby incorporated into this Order by reference. All submittals, approvals, and inspections required to be provided to the Northampton Stormwater Authority shall also be submitted to the Commission.

The following conditions are specific to the Northampton Wetlands Ordinance:

38. The owner of the property described in this Order must advise any potential buyer of the property that any construction or alteration to said property, including brush cutting or clearance, may require approval by the Northampton Conservation Commission.

Any deed or legal instrument conveying any or all of the owners' interest in said property or any portion thereof, shall contain the following language:

> "This property is subject to the Northampton Wetlands Protection Ordinance and/or Wetlands Protection Act. Any construction or maintenance work performed on this property may require an Order of Conditions, and/or a Determination of Applicability from the Northampton Conservation Commission.

39. Subject to required local approvals, the applicant shall donate a permanent Conservation Restriction on that portion of land shown as 'Proposed Conservation Restriction' on plansheet CR-01 to the City of Northampton, acting by and through its Conservation Commission. Prior to the preconstruction meeting, the applicant shall execute a purchase and sale agreement for the donation. The applicant shall work with the City to submit a restriction for state approval and endorsement.

40. A Stormwater Management Permit Amendment to the July 25 Stormwater Management Permit Decision shall be obtained from the Northampton Stormwater Authority prior to the preconstruction meeting.

41. The area shown as "35 foot protected zone" on project plans shall be marked as a no disturb area with boulders or other permanent markings approved by the Commission. Any future alterations, except as may be required to maintain the area in its planted condition are prohibited. Additional allowable activities are removal of species listed on the Massachusetts Prohibited Plant list, planting of native species, and pedestrian trail construction and maintenance as shown on project plans.

EXHIBIT B

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Request for Departmental Action Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

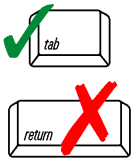
264-0785
Provided by DEP

A. Request Information

1. Location of Project

8 View Avenue/56 Northern Avenue a. Street Address	Northampton, MA 01060 b. City/Town, Zip
12168 c. Check number	$245.00 d. Fee amount

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



2. Person or party making request (if appropriate, name the citizen group's representative):

Caroline E. Smith, McGregor Legere & Stevens, PC
Name

15 Court Square, Suite 660
Mailing Address

Boston City/Town		MA State	02108 Zip Code
617.338.6464 x 115 Phone Number	N/A Fax Number		csmith@mcgregorlaw.com Email Address

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Sovereign Builders, Inc.
Name

710 Southampton Road
Mailing Address

Westfield City/Town		MA State	01085 Zip Code
413-527-8001 Phone Number	Fax Number		tcellura@sovereignbuilders.com

4. DEP File Number:

264-0785

B. Instructions

1. When the Departmental action request is for (check one):

☒ Superseding Order of Conditions – Fee: $120.00 (single family house projects) or $245 (all other projects)

☐ Superseding Determination of Applicability – Fee: $120

☐ Superseding Order of Resource Area Delineation – Fee: $120

Send this form and check or money order, payable to the *Commonwealth of Massachusetts,* to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

McGregor Legere & Stevens, P.C.Remittance Advice

12168

REFERENCE NO.	DESCRIPTION	INVOICE DATE	INVOICE AMOUNT	DISCOUNT TAKEN	AMOUNT PAID
20241015		10/15/24	245.00		245.00

CHECK DATE	CHECK NO.	PAYEE	DISCOUNTS TAKEN	CHECK AMOUNT
10/15/24	12168	Commonwealth of Massachusetts		$245.00

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED

12168

McGregor Legere & Stevens, P.C.
15 Court Square Suite 660
Boston, MA 02108

Eastern Bank
Boston, MA 02110
easternbank.com
1-800-EASTERN

53-179/113

DATE
Oct 15, 2024

12168

AMOUNT
$ ******$245.00

Memo:

Two Hundred Forty-Five and 00/100 Dollars

PAY TO THE ORDER OF: Commonwealth of Massachusetts

Security features. Details on back.

Cheryl A Dalton
AUTHORIZED SIGNATURE

⑈012168⑈ ⑆011301798⑆ 060093073⑈

EXHIBIT C

MWE
Consulting Civil Engineers and Land Surveyors
MetroWest Engineering, Inc.

August 23. 2024

Mr. Kevin Lake, Chairperson
Northampton Conservation Commission
210 Main Street
Northampton, MA 01060

RE: Notice of Intent for 8 View Avenue, Sovereign Builders, Inc.
MADEP File Number 246-0785

Dear Mr. Lake and fellow Commission Members:

I represent a group of concerned abutters/citizens to the above-referenced project, and I have been engaged to review stormwater management aspects of the plans and analysis submitted in support of the Notice of Intent. I have attached a separate list to this letter of the citizen group that has retained my services.

As a brief introduction to my qualifications, I am owner and president of MetroWest Engineering, Inc. MWE, located in Framingham, MA has been in business for 40-years, and we work extensively in the areas of site design and permitting of residential, commercial and institutional development projects. We are well-versed in the requirements of the MA Wetland Protection Regulations, 310 CMR 10.00, the MADEP Stormwater Handbook and Standards, and the general permitting process for development projects in Massachusetts. I hold a bachelor's degree from the University of Massachusetts in Amherst in civil engineering, as well as a master' degree in civil engineering with a focus on surface and groundwater hydrology from Colorado State University. My personal expertise lies in the areas of hydrologic analysis, stormwater management and drainage engineering. I periodically serve as a peer-review consultant to several MA communities including the Towns of Weston and Wellesley. I am a MA registered Professional Engineer and Land Surveyor.

My review of this project has included the following documents:

1. Plan Set, "View Ave", prepared by Berkshire Design Group, signed and stamped by Gregory Henson, PE, and Jeffrey Squire, RLA, last revised on July 17, 2024.
2. Stormwater Drainage Report, prepared by Berkshire Design Group, stamped and signed by Gregory Henson, PE, dated April 11, 2024
3. Stormwater Drainage Report, prepared by Berkshire Design Group, for North Street Condominiums, last revised 02/29/2009
4. USGS Topographic Quadrangle Map of Easthampton, MA dated 2021

5. Notice of Intent, View Avenue, prepared by Berkshire Design Group, dated April 10, 2024
6. USDA NRCS Soil Survey for Hampshire County, Massachusetts, Central Part, interactive web page review, 8/19/24
7. MADEP Data Portal, Wetlands NOI Project Information, NOI File Number 246-0785

Executive Summary

My review of this project's stormwater management design and the supporting analysis has revealed several significant flaws that require the system to be re-analyzed and the re-analysis will most likely result in major design modifications that could also impact the project layout and density. These significant flaws include the following:

1. Failure to accurately map the location of Soil Series based on the USDA NCRS Soil Maps.
2. Improperly classifying surface soils as within Hydrologic Group D when the USDA Soil Maps indicate the presence of Hydrologic Group A, B and C/D soils, resulting in an over-estimate of Pre-development Stormwater runoff rates and volumes. Please note that an earlier hydrologic assessment for the same property, prepared by the same consultant, utilized Hydrologic Soil Group Classifications that conflict with the values selected for the current project.
3. Failure to provide sufficient soil testing within the footprint of proposed infiltration systems, thereby failing to establish accurate Seasonal High Ground Water levels for a system designed with the minimum 2-foot offset to the water table. Additionally, failure to establish soil type within the footprint of an infiltration system when using an assumed infiltration rate based on soil texture class.
4. Failure to provide a groundwater mounding analysis for infiltration systems with a groundwater offset of less than four feet that are being used to attenuate peak flows per MA Stormwater Standard 2. Given the high-water table at this site and the steep fill slopes adjacent to the infiltration systems, slope failure and groundwater breakout is clearly an issue.
5. Failure to provide a hydraulic capacity analysis to demonstrate the roof drain collection systems, street drains, and catch basin inlets can handle the flows assumed to be collected under the submitted hydrologic analysis (the hydrologic analysis assumes that flows are collected and conveyed to the two infiltration systems without documentation that the pipe network has sufficient conveyance capacity.
6. Adoption of excessive infiltration rates (2.41-inches per hour) in sandy-loam soils, where the Stormwater Handbook provides (by means of the Rawls Table) for a rate of 1.02 inches per hour. Given the documented presence of Fine Silty Loam (FSiL) soils, the actual infiltration rate may be as low as 0.27 inches pe hour.This issue alone is sufficient to invalidate the analysis.

7. The Hydrologic Model and Proposed Site Plan are inconsistent, so that the conclusions of the hydrologic assessment are not valid for the design presented in the most recent plan set.
8. Based on the numerous issues presented in Items # 1 through 7, above, the applicant has failed to demonstrate compliance with MADEP Stormwater Standards, in particular Standard # 2, peak discharge rates, and Standard #3, Annual Recharge of Groundwater. The hydrologic model submitted in support of the project design is so rife with errors and inconsistencies that it clearly fails to demonstrate compliance with these standards.

I will discuss these topics in greater detail below.

I note that my initial review of this project has revealed so many consequential issues that I truncated my review to limit the expense that my clients are incurring for this review. Should revised plans and supporting documents be submitted, I may have additional comments on aspects of the project that I have not fully reviewed.

USDA NCRS Soil Survey and Hydrologic Soil Group Classification (Items #1 and #2 in Executive Summary)

Hydrologic modeling of the pre- and post-development conditions of the site requires a Curve Number Selection for site conditions based on surface land use and the underlying soil types as mapped by the NCRS. The NCRS mapping for site shows two major soil series. The rear or northerly portion of the site, roughly following the wetland resource, consists of soils within the Raynham Silt Loam Series. The USDA classifies these soils as Hydrologic Group C/D, with the more poorly drained soils, the D soils, likely within the wetland, and the better draining C soils upland of the wetland border.

The soils in the southerly portion of the site, the area of the site designated for development, lie within the Amostown-Windsor silty stratum-Urban land complex Series. These soils are classified as Hydrologic Group A and B soils, indicative of lower stormwater runoff than Hydrologic Group D soils. While it is true that both the Raynham and the Amostown/Windsor soils exhibit seasonally high groundwater levels, the Amostown/Windsor series produce much less stormwater runoff due to water retention in the upper soil horizons. I have provided the USDA NCRS description for the relevant soil series present on this site

The watershed delineation plans should identify the USDA NCRS soil boundaries on the plan, so that runoff curve numbers used in the hydrologic model may be accurately defined. This basic step in preparing a reliable hydrologic model has not been done, and it renders the results of the model as suspect.

The submitted hydrologic analysis assumes that all soils on the site lie within the Hydrologic Group D classification, an assumption that is in direct conflict with the published soil series. The result of this error is that the hydrologic model, for the pre-development condition, produces

more runoff from a storm event than it would have shown had the correct classification of Hydrologic Group A and B soils been used. This masks the impact of converting wooded/meadow lands to impervious surfaces such as roads, houses and driveways. This invalidates the conclusion of the modeler, that the project will not increase stormwater runoff rates and/or volumes when compared with pre-development conditions.

Additionally, the use of the Hydrologic Group D soil classification reduces the volume of groundwater recharge required for the project.

This improper mapping and classification of Hydrologic Soil Group invalidates the stormwater hydrologic analysis and has resulted in under-designed infiltration recharge systems for the project. As designed and modeled, the project will result in an increase in stormwater peak flow rates and stormwater volume directed into the wetland and ultimately offsite.

Of interest is the fact that the same engineering consultant, in a hydrologic analysis conducted for the same property in 2009, classified the soils as within Hydrologic Soil Group C, rather than Group D, as in the current analysis. The Group C classification, while still in conflict with the USDA report, would have produced significantly less stormwater runoff in the pre-development condition than the Group D classification

Soil Evaluation within the footprint of Proposed Infiltration Systems (Item #3 in Executive Summary)

While the applicant's engineer has submitted results from various soil evaluation tests performed on the site, none of the evaluations provided with the NOI occur within the proposed footprint of either Infiltration System, as specifically required by the MADEP Stormwater Handbook, as stated in Volume 3, Chapter 1, Standard 3, pages 5 through 13. The soil evaluations that have been presented demonstrate that the soil conditions, particularly textural classification, on this property are highly variable over short distances.

I note that the Drainage and Grading Plan, Sheet LC-130, fails to provide the location of all the soil evaluation tests that were performed on the property, making it difficult to verify the soil conditions in the location proposed for infiltration. These test locations should be added to the plan.

Infiltration System #1

Referring to Infiltration System #1, the larger of the two systems, two soil evaluations were conducted in the general vicinity of the system, TP-9 and TP-10. A third soil evaluation, TP-(2), is shown on Sheet LC-130 of the plan set, but a soil log for that evaluation was not provided in the NOI. The system elevation was set based on the groundwater level reported on the plan for this test pit, at elevation 134.83-feet. No textural classification is provided for TP-(2). TP-9, located 30-feet south of the system, reports a textural classification of Fine Silt Loam (FSiL),.

TP-10, located 10-feet north of the system indicates that is was excavated within historic fill and therefore does not have a texture classification. Based on the FSiL textural classification, the infiltration rate used for modeling of the infiltration system should be 0.27-inches per hour. The engineer, however, applied a rate of 2.41 inches per hour, a rate appropriate for Loamy Sand (LS) soils. Based on this, the model likely over-estimates the infiltration capacity of the system an order of magnitude, or nearly 800 percent.

Beyond the question concerning infiltration capacity, it is important to note that the system has been designed with the minimum offset of two-feet between the seasonal high water table and the bottom of the infiltration system, based on a sole evaluation point, TP-(2). Any variation in the natural water table elevation across the system, such as that which occurs when surface topography varies, may result in this system being non-compliant with the two-foot offset requirement.

As a minimum, at least two additional soil evaluations should be performed within the actual footprint of Infiltration System #1, both to definitely establish the soil textural classification and to develop a profile of the natural high-water table across the system.

Infiltration System #2

No soil evaluations have been conducted within the footprint of Infiltration System #2. Sheet LC-130 indicates that a soil evaluation, TP-(1), was performed approximately 10-feet to the northwest of the northerly end of the system, with a reported high water table 16-inches below the ground surface at elevation 132.67-feet, and a ground surface elevation of 134.0-feet. No NCRS soil textural classification was provided. The existing ground surface elevation at Infiltration System #2 varies from 134-feet on the northerly end of the system to 135.5-feet on the southerly end of the system. Assuming a similar depth to the water table of 16-inches below grade, the maximum high water table within the system area is 134.2-feet. The bottom of Infiltration System #2 has been set at 135.0-feet, less than a foot above the seasonal high groundwater table. This system clearly fails to satisfy even the minimum standard required in the MADEP Stormwater Handbook.

Additionally, the hydrologic model has assumed that the native soils where Infiltration System #2 will be constructed has an infiltration capacity, of 2.41 inches per hour, based on the Rawls Table rating for Loamy Sand (LS) soils. Several previous soil evaluations conducted in the vicinity of this system report soil textures that vary from Sandy Loam (SL) to Loamy Sand (LS). Since a SL soil has a rated infiltration capacity of 1.02 inches per hour compared to 2.41 inches per hour for a LS soil, it is critical to have soil evaluations conducted within the footprint of the infiltration system, in accordance with MADEP Stormwater Management Handbook guidelines. At least two such evaluations should be performed, one at either end of the system.

Requirement for a Groundwater Mounding Analysis (Item #4 in Executive Summary)

The MADEP Stormwater Handbook, in Volume 3, Chapter One, Page 28, requires that a groundwater mounding analysis be performed when infiltrations systems are used to attenuate peak flows for the 2- and 10-year storm events, if the offset between the high groundwater elevation and the bottom of the infiltration system is less than 4-feet. This design does use the infiltration system to attenuate peak flows and has less than a four-foot offset to the water table, so a mounding analysis is definitely required.

Groundwater mounding is a serious concern for this design. First, the parent soils on site have low hydraulic conductivities, which leads to the development of pronounced groundwater mounds. Second, the offset to the water table is at best, only two feet, and possibly less given the lack of definitive soil evaluations within the infiltration footprint. Finally, and most importantly, the infiltration systems are to be constructed immediately adjacent to steep slopes constructed in fill. This will, definitely (not speculatively) lead to a groundwater breakout through the slope, which is considered a failure under the MADEP Stormwater Handbook.

For example, for the 10-year storm event, Infiltration System #2 shows a peak water surface elevation within the chambers of 136.2-feet. The 2 to 1 fill slope located at the north end of the system shows the 136-foot contour only 10-feet away from the stone surrounding the chambers. This will lead to a water breakout through the slope. This in turn will lead to an eventual slope failure, flooding into the wetland, as well as slope erosion and the transport of sediment into the wetland resource. A similar condition exists at Infiltration System #1.

Accordingly, it is imperative that a groundwater mounding analysis of both infiltration systems be performed. The likely result of such an analysis is that a significant groundwater mound will develop under both infiltrations systems, and the fill slope at the 35-foot wetland buffer will need to be relocated further away from the infiltration systems and within the 35-foot wetland buffer.

Hydraulic Capacity of Stormwater Collection and Conveyance Pipe Network (Item #5 in Executive Summary)

The submitted Hydrologic Assessment of the project is predicated on the stormwater collection and conveyance system being able to fully collect flows from the 100-year storm event and, once collected, conveying those flows to the infiltration systems. No hydraulic capacity analysis has been submitted to demonstrate that gutter systems, roof drains, and piping network within the driveway/parking lot have the hydraulic capacity to convey those flows. A hydraulic analysis of the collection and conveyance network should be provided to demonstrate that the systems have been properly designed to collect and convey the 100-year storm event.

Infiltration Rates Used in Hydrologic Model (Item #6 in Executive Summary)

As has been previously discussed, the infiltration capacity for the two infiltration systems has been modeled using an infiltration rate of 2.41 inches per hour, a value derived from the Rawls Table for soils with a Loamy Sand (LS) texture classification. Insufficient soil evaluations have been provided to demonstrate that soil conditions within the two infiltration areas are consistent with the LS classification. In fact, most of the soil evaluations that were conducted on site indicated that soil textures belonged to the Sandy Loam (SL) classification. As noted earlier, one evaluation located near Infiltration System #1 reports a textural classification of Fine Silty Loam (FSiL). The Rawls Table provides for an infiltration capacity of 1.02-inches per hour for SL class soils, and 0.27 inches per hour for SiL class soils, both significantly lower than the values used in the model.

I further note, as previously discussed, that the modeler has placed all soils on the soil as within Hydrologic Soil Group D (HSG-D). HSG-D soils typically consist of Loam (L) or Silt-Loam (SL) soils and are not consistent with soils comprised of Sand (S) or Loamy Sand (LS). There is an obvious conflict between the modeler's classification of Hydrologic Soil Group to calculate surface runoff and the assumption of LS soils to calculate infiltration capacity.

This question is concerning selection of the proper infiltration rate is significant, as if the soil texture class is a SL type rather than a LS type, infiltration capacity of these systems will be reduced by nearly 60-perecnt. If the soils fall with the SiL class, the infiltration capacity will be nearly 600 percent lower than the values used in the model.

This conflict is best resolved by conducting additional soil evaluations within the footprints of the infiltrations systems, as discussed previously. I recommend that any such soil evaluations be witnessed and confirmed by an independent third party.

Inconsistency and Discrepancies between Hydrologic Model and Site Plan Set (Item #7 in Executive Summary)

The latest site plan set available for my review provides for a revision date of July 17, 2024. The hydrologic analysis provided to me has a date of April 11, 2024. The layout and elevations for the infiltration systems provided in the hydrologic model conflict with those provided on the July 17th plan set. If a revised hydrologic analysis has been provided to the Conservation Commission, it should also be provided to the concerned citizens group for review. If a revised analysis has not been submitted, one needs to be submitted, as the April 11, 2024, Hydrologic Analysis does not reflect the actual design proposed on the July 17, 2024, Plan Set. The discrepancies between the two documents are significant and must be resolved.

Failure to Demonstrate Compliance with Stormwater Management Standards #2 and #3.

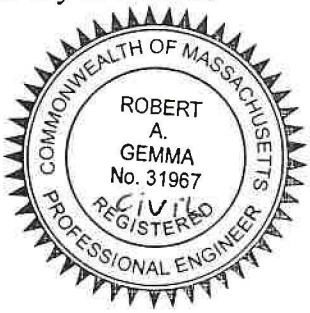
As discussed in the preceding paragraphs, the Hydrologic Model submitted in support of this project has numerous inconsistencies and lacks data to support several assumptions made in the model. Specifically, the model incorrectly classifies all soils on site as being within Hydrologic Soil Group D, when published soil surveys classify the soils as belonging to HSG A and B, in the case of the Amostown-Windsor series, and HSG C/D in the case of the Raynham Silt Loam Series. Moreover, the soil evaluations provided do not demonstrate the presence of Loamy Sand (LS) within the footprint of the two infiltration systems. Also, the soil evaluations fail to establish the high groundwater levels throughout the footprint of the infiltration systems. Finally, no groundwater mounding study has been provided to demonstrate that a groundwater mound will not result in a surface breakout of infiltration water. Based on these issues, the applicant has failed to demonstrate compliance with Stormwater Standards #2 and #3.

Conclusion

It is my professional opinion that the project, as presented, fails to demonstrate that the eight interests of the MA Wetland Protection Regulations, as described in 310 CMR 10.01 (2), will be protected. Further, the submission fails to demonstrate compliance with MADEP Stormwater Standards #2 and #3.

Thank you for considering my input as you evaluate this project and please do not hesitate to contact me if I may provide any clarification to my comments.

Sincerely yours,



Robert A. Gemma, PE, PLS
President

Enclosure : USDA NCRS Soil Map and Descriptions

CC : Concerned Citizen Group as listed below:

Jacqueline McCreanor
124 North Street
Northampton, MA 01060

Jacquelyn Ballance
35 Warner Street
Florence, MA 01062

Adam Cohen
134 North Street #2
Northampton, MA 01060

Dennis Helmus
174-176 North Street
Northampton, MA 01060

Jane Myers
74 Straw Avenue
Florence, MA 01062

Arnold Levinson
14 Hancock Street
Northampton, MA 01060

Heather McLaughlin
193 North Street
Northampton, MA 01060

Leah Gregg
James Scott Jackson
Joanne Sickles
1 View Avenue
Northampton, MA 01060

Michael Kane
12 Garfield Avenue
Florence, MA 01062

Fred Zimnoch
23 Pomeroy Terrace
Northampton, MA 01060

David and Katie Kates
125 North Street
Northampton, MA 01060

Soil Map—Hampshire County, Massachusetts, Central Part

Map Scale: 1:5,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Hampshire County, Massachusetts, Central Part

741A—Amostown-Windsor silty substratum-Urban land complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 99z2
Elevation: 100 to 330 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Amostown and similar soils: 35 percent
Windsor, silty substratum, and similar soils: 25 percent
Urban land: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Amostown

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Friable sandy glaciofluvial deposits over silty glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 32 inches: fine sandy loam
H3 - 32 to 60 inches: stratified very fine sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B
Ecological site: F145XY005MA - Moist Lake Plain
Hydric soil rating: No

Description of Windsor, Silty Substratum

Setting

Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loose sandy glaciofluvial deposits over silty glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: loamy sand
H2 - 8 to 21 inches: loamy sand
H3 - 21 to 45 inches: sand
H4 - 45 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Enosburg

Percent of map unit: 10 percent
Landform: Terraces
Hydric soil rating: Yes

Maybid

Percent of map unit: 5 percent
Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Hampshire County, Massachusetts, Central Part
Survey Area Data: Version 18, Sep 10, 2023

Hampshire County, Massachusetts, Central Part

30A—Raynham silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9b1h
Elevation: 50 to 500 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Raynham and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham

Setting

Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 37 inches: silt loam
H3 - 37 to 60 inches: stratified loamy fine sand to fine sandy loam to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 31 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F145XY004CT - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Maybid

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Scitico

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Belgrade

Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Hampshire County, Massachusetts, Central Part
Survey Area Data: Version 18, Sep 10, 2023

EXHIBIT D

September 25. 2024

Mr. Kevin Lake, Chairperson
Northampton Conservation Commission
210 Main Street
Northampton, MA 01060

RE: Notice of Intent for 8 View Avenue, Sovereign Builders, Inc.
MADEP File Number 246-0785
Second Peer Review

Dear Mr. Lake and Fellow Commission Members:

As you may recall, I provided your Commission with a peer review letter for the above-referenced project, dated August 23, 2024, performed at the request of a group of concerned citizens and abutters. Just prior to September 12, 2024, the applicant submitted a revised drainage report dated September 9, 2024. As this left me with insufficient time to review the revised submittal, the hearing was continued to September 26, 2024. It was my understanding that the continuance was granted to allow me time to review the 9/12/24 report.

Unfortunately, another drainage report and plan set were submitted just this past Friday, on September 20. Moreover, the hydrologic analysis and drainage approach has undergone a major change. Whereas the earlier submittals relied upon infiltration as the major mechanism to control peak flow rates, the revised plan and supporting calculations rely on stormwater detention and controlled flow release to mitigate flooding impacts. These are very significant changes to the stormwater management approach and warrant a thorough review.

This in turn will require another extensive review on my part, one that requires a significant investment of my time. It is frankly unreasonable to expect me to able to complete a thorough review of yet another design approach in a few days. The applicant should have requested another extension when the new plans and analysis were submitted and in not doing so the public confidence in the process has been diminished.

In beginning my review of the September 20 submittal, I quickly observed a major omission as well as a number and both analysis and design issues. I offer the following comments for your consideration.

Process Issues

The revised drainage plans and supporting analysis have undergone major revisions since my first review and my comments at the previous public hearing. While it is personally rewarding to see that my input has been considered and has resulted in design changes, it frankly should not be the responsibility of the concerned citizens group to fund a peer review of this project. This subject site has major physical limitations including poorly draining soils, extremely high groundwater levels, extensive wetland resource areas and a dense, compact development proposal. The proposed drainage design pushes hard against the boundaries as to what is allowable both under the MADEP Stormwater Regulations and handbook, and the Wetland protection Regulations, 310 CMR 10.00.

It is clear that an in-depth review of the submitted materials was beyond the resources available of town staff to review, as it requires expertise in hydrologic and hydraulic engineering, as well as a time commitment that most municipal employees simply do not have. Projects of such complexity are routinely subjected to an outside, independent peer review by a qualified consultant, paid for by the applicant.

The lack of an independent peer review forced my clients to engage me to review the project. Their expenses will, at the close of this second review, exceed five figures, a cost that should have been borne by the applicant and not the concerned citizens group.

Submission Omission

The September 20, 2024, Stormwater Report failed to include the HydroCad Analysis for the Existing Conditions model. This model underwent significant changes based on my earlier review, where I pointed out that the engineer used the wrong Hydrologic Soil Group in determining the pre-development runoff curve numbers in the model. While the cover page for Appendix A states it includes both Pre- and Post-Development Hydrologic Calculations, in fact only the Post-Development Calculations were included.

This means that my own peer review is incomplete, as I cannot verify the input data used in the model. Moreover, it means that the submittal fails to comply with MADEP Stormwater Requirements, as well as the requirements of the Northampton Stormwater Regulations. As a result, the Conservation Commission has only two options:

1. Seek a continuance to allow the applicant to provide the omitted material with sufficient time for a review
2. Deny the application for an incomplete submittal

This is frustrating, as it demonstrates:

1. The applicants engineer/representative rushed the submission package without the responsible professionals checking it for completeness.
2. The responsible review authorities in the town did not bother to review the submission.

This is another issue that adds to the expenses incurred by the concerned citizens group through no fault of that group, and further diminishes public confidence in the process.

Alteration of Bordering Vegetated Wetlands (BVW)

As I will discuss in subsequent sections of this report, there are several issues with the hydrologic analysis and drainage system design that make the results and conclusions reported in the narrative of the report suspect and unreliable. However, even if the results are assumed to be correct, the results indicate that wetland impacts, and alteration are likely as a result of this project. Referring to Table 1 on Page 5 of the report, the study indicates that the total volume of stormwater discharged into the BVW will increase from between 35 percent for the 2-year storm to 15 percent for the 100-year storm. The actual volumetric increase in stormwater discharged into the wetlands will likely be higher than figures when certain design flaws in the hydrologic model are corrected, as I will discuss later.

I note that the definition of "Alter" is provided in 310 CMR 10.04 as:

Alter means to change the condition of any Area Subject to Protection Under MGL c. 131, Section 40. Examples of alteration include, but are not limited to, the following:

(a) The changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas.
(b) The lowering of the water level or water table
(c) The destruction of vegetation
(d) The changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of the receiving water

The increase in water volume delivered to the BVW will make the wetland "wetter", with water standing in the BVW for longer periods of time and at a greater depth. Additionally, since the drainage system has changed from one relying on infiltration to one relying on detention, water quality characteristics of the water will change. In particular, water temperatures will increase due to heat retention within impervious surfaces and chemical properties will change due to dissolvable constituents such as sodium that cannot be removed by the stormwater system. These environmental changes will alter wetland hydrology over time. Species which tolerate wetter conditions, warmer waters and are resistant to chemicals will thrive over species that are less tolerant of such conditions. Invasive species such as Japanese Knotweed are particularly adept at adapting to such conditions.

Beyond the alteration of wetland hydrology, the increase in stormwater volume discharged into the BVW has the potential to increase downstream flooding issues, and to over-tax existing

hydraulic conveyance infrastructure. The applicant has not submitted an analysis of whether existing hydraulic conveyance and/or storage systems have the capacity to accept the additional stormwater volumes that the project will generate.

Stormwater Infiltration System #1 (SIS #1)

The engineer/modeler takes a curious approach to stormwater modeling in the case of SIS #1; The model assumes that the system is present for the smaller design storm, the 2-year event, but assumes that it is completely absent for the larger storm events, the 10-year and 100-year event. In the real world, the system is there as it is on the design plans and will be constructed. The post-development model should account for its presence across all design storms. The methodology employed, selectively including the infiltration for one design storm but not another, is at odds with accepted engineering practice and the model should be revised accordingly.

SIS #1, which is used to satisfy minimum stormwater recharge volume under Stormwater Management Standard 3, fails to satisfy the minimum offset requirement of two feet between the seasonal high groundwater table and the bottom of the infiltration system. TP-(2), as shown on Sheet LC-130, reports the seasonal high-water table at 134.83-feet. The bottom of stone of SIS #1 is proposed at 136.33-feet, 1.5-feet above the reported seasonal high groundwater table.

The project narrative, on page 4 under paragraph Area P3, states that this sub-watershed catchment drains into Subsurface Detention System #1 (SDS #1), and then into SIS #1. In fact, the area is first discharged into a flow diversion manhole (DIV #1), which first diverts flow into SIS #1, based on the detail of DIV #1 provided on Sheet LC-501. Flow to SDS #1 only occurs after the water level in SIS #1 reaches the top of the manhole weir, at elevation 137.70-feet. The post-development hydrologic model should be revised to reflect this design element accurately.

Stormwater Detention System #1 (SDS #1)

As I have previously noted, the current engineering design relies on detention, rather than groundwater recharge, to attenuate peak flood flows. This is accomplished by means of SDS #1, located under the pavement in the northeast corner of the site.

SDS #1 consists of 224 plastic chambers that are assembled together in the field in a Lego-like manner. The chambers are set on a bed of stone and covered with a bed of stone.

In order to provide for flood water storage and detention, these chambers, including the stone above and along the sides of the chambers, must be empty and not holding water before a storm event begins. Thus, the system of chambers and stones must be impermeable to groundwater that may be present under or along the sides of the system.

To prevent groundwater intrusion into the chambers and surrounding stone, the engineer has called for a 30-mil thick poly-vinyl barrier to be wrapped on all four sides and the bottom and top of the system, to create an impermeable barrier to prevent groundwater intrusion.

Creating a water-tight wrap where the top, bottom and all sides of the system are water-tight using a membrane wrap is a formidable construction challenge, one that I have never seen achieved in my 40-plus years of practice. The membrane itself is difficult to work with as it is not very flexible, and establishing watertight seams can be exceedingly difficult. Moreover, it is virtually impossible to field test the system for water-tightness before backfilling, so even if meticulously constructed, the system as-built may not be water-tight.

Complicating this design is a water table that will vary in depth across the system. Based on the soil tests provided, I estimate that the water table at the northwest end of the system will be approximately at 135.6-feet, and roughly 0.7-feet below the stone bedding supporting the system. However, at the southeast end of the system the water table will be at, approximately, 137.1-feet, about 0.8-feet above the bottom of the stone, and above the bottom of the chambers. The system will therefore be subject to a non-uniform hydrostatic pressure from below, pushing the system up. This force is analogous to the hydrostatic force that sometimes can push an in-ground swimming pool out of the ground in the winter).

The issue is that the system will be subject to both non-uniform hydrostatic pressure from below, and vehicle loading pressure from above. These forces will stress the system integrity and over time may result in a breach of the watertightness, as the modules will shift, and lateral strain will be exerted on the impervious liner. Any breach of the liner can fully compromise the detention capacity of the system by allowing groundwater intrusion, which will result in a failure of the detention component. This in turn leads to a failure to comply with Stormwater Standard # 2.

I realize that construction details and standards can be difficult for a lay person to understand, and the issues presented here may seem abstract. However, nearly everyone has seen road settlement, or live in a house with creaks and groans that develop as the structure is subjected to settlement stress. The mechanism that I discuss above is similar and nearly impossible to avoid.

The design as presented is poor as it is nearly impossible to build and even if built well, will eventually fail due to internal stresses. In my opinion, more suitable design choices are available, and I will discuss alternative approaches at the end of this report.

Subsurface Infiltration System #2 (SIS #2)

Soil Conditions and Testing

No soil evaluations were conducted within the footprint of SIS #2, and these are required as per the MADEP Stormwater Handbook. A soil evaluation of soil texture and groundwater levels should be provided.

Groundwater Offset to System

SIS #2 is designed with a bottom of stone elevation at 135.7-feet. The design engineer selected this elevation based on the reported groundwater level of 132.67-feet observed in TP-(1). This test pit is, however, located approximately 15-feet away from and vertically down-gradient from SIS #2. Since the water table here has been shown to reflect the surface topography, the actual water table is likely higher at the location of SIS #2. This can be seen by reviewing the water table reported in TP-3, which is located at the same surface elevation as SIS #2, and 18-feet to the southwest. The reported water table in this test hole was 134.6-feet, and within the two-foot required minimum offset between the bottom the system and the high-water table.

To best evaluate the water table elevation at SIS #2, in the absence of an actual soil evaluation, I interpolated the groundwater elevation using the results reported in TP-(1), TP-3, TP-4 and TP-2, which surround the location of SIS #2. Based on that interpolation, the probable elevation of the water table at SIS #2 is at elevation 133.9-feet.

Based on this interpolation, the bottom of SIS #2 is offset only 1.8-feet from the water table and fails to meet even the minimum groundwater offset requirement of 2.0-feet.

Groundwater Mounding Analysis

While a groundwater mounding analysis for SIS #2 has been provided in the most recent submittal, the analysis is based on questionable data assumptions required for the Hantush Spread Sheet used.

The Hantush method requires the following input data:

(a) Recharge Rate (volume of water to be recharged in a specific time period in feet per day)
(b) Specific Yield (a dimensionless value representing available storage in the aquifer)
(c) Horizontal Saturated Hydraulic Conductivity of the aquifer soil
(d) Basin dimensions (1/2 length and ½ width)
(e) Recharge duration period.
(f) Initial thickness of saturated zone

The modeler used the following data for these values:

(a) RR: 0.54 feet per day
(b) SY: 020
(c) K: 5.4 feet per day
(d) One-half basin dimensions: 13.86 ft by 9.9 ft
(e) Recharge duration; 1.7 days
(f) Initial thickness of saturated zone; 5.67-feet

In my opinion, the data input for items (a), (d) and (e) are incorrect for the following reasons.

The Recharge Rate, RR should be based on the total infiltration volume of 823 CF that occurs during the 100-year storm, applied over the footprint of the infiltration area which is 480 SF. This results in a recharge rate of 1.71 feet per day, not the 0.54 feet per day used in the report.

The basin dimensions, even though SIS #2 has an irregular shape, should equate to the actual surface area of the infiltration system, which is 480 SF. The dimensions input in the analysis submitted, 13.86-feet by 9.9-feet equate to an area of 549 SF, overestimating the infiltration footprint by 22 percent. The dimensions should be adjusted to approximately 9.0-feet by 13.3-feet.

Finally, the infiltration duration period should be set to one day, as the model is simulating the response to a 24-hour storm.

Using the parameters discussed above, the Hantush model predicts a groundwater mound at the center of the infiltration system of 3.3 feet. This mound will therefore extend to within the infiltration system.

Roof Drainage Conveyance System

Capacity

The revised stormwater submittal includes a Rational Method Analysis to substantiate the diameter and slope of pipes used to convey roof water from downspouts to the infiltration systems. Unfortunately, no map or diagram was provided to identify which pipes, serving which buildings, were analyzed. As such, there is no way to review or confirm the analysis. A diagrammatic sketch should be provided along with the analysis so that the pipe runs, diameters and slopes can be reviewed.

Cover

The cover over the pipes in the rear of the buildings needs to be assessed to confirm that a minimum one one-foot of ground cover over the top of the pipes is provided. Depending on the required pipe diameters and slopes needed to achieve conveyance capacity, several of the conveyance pipes may have insufficient cover. Of particular concern is the 6-inch diameter pipe that runs behind Building #8. Based on the minimum required slopes, the invert at the north end of this pipe will be approximately 138.8-feet and the crown of the pipe will at elevation 139.3-feet. The proposed finish grade at this location is elevation139.5.feet, or only 2.4-inches above the top of the pipe. While this may seem like a minor point, it is indicative of a design plan that has been rushed and does not consider constructability issues.

Maintenance

The submitted Stormwater Operation and Maintenance Plan makes no mention of the roof gutter and piping conveyance network, despite the fact that the entire hydrologic analysis is predicated on the collection and conveyance of roof stormwater to the disposal systems. If the roof water is not collected and conveyed, for all design storm events, then the analysis as presented will not represent the actual site conditions and the downstream flooding will absolutely occur. Maintenance of the gutters, downspouts and sub-surface conveyance conduits is critical to the performance of the stormwater management system.

As it is presently designed, the collection and conveyance system cannot be inspected, cleaned or maintained. The sub-surface piping network calls for numerous tee-connections, bends, and sharp angles. No cleanouts or inspection ports brought to finish grade are called for on the plans.

As anyone who has ever cleaned a gutter knows, roof shingles gradually degrade and discharge aggregate into the gutters. Gutters are also a magnet for leaves, pine needles, acorns and children's toys. All of these deleterious materials will eventually find its way into the conveyance pipes. Clogging is inevitable, especially at bends, junctions and angle points where changes in velocity can result in material deposition. The current plans provide for no mechanism to inspect and clean the pipes, and the O & M does not even require inspection or maintenance of the system. This is a gross oversight that must be corrected.

Low Impact Development Components

The Stormwater Management System as submitted offers no Low Impact Development (LID) components. Contrary to the engineer's assertion in the Stormwater Report, infiltration systems, which now have been largely eliminated for this project, are not considered LID components.

Conclusions and Recommendations

The Stormwater Management System for this project has been designed on a knife's edge, pushing hard against the regulatory limits for a site with such poorly draining soils and a water table close to the ground surface. If any of the design assumptions prove to be incorrect the system will fail to protect the interests of the Wetlands Protection Act and the downstream residents. If minor irregularities occur during construction, which is the norm, system failure is the likely outcome. If the ground settles over time causing even a minor rupture of the Subsurface detention system, failure will result. Given the physical limitations of this site, there will be no available remedy, and downstream residents will incur property damage.

In my opinion better stormwater management alternatives are available that would allow the project to move forward at a similar density. I specifically recommend that the following alternatives be explored:

(a) A stormwater disposal system, open to the air and above-grade, should be considered in the northwesterly portion of the property. The system could employ rain gardens, an open infiltration basin, or a constructed wetland to manage the site's stormwater runoff. Such a system offers significant benefits on terms of inspection and maintenance, and greatly reduce the possibility of a system failure. This approach would likely require an adjustment in the building design and placement, perhaps combining single family units into attached units to free up real estate for stormwater management purposes.

(b) Porous or pervious pavement should also be considered for the driveways, the main access road, or both. Since the site is being filled in the driveway and road locations, porous pavement can be an effective means to minimize stormwater runoff and reduce the required size of other stormwater management systems.

In any case, given the complexities that this site faces to achieve the proposed density, the Commission is justified to require that an evaluation of alternatives be provided.

Finally, and in closure, given your 3-minute time limitation for input by non-applicant participants, it does not make sense for me to attend the next hearing, as my attendance is another added expense to the citizens group, and I can accomplish very little in three minutes.

Thank you for your consideration.

Sincerely yours,

Robert A. Gemma, PE, PLS
President

Enclosure : Hantush Mounding Analysis

CC : Concerned Citizen Group as listed below:

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Northampton, MA 01060

Jacquelyn Ballance
35 Warner Street
Florence, MA 01062

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This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. M
Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormv

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimer
thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For
For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as th
if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dim
can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output value
blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary it
and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

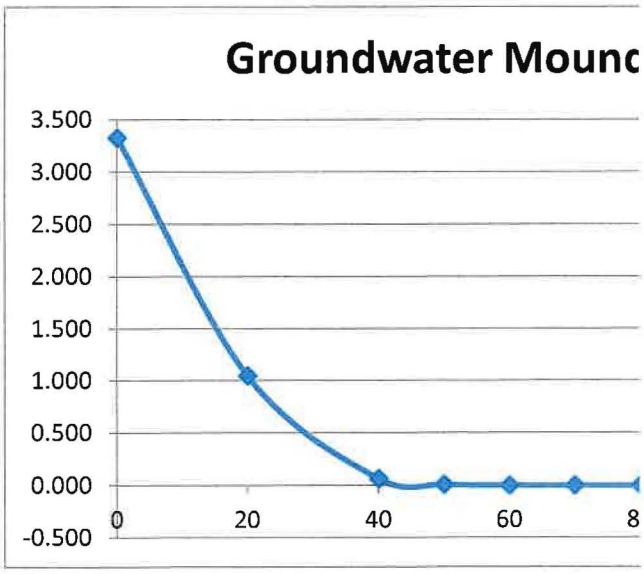
Input Values

1.7100	*R*	Recharge (infiltration) rate (feet/day)
0.220	Sy	Specific yield, Sy (dimensionless, between 0 and 1)
5.40	K	Horizontal hydraulic conductivity, Kh (feet/day)*
13.300	x	1/2 length of basin (x direction, in feet)
9.000	y	1/2 width of basin (y direction, in feet)
1.000	t	duration of infiltration period (days)
5.670	hi(0)	initial thickness of saturated zone (feet)

9.000	h(max)	maximum thickness of saturated zone (beneath center of ba
3.330	Δh(max)	maximum groundwater mounding (beneath center of basin

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.330	0
1.050	20
0.067	40
0.014	50
0.004	60
0.003	70
0.003	80
0.003	90
0.003	100
0.003	120

Re-Calculate Now



Mound at center of system = 3.33 Feet

Disclaimer