



August 23, 2021

**BY ELECTRONIC MAIL: zoning@topsfield-ma.gov
AND FIRST-CLASS MAIL**

Topsfield Zoning Board of Appeals
Topsfield Town Hall
8 West Common Street
Topsfield, MA 01983

Re: Application for Comprehensive Permit – 57 Perkins Row, Topsfield

Dear Members of the Board:

As you know, this Firm represents William and Natalie Whelan (the “Whelans”) of 63 Perkins Row in Topsfield. The Whelans’ properties abut the proposed 40-unit housing project at 57 Perkins Row (the “Project” and the “Project Site”), which is the subject of a pending application for a comprehensive permit under General Laws Chapter 40B, Sections 20-23 proposed by Perkins Landing, LLC (the “Developer”). I am writing to provide the Board with technical analyses from the following experts concerning the Project:

1. Scott Horsley – hydrology and pollution impacts on groundwater;
2. Patrick C. Garner – wetlands impacts; and
3. David Black, C.Eng. – traffic engineering and planning.

By this correspondence, I am submitting comment letters from these experts for the Board’s review and consideration.

I. Substantive Concerns

- A. The Project’s wastewater and stormwater management systems may not be viable.

Our Water Resources Consultant, Scott Horsley, has determined that shallow groundwater conditions at the site, coupled with groundwater mounding impacts, may preclude the feasibility of the proposed wastewater facility. He also found that the project does not comply with the design requirements in the Massachusetts Department of Environmental Protection (“MADEP”) Stormwater Handbook. Mr. Horsley has identified the following deficiencies, as further explained in his comment letter:

- The proposed wastewater leaching area may not comply with minimum depth to groundwater requirements.
- A groundwater mounding analysis is necessary to evaluate the impacts of the proposed wastewater disposal. If the mounding effect causes the groundwater elevations to rise such that 4 feet of separation cannot be attained, the size of the leaching field will need to be modified, or the volume of effluent being directed to the leaching field will need to be reduced.
- The project proposes to discharge 9680 gallons/day of wastewater to the underlying groundwater on the site, which will subsequently flow to the surrounding properties, wetlands, and the Ipswich River. No information is provided on the proposed wastewater treatment process or effluent quality. No information is provided about groundwater flow directions nor the resulting water quality impacts that will occur downgradient of the wastewater discharge.
- Additional test pits, geologic borings, permeability tests, and a groundwater mounding analysis will be required to fully evaluate the feasibility of the proposed area for wastewater disposal.
- No test pits are provided for the proposed stormwater infiltration systems. MADEP Stormwater Handbook requires a minimum of two test pits for each infiltration system.
- The project does not comply with the MADEP Stormwater Standard 3, such that it will result in higher groundwater levels and alterations to wetlands.
- The project does not comply with MADEP requirements for state-designated “impaired waters.”

Based on the foregoing, Mr. Horsley has determined that: “Given the significant size of the project, its proximity to extensive wetlands, the Ipswich River, and its location immediately adjacent to the river, and the MADEP TMDL status [of the Ipswich River as being impaired by pathogens], minimum setback/buffers of 100 - 200 feet to the wetlands associated with the Ipswich River would be a reasonable and defensible protective measure that the Topsfield Board of Appeals could require to protect public health, public and private drinking water supplies, and the environment.”

- B. Protected Wetland Resource Areas are not properly delineated on the proposed Plans, and the Project is not designed to mitigate impacts to wetlands.

Our wetlands consultant, Patrick Garner, has also identified the following deficiencies with the proposed project, as explained in the attached comment letter:

- The project plans are based on old, incomplete or approximate data, such that their accuracy cannot be verified. For example, the location of Riverfront Area (“RA”) is

listed as “approximate,” which is inappropriate and unwarranted under the state regulations.

- Given the permitting history of the site, an entirely new Notice of Intent or Abbreviated Notice of Resource Area Delineation (ANRAD) that re-assesses the state Wetlands Protection Act Riverfront Area boundary is necessary before this project can proceed.
- A preliminary review of impacts to the potential (and certifiable) vernal pool on the site indicates that alterations to its “water budget” are likely, such that the project could impair the capacity of the vernal pool habitat to function as wildlife habitat, in violation of state standards.

Mr. Garner recommends that the Board’s review of the proposed project be suspended until the issues concerning the vernal pool and the delineation of the Riverfront Area are addressed.

II. The Application is Incomplete.

The application materials submitted by the Developer are also inadequate to enable the Board to properly evaluate the Project and the waivers being requested.

First, the Developer has not provided sufficient design plans or supporting documentation on the wastewater and stormwater utilities that will be needed to support this large project. These are foundational issues that should have been addressed in the application filed with the Board (see, 760 CMR 56.05(2)), and their omission disables the Board from properly evaluating the application.

Second, the Developer has not provided any traffic impact analysis, even though it was required to do so by MassHousing in its Project Eligibility Letter. Specifically, on Page 4 of its Letter, MassHousing states:

- The Applicant should be prepared to provide a detailed traffic study assessing potential impacts of the Project on area roadways, including traffic volumes, crash rates, and the safety and level of service (LOS) of area intersections, and identifying appropriate traffic mitigation in compliance with all applicable state and local requirements governing site design.
- The traffic study or other professional site design process should address proposed on-site circulation and parking to ensure compliance with public safety standards and good design practice relative to drive-aisle widths, turning radii and sight distances along the Site drive and the parking areas through which it passes. The Applicant should be prepared to address concerns about provisions for safe pedestrian access and pedestrian/vehicular separation within the Site, sufficiency of resident and guest parking, and plans for snow storage.

Again, this deficiency prevents the Board from properly evaluating the project in accordance with the strict timeframes established under Chapter 40B. Our traffic engineer, David Black, discusses the traffic safety issues in the attached memorandum.

In light of the foregoing, we request that the Board require the Developer to supply the missing information, and update its project proposal to address the above concerns.

Thank you for your consideration of these comments.

Very truly yours,

/s/ Elizabeth M. Pyle

Elizabeth M. Pyle

Encs.

cc: Clients
Paul Haverly, Esq.
Conservation Commission
Board of Selectmen
Planning Board

Scott Horsley
Water Resources Consultant
65 Little River Road • Cotuit, MA 02635 • 508-364-7818

23 August 2021

Mr. Robert Moriarty, Chairperson
Topsfield Zoning Board of Appeals
Topfield Town Hall
8 West Common Street
Topsfield, MA 01983

RE: Perkins Landing, 57 Perkins Row, Topsfield, MA

Dear Mr. Moriarty and Board Members:

I have been retained by Hill Law to review the proposed project located at 57 Perkins Row, Topsfield, MA. I have reviewed the Comprehensive Permit Plans dated March 5, 2021 prepared by Morin Cameron Group, Inc., Technical Report Narrative, March 5, 2021, and other relevant data and resources published by the Massachusetts Department of Environmental Protection (MADEP), Massachusetts Geographic Information System (MAGIS), United States Geological Survey (USGS), USDA Natural Resources Conservation Service (NRCS) and United States Environmental Protection Agency (USEPA).

Qualifications: I have over 30 years of professional experience in the field of water resources management and on a broad range of water contamination and restoration projects. I have been retained as a consultant to federal, state, and local government agencies, non-governmental organizations (NGOs), and private industry throughout the United States, Central America, the Caribbean, the Pacific Islands, Bulgaria, and China. I have served as an instructor for a nationwide series of U.S. Environmental Protection Agency (USEPA) workshops on drinking water protection and watershed management. I have also served on numerous advisory boards to the USEPA, the National Academy of Public Administration, Massachusetts Department of Environmental Protection (DEP), Massachusetts Executive Office of Energy and Environmental Affairs (EEA), and the National Groundwater Association. I have received national (USEPA) and local awards for my work in the water resources management fields. I serve as Adjunct Faculty at Harvard University Extension School and Tufts University, where I teach courses in water resources policy, wetlands management, green infrastructure, and low impact development (LID). These courses focus on the critical role of local governments who have the primary responsibility and authority of regulating land uses in critical water resource protection areas.

General Comments: The proposed project includes an on-site wastewater disposal system with a design flow of 9680 gallons per day (GPD) and several stormwater infiltration/recharge and detention systems. The project site is surrounded by wetland resources areas including the Ipswich River, a tributary stream, several bordering vegetated wetlands (BVW) and a certifiable vernal pool (PVP). The proposed project will result in hydrologic alterations to wetlands and water quality impacts to groundwater and surface waters. My specific comments are as follows:

1. Shallow groundwater conditions and groundwater mounding may preclude the feasibility of the proposed wastewater facility.

The proposed wastewater leaching area may not comply with minimum depth to groundwater requirements. A minimum vertical separation of 4 feet (48 inches) is required beneath the bottom of the wastewater leaching facility and the seasonal high groundwater levels (including groundwater mounding). Test pit 17-14 is within the footprint of the proposed wastewater discharge area and shows a depth of only 44 inches to estimated seasonal high groundwater (ESHGW). Additionally, the proposed leaching field is located within a sloped area and no test pits are provided at lower elevations where depth to water table is likely to be less.

Furthermore, groundwater mounding associated with the infiltration of 9680 gallons/day of wastewater will significantly raise ambient water table conditions (see discussion below).

According to available surficial geology maps prepared by the United States Geological Survey (USGS) the proposed wastewater disposal area is mapped as glacial till (see figure 1). Glacial till has variable hydrologic properties and is generally low permeability, which will exacerbate groundwater mounding. Additional test pits, geologic borings, permeability tests, and a groundwater mounding analysis will be required to fully evaluate the feasibility of this area for wastewater disposal (see discussion below).

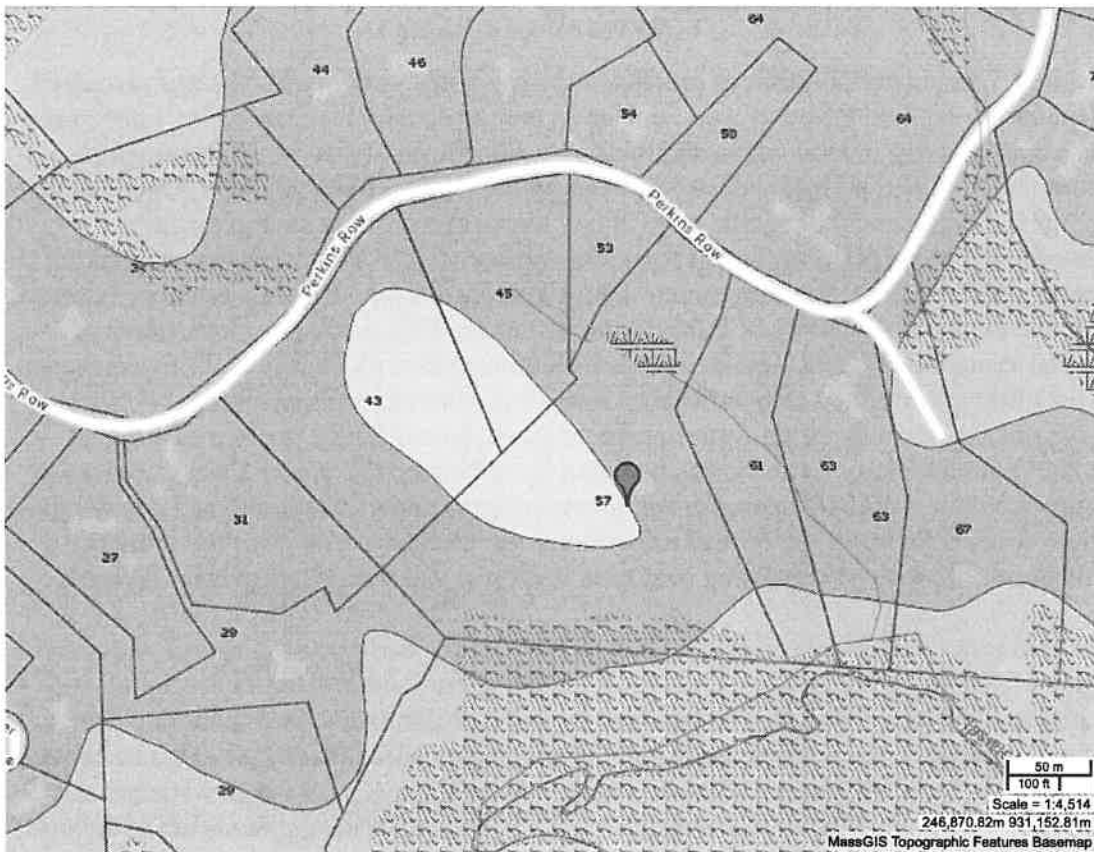


Figure 1 - Surficial Geology (USGS, MAGIS) - glacial till shown in green color

2. A groundwater mounding analysis is required to evaluate the impacts of the proposed wastewater disposal.

The discharge of 9680 gallons/day of wastewater to the subsurface will result in a rise of the water table and a modification of groundwater flow directions. The MADEP Nitrogen Loading Guidelines (page 10) state that for wastewater discharges of over 2000 gallons/day, **“the applicant must conduct a mounding analysis for the proposed discharge and demonstrate that the appropriate thickness of unsaturated material required by Title 5 (310 CMR 15.240) separates the bottom of the soil absorption system (SAS) and the mounded, seasonal high groundwater table. Mounding calculations must be conducted to stabilization at the proposed design flows and be reflected on the water table map”**.

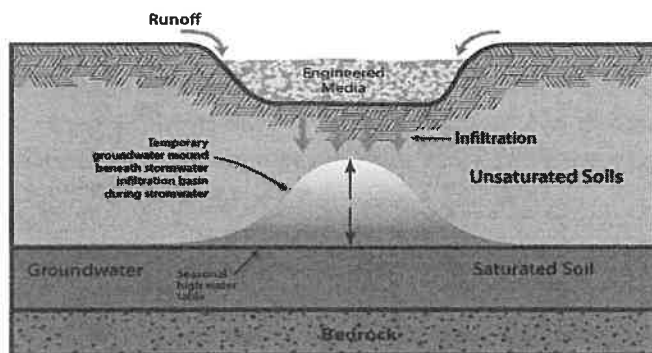


Figure 2 - Groundwater Mounding

3. The proposed wastewater discharge will cause water quality impacts.

The project proposes to discharge 9680 gallons/day of wastewater to the underlying groundwater on the site, which will subsequently flow to the surrounding properties, wetlands, and the Ipswich River. No information is provided on the proposed wastewater treatment process or effluent quality. No information is provided about groundwater flow directions nor the resulting water quality impacts that will occur downgradient of the wastewater discharge.

The wastewater discharge will contain significant concentrations (and loads) of nutrients (nitrogen and phosphorus). These contaminants are a risk to both groundwater (private wells) and downgradient surface waters. Several of the surrounding properties have on-site drinking water wells. Nutrients cause eutrophication in surface waters at low concentrations.

The applicant should model and evaluate post-development groundwater flow directions to identify downgradient sensitive receptors and determine the probability of water quality impacts. MADEP has developed a nutrient loading approach that should be applied to evaluate these impacts. The MADEP Nitrogen Loading Guidelines (page 9) state, **“where the proposed discharge from a facility is 2000 gpd or greater, but less than 10,000 gpd, and may impact sensitive receptors, the Board of Health or DEP may require a site-specific mass balance analysis to ensure adequate protection of public health, safety or the environment”**.

Recent studies are revealing that concentrated wastewater discharges contain contaminants of emerging concern (CECs) such as pharmaceuticals, flame retardants, and PFAS. These studies also indicate that PFAS is bioaccumulated in fish and shellfish. Again, no information has been provided about groundwater flow directions and the resulting water quality impacts to private drinking water wells, wetland resource areas, or the Ipswich River (a source of public drinking water) that will occur downgradient from the proposed project's wastewater discharge.

At 9680 gallons per day, the proposed system is designed at just 320 gallons per day less than the 10,000 gallons per day threshold to avoid the permitting requirements of the MA Groundwater Discharge Permit Regulations (310 CMR 5.00) and extensive review by the Massachusetts Department of Environmental Protection (MADEP). It is unclear how the Applicant derived the design flow of 9,680 gpd. Under Title 5, the design flow for septic systems in multi-family condominiums is 110 gpd, per bedroom. All of the 40 housing units are set up to have two bedrooms on the third floor, but it appears based on the architectural plans that the 30 market-rate units will have an optional third bedroom on the first floor. If that is the case, the market-rate units could have a design flow of 9,900 (330 gpd x 30), and the affordable units would have a combined flow of 2,200 gpd, for a total project flow of 12,100 gpd. This would exceed Title 5's lower permitting threshold.

The Topsfield Health Regulations (Section 11) further require a "Geohydrological Study" for cluster projects where multiple dwelling units discharge to a single septic system. The Health Regulations (Section 14) also prohibit septic discharges within 200 feet from the bank of the Ipswich River. These regulations are designed to protect public health and the environment. The required Geohydrologic Study must include an assessment of groundwater mounding, groundwater flow directions, and downgradient water quality impacts. The proposed leaching area is also near the property line, and may impact neighbors' wells and an isolated wetland on neighboring property. The Geohydrologic Study should evaluate these impacts, as well as impacts on the Ipswich River and its associated wetlands.

4. The project does not comply with the MADEP Stormwater Handbook design requirements.

The proposed project will generate significant volumes of stormwater. The applicant proposes to utilize a series of stormwater infiltration/recharge and detention structures to dispose of the stormwater runoff from the impervious areas. These stormwater facilities are within the 100-foot buffer zone to wetlands and in areas with shallow depths to groundwater. Proper functioning of these facilities is highly dependent upon the site-specific soil conditions and their proximity to the water table and wetlands.

No test pits are provided for the proposed stormwater infiltration systems. MADEP Stormwater Handbook requires **a minimum of two test pits for each infiltration system**. This information is critical to determine the impacts on groundwater mounding and to evaluate if the overall proposed site plan is feasible.

A groundwater mounding analysis for the stormwater systems is provided in the Technical Report. The groundwater mounding analysis for stormwater recharge systems assumes a

saturated thickness of 45 feet and a permeability (K) of 48 feet/day with no support for either of these values. The groundwater mounding model is very sensitive to these two input values and can easily underestimate the impacts.

Saturated thickness is the vertical distance between the water table and an underlying lower permeability layer such as glacial till or bedrock. The deepest test pits shown on the project plans are 10 feet. No subsurface information is provided below this depth and no justification is provided for the applicant's assumption of 45 feet depth.

Permeability is a measure of the soils ability to accept and transmit water. There are no permeability tests provided and no explanation for the values used. Further hydrogeologic investigation is required to document the saturated thickness and permeability values utilized in the groundwater mounding modeling.

Groundwater mounding analyses need to be evaluated long term and cumulatively. The groundwater mounding analysis provided does not include the cumulative impacts of year-round stormwater infiltration (of all storm events) that will result in an altered post-construction water table. The average annual volume of infiltration from these smaller storms greatly exceeds the average annual infiltration from the far less frequent, larger storm events. The larger, event-based mounding discussed above should be added on top of the post-development steady-state water table.

5. The project does not comply with the MADEP Stormwater Standard 3 and will result in higher groundwater levels and alterations to wetlands

The MADEP Stormwater Standards and Stormwater Handbook provide guidance and criteria to ensure that the hydrologic budget of associated wetlands is maintained and protected. Wetlands are dependent upon both surface water and groundwater inputs and are sensitive to hydrologic shifts and alterations (they can be impacted by both increases and decreases of water levels and flow). They are impacted by both short-term runoff events and longer-term groundwater changes in recharge rates that alter baseflow. Recharge is the process of precipitation infiltrating into the ground and replenishing the underlying groundwater. MADEP Stormwater Standard 3 requires that annual groundwater recharge rates be maintained and preserved.

MADEP Stormwater Standard 3 is designed to maintain the hydrologic balance in wetlands. It requires that post-development recharge is maintained at existing pre-development recharge. MADEP Stormwater Handbook, Volume 2, Chapter 1 provides guidance and clarification regarding this requirement to maintain natural hydrology. Page 6 of this document states, **"Standard 3 of the Stormwater Management Standards requires that proponents preserve infiltration at predevelopment levels in order to maintain base flow and groundwater recharge"**. Recharge provides baseflow to wetlands and contributes to their hydroperiod (the natural cycle of water levels through the seasons). Changes to this hydrologic balance of recharge areas to a wetland constitute "alterations" to the wetland. This project will result in significant alterations to these recharge rates and to the hydrologic regime of the wetlands. Where the site includes a potential vernal pool, such changes in the hydrologic regime could disrupt the delicate balance necessary to maintain the viability of the pool, impairing the capacity

of the vernal pool habitat to function as wildlife habitat in violation of the state Wetlands Protection Act and regulations.

The Applicant's Technical Report provides recharge calculations that indicate that the proposed recharge basins will recharge significantly more stormwater post-development compared to pre-development conditions by a factor of nearly three (see Table 1). This will result in a higher year-round water table and increased discharges to the wetlands. This does not comply with MADEP Stormwater Standard 3 – to **“preserve infiltration at predevelopment levels in order to maintain base flow”**.

Table 1 - Groundwater Recharge Comparison (Existing vs. Proposed)

Existing Recharge Volume	2457 cubic feet
Proposed Recharge Volume	7166 cubic feet
Net Increase Ratio	2.9 times larger

The proposed amount of stormwater infiltration will increase water levels and will cause significant alterations to the wetlands. According to the MADEP Stormwater Handbook, these water level alterations in wetlands are not allowed. MADEP Stormwater Manual, Volume 3, Chapter 1, page 17 provides guidance on how to evaluate impacts on wetlands associated with proposed infiltration/recharge facilities designed in accordance with Stormwater Standard 3. It states, **“Evaluate Where Recharge Is Directed: The infiltration BMP must be evaluated to determine if the proposed recharge location will alter a Wetland Resource Area by causing changes to the hydrologic regime”**.

Recharge system #2 is located approximately 57 feet from the wetland boundary (see figure 3). According to the groundwater mounding analysis provided in the Technical Report, this recharge system will raise water levels in the adjacent wetland by approximately 0.5 feet or 6 inches (see figure 4). Please note that this groundwater mounding analysis includes the non-conservative input values of saturated thickness and permeability (discussed above).

MADEP Stormwater Handbook, Volume 3, Chapter 1, page 28 provides criteria by which to evaluate groundwater mounding impacts on wetlands. It states, **“The mounding analysis must also show that the groundwater mound that forms under the recharge system will not break out above the land or water surface of a wetland (e.g., it doesn't increase the water sheet elevation in a Bordering Vegetated Wetland, Salt Marsh, or Land Under Water within the 72-hour evaluation period)”**.

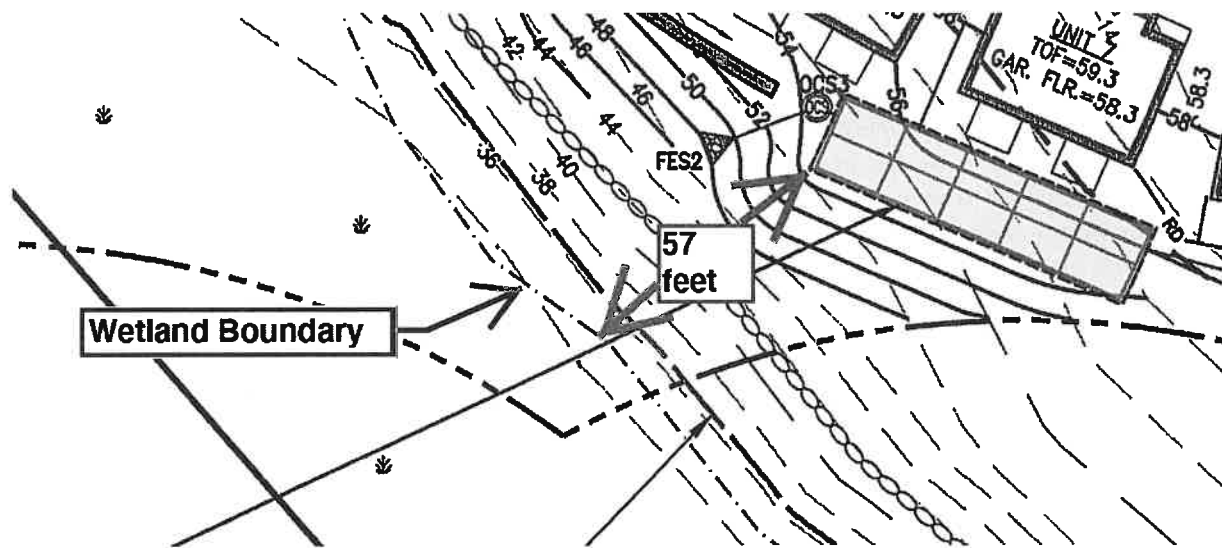


Figure 3 - Proposed Stormwater Recharge System #2

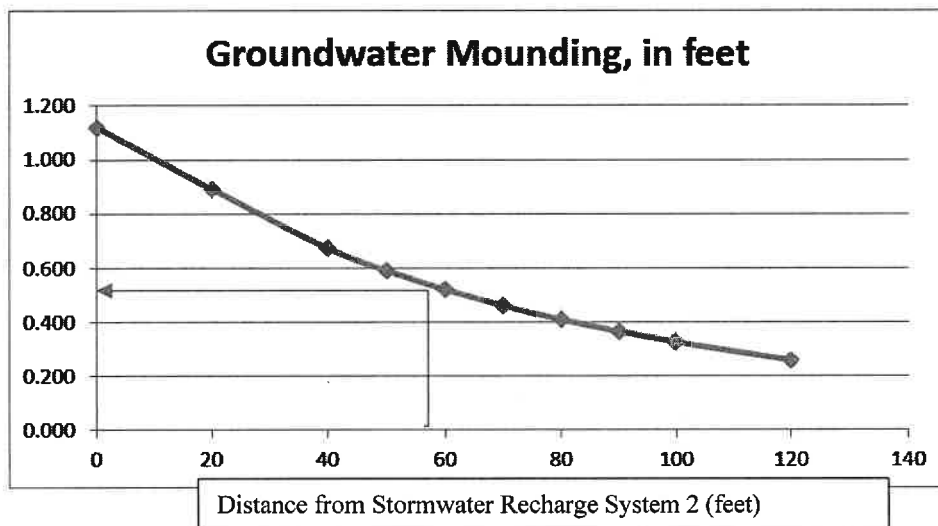


Figure 4 - Groundwater Mounding Analysis for Stormwater Recharge System 2 (Technical Report - page 118)

6. The Project Does Not Comply with MADEP requirements for state-designated “impaired waters”.

The project will discharge untreated stormwater to the Ipswich River via overland flow from pervious areas. The Ipswich River is designated as “impaired” for pathogens and MADEP has

prepared a TMDL¹ report that documents water quality conditions and probable sources of pollutants.

The MADEP Stormwater Handbook (Volume 1, Chapter 2) states, **“If a proponent is proposing a project that is in the watershed of a water body with a TMDL and if the project is subject to wetlands jurisdiction, the proponent must select structural BMPs that are consistent with the TMDL”**. The Ipswich River has been designated by MADEP as “impaired by pathogens” and is incorporated into the 2014 Pathogen TMDL for Ipswich River by the MADEP as part of the state’s compliance with the federal Clean Water Act. The TMDL report identifies pet wastes as a primary source of pathogens to the river.

Given the size and density of the proposed project, it will generate significant quantities and loads of pathogens from pet wastes and will impact the Ipswich River. Pet wastes have been identified as a significant pathogen pollutant source in high density developed areas². Hence, the project site design must incorporate features to prevent pathogen pollution. These features should include limiting the density of the project (thereby limiting the number and density of pets) and naturally-vegetated buffers and setbacks (100 feet) from wetlands.

The proposed stormwater infiltration and detention practices are insufficient to meet this standard for two reasons – 1) they provide inadequate buffers to adjacent wetlands, and 2) the pet waste source areas include both pervious and impervious areas, and the proposed stormwater facilities are designed only for impervious areas.

United States Environmental Protection Agency (USEPA) has prepared a guidance manual to address pathogen pollution issues in Massachusetts TMDL areas. This document, “Mitigation Measures to Address Pathogen Pollution in Surface Waters: A TMDL Implementation Guidance Manual for Massachusetts” identifies pet waste as a significant pathogen pollution source and references another document, “Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters”. USEPA, Office of Water 1993.

That report states, **“EPA recommends that no habitat-disturbing activities should occur within tidal or nontidal wetlands. In addition, a buffer area should be established that is adequate to protect the identified wetland values. Minimum widths for buffers should be 50 feet for low-order headwater streams with expansion to as much as 200 feet or more for larger streams”**.

The Town of Topsfield Wetlands Bylaw recognizes the importance of protective buffers and states, **“Setback Areas: The Commission presumes that work within the following Setback Areas will adversely affect the buffer zone’s capacity to contribute to the interests of the**

¹ A TMDL is a Total Maximum Daily Load report which indicates the maximum amount of a pollutant that can be discharged to a water body and identifies pollutant sources. TMDL reports are required when the state identifies waters are “impaired” (not meeting state water quality standards).

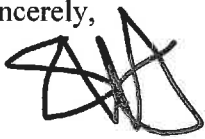
² According to MADEP, each gram of dog feces contains 23 billion fecal coliform organisms. The water quality standard for Class SB waters including the Ipswich River is 14 organisms/100 milliliters. The track record for pet owners cleaning up after their pets is not good. Therefore, towns must rely on other means to control this pollution source including lower density and vegetated buffers.

Bylaw: Within 100 feet of the boundary of a Freshwater Wetland, Bank, or Body of Water”.

Given the significant size of the project, its proximity to extensive wetlands, the Ipswich River, and its location immediately adjacent to the river, and the MADEP TMDL status, minimum setback/buffers of 100 - 200 feet to the wetlands associated with the Ipswich River would be a reasonable and defensible protective measure that the Topsfield Board of Appeals could require to protect public health, public and private drinking water supplies, and the environment.

Thank you for the opportunity to submit these comments. Please contact me with any questions that you might have.

Sincerely,

A handwritten signature in black ink, appearing to be 'SWH' with a stylized flourish.

Scott W. Horsley
Water Resources Consultant



August 23, 2021

Daniel C. Hill, Esq.
Hill Law
6 Beacon Street
Boston, MA 02108

**Subject: 57 Perkins Row, Topsfield, MA
Proposed 40B Project**

Dear Dan:

This memo provides a review of wetland resources on and near the 57 Perkins Row property. My professional opinions are based on an August 10, 2021 site inspection, review of aerial photography, analysis of MassGIS data, and examination of a March 5, 2021 14-sheet plan set titled "Comprehensive Permit Plans" (Plans) by Morin-Cameron.

Qualifications

By way of introduction to the Topsfield Zoning Board of Appeals, I am a wetlands scientist, professional land surveyor, and hydrologist with 35 years of experience. I am a certified Massachusetts Professional Land Surveyor and Soil Evaluator. I was a Director of the Massachusetts Association of Conservation Commissions from 1997 to 2000, and again in 2008, and President between 2004-2006 and 2010-2012. I am a past President of the Association of Massachusetts Wetlands Scientists (1996-1998), and a 2007 recipient of the Association's President's Award for significant contributions to wetlands science. I have taught numerous workshops and seminars for the Association of Massachusetts Wetlands Scientists and the Massachusetts Association of Conservation Commissions, and I've held several other leadership roles regarding wetlands and hydrology in Massachusetts.

Overview

As an overview, the 57 Perkins Row property is environmentally sensitive, but a full analysis of protected resources has not been completed by the Applicant. Such an analysis, including potential impacts to state and locally-protected wetlands, is critical and should have been completed prior to any 40B application. Instead, resources shown on the Plans are based on older filings with the Conservation Commission; key resources, in some cases, are identified as "approximate." The correct location of protected resources could result in a project redesign.

Key state and locally-protected wetlands include:

- Bordering vegetated wetlands (BVW);
- A potential vernal pool (PVP)¹;
- A 200-foot protected resource designated as Riverfront Area (RA) that originates at Mean annual high water, based on MassDEP criteria, or "the furthest horizontal extent of

¹ The Applicant's wetlands scientists acknowledged at the last substantive ZBA hearing that the vernal pool near the front of the Site is certifiable with the Natural Heritage program.

flooding averaged over at least ten years,” based on the Topsfield Wetlands Bylaw.



Figure 1. MassGIS view of site.

I discuss each of these wetland resources below.

BVW

BVW is a dynamic wetland, subject to locational fluctuation on a year-to-year basis. The Plans rely upon previous delineations. The field location of the edge of existing BVW should be reviewed by an experienced wetland scientist and affirmed by the Conservation Commission.

PVP

The potential vernal pool (PVP) near the entrance to the property should be assessed to determine if it meets certification requirements. Those requirements are administered by the Massachusetts Natural Heritage program. Such an assessment can only occur during a brief period in the spring. Until that time the PVP should be regarded as a fully protected resource area.

The PVP lies within a 100-foot buffer zone to BVW. Any activity within that zone has the potential to alter the PVP. In the case of this project, an entrance road to the development comes within five feet of the PVP edge. More egregious, a retaining wall for the road is proposed to be built directly beside the PVP edge, restricting and/or eliminating all wildlife passage where the wall is constructed.

MassDEP regulations require that any BVW lost be replicated. In this case, the roadway crosses over BVW as it passes by the PVP, eliminating some 450 square feet (s.f.). To compensate for the loss, the Plans indicate that 1,000 s.f. of BVW replication will be built directly beside the western edge of the PVP. This area of replication, typically protected by silt fence, again restricts wildlife passage into and out of the PVP, potentially altering the habitat viability of the PVP itself.

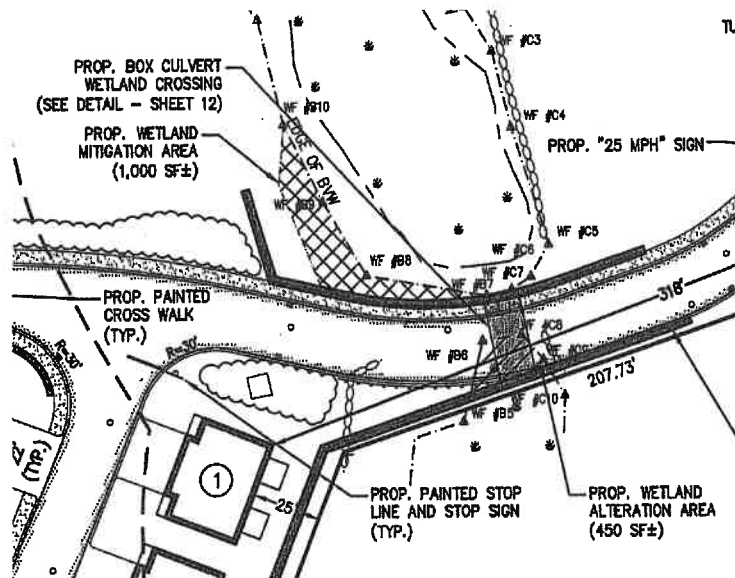


Figure 2. Wetland crossing at entrance. Note proposed box culvert, retaining walls and wetland mitigation area, all beside or surrounding the PVP.

Further, the Plans call for installation of a new six-foot tall by 12-foot wide box culvert to replace an existing smaller culvert. Plans do not indicate the dimensions of the existing culvert, but if the volumetric capacity and velocity potential of the new culvert exceeds that of the existing device, flows into or out of the PVP may be substantially altered, thus altering the existing hydrology of the PVP. The Plans do not provide such an analysis. Such data must be analyzed to ensure that major hydrologic changes do not occur to the PVP — and to ensure that volumetric increases in flow do not occur onto adjoining properties.

These considerable issues aside, every vernal pool (VP) has certain annual water requirements that allow the obligate species within it to thrive. These water requirements are referred to within the wetland science field as a *water budget*. A 2016 MassDEP Office of Appeals and Dispute Resolution (OADR) adjudicatory decision affirmed that “in order for vernal pool habitat to continue to function and co-exist with nearby development its water budget must be sustained post-development.”² In other words, the decision determined that a project must not cause substantial alterations to the water budget of a VP.

Meeting this requirement appears highly problematic for this project. First, the project would change the pre- and post-development watershed area to the PVP. Second, post-development impervious area within the watershed would increase dramatically, thus increasing the volume of stormwater that will enter the PVP. The patterns and direction of stormwater flow into the PVP would also be altered. A new “pocket wetland” to modulate stormwater is proposed beside the PVP to its east. All of these substantial alterations around the PVP are likely to alter the dynamics — and the wildlife habitat interests of the PVP — thus violating state regulations. See *In re Bosworth*, OADR Docket No. WET-2015-015, Recommended Final Decision (February 17, 2016) (“work in the Buffer Zone to BVW may not impair the capacity of the vernal pool habitat to function as wildlife habitat.”)

² *Matter of Bosworth*, OADR Docket No. WET-2015-015, Recommended Final Decision (February 17, 2016) adopted by Final Decision (March 14, 2016).

Riverfront Area (RA)

RA is not a buffer zone, but is instead a fully protected 200-foot wide resource area. State regulations place certain development restrictions on use of land within the RA. Consequently, determination of the *location* of the RA is critical to any project. Yet the Plans identify the location of RA as "approximate." Such a designation for RA location is inappropriate and unwarranted under the state regulations.

I note that a precise location of RA is complicated by the differences in definition between the state and the local wetland bylaw. RA in both cases begins at mean annual high water. As noted on page 2 of this memo, mean annual high water under MassDEP criteria is based on field indicators such as vegetation and scouring, whereas under the wetlands bylaw it is based on "the furthest horizontal extent of flooding averaged over at least ten years." The local definition expands the RA to a greater extent than the state definition. The Plans ignore the bylaw definition and only indicate the "approximate" state location of RA.

Regardless, the actual edge of mean annual high water should be delineated by an acknowledged expert in such determinations. The Ipswich River is known throughout the region as being difficult to analyze.

In addition, I note that the Order of Conditions (OOC) for 57 Perkins Row issued on December 18, 2015 contains the "General Conditions Under the Massachusetts Wetlands Protection Act" listed on WPA Form 5, which are the standard conditions used for all Orders of Conditions in the state. General Condition #13 states that: "The work shall conform to the plans and special conditions referenced in this order." General Condition #14 states that: "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."

Regardless of whether the 12/18/15 OOC has been extended, the new 2021 project plans are so fundamentally different from the previous 2015 plans that the correct procedure under General Condition #14 is for the Applicant to formally ask the Conservation Commission whether "the change is significant enough to require the filing of a new Notice of Intent." If the Conservation Commission determines that the plan changes are significant enough to require the filing of a new Notice of Intent (NOI) – which it should, under the circumstances – then the Commission could make a new determination as to the boundary of Riverfront Area on the site under the state Wetlands Protection Act (WPA). This is because the May 14, 2015 Order of Resource Area Delineation (ORAD) for the site did not verify the accuracy of Riverfront Area under the WPA, and the 12/18/15 OOC authorizes work for a project of much smaller scope than the current 40B project, such that the 12/18/15 conditions cannot be relied upon to protect the adjacent wetland resources. As a result, an entirely new NOI (or Abbreviated Notice of Resource Area Delineation, or ANRAD) that re-assesses the WPA Riverfront Area boundary on the site is necessary before this project can proceed.

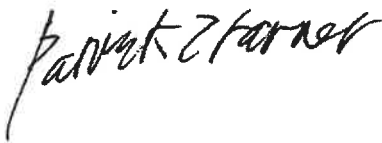
Summary

The feasibility of the project is predicated on both the accurate location of wetland resources and on an assurance that substantial impacts will not occur to the PVP. The Plan relies on old, incomplete or approximate data. A preliminary review of potential impacts to the PVP indicates that numerous alterations to its water budget are likely, and that the designer has not attempted to mitigate those impacts, including impacts that are likely to impair the capacity of the vernal pool habitat to function without alteration as wildlife habitat.

Based on my findings, I recommend that project review be suspended until the issues surrounding the PVP and delineation of the Riverfront Area are resolved. The Applicant should file a new NOI (or ANRAD) with the Conservation Commission under the state WPA in order to resolve these issues.

Please contact me if you require further information.

Very truly yours,

A handwritten signature in black ink that reads "Patrick Garner". The signature is written in a cursive, slightly slanted style.

Patrick Garner
Wetland Scientist, Hydrologist

Memorandum

To: Daniel C Hill, Esq., Hill Law
From: David Black
Date: August 23, 2021
Subject: Proposed Residential Development
57 Perkins Row, Topsfield, MA
Traffic and Transportation Review

As requested, I have performed an evaluation of the traffic and transportation considerations regarding the proposed residential development at 57 Perkins Row, Topsfield, MA (the Project). According to the Comprehensive Permit Plans (the Permit Plans), the proposed Project comprises 40 housing unit in 20 duplex buildings with a total of at least 80 bedrooms. Each residential unit would be supported by 2 internal garage parking spaces. Single point access would be provided by the existing, but modified, site driveway on Perkins Row.

I have reviewed the Permit Plans and have visited the Project site to perform field observations of the local roadway network and evaluated. **However, in the absence of a traffic impact study (TIS), it is not possible to assess the potential impacts of the Project to the local transportation network.** My review is therefore limited to the design and potential impact of the proposed Project vehicle access on Perkins Row.

The Project site is located on the south side of Perkins Row, approximately 0.55 miles east of its unsignalized intersection with High Street (Route 97). To the east of the site, Perkins Row continues in a generally north-eastern direction for approximately 0.48 miles to the Mass Audubon Ipswich River Wildlife Sanctuary access driveways, before proceeding approximately 0.7 miles in a generally north-western direction to its unsignalized intersection with Howlett Street. From Howlett Street, Perkins Row resumes its generally north-eastern direction for approximately 1.43 miles to Ipswich Road. A south off-ramp from Route 1 (Boston Street) connects to Howlett Street approximately 0.27 miles northeast of its intersection with Perkins Row. Therefore, while the site is only 0.55 miles from High Street (Route 97), its connections with Route 1 are more distant and circuitous.

In the vicinity of the Project site, Perkins Row is a winding minor rural roadway with a meandering alignment. In many places, dense vegetation abuts the roadway, resulting in sight line constraints for drivers. The cross-section is generally limited to a paved width of approximately 20 ft, with no curbs or roadway stripping. Notably, there are no sidewalks (or bicycle accommodations) along Perkins Row, a hazardous condition for pedestrians and bicycles. There is no transit service along the corridor, and no bus routes or rail stations within walkable distance of the site.

Based on the above conditions, it is clear that the Project site is not supported by any alternative modes of transportation, and is therefore almost totally dependent on auto travel. The absence of

sustainable transportation and the remoteness from the site of day-to-day needs such as shopping dictate that the Project is inconsistent with local and regional planning principles to build dense development in transit-oriented locations.

Based on field observations, it is clear that Stopping Sight Distance (SSD) along Perkins Row is significantly compromised by the roadway alignment, including a tight 90-degree bend just east of the Project site driveway. In turn, Intersection Sight Distance (ISD) at the site driveway is restricted by both the roadway alignment and the presence of abutting vegetation and trees. In the absence of actual speed data, it is not possible to determine the specific sight distances (both SSD and ISD) required in accordance with National and State guidelines to ensure safe conditions for traffic entering and exiting the Project site as well as travelling along Perkins Row.

It is critical that speed data be obtained and safety and design criteria defined to confirm if it is possible to accomplish satisfactory and safe access to support the Project. I recommend that a Traffic Impact Study be prepared for the Project to identify any potential off-site traffic impacts and determine if design and safety standards can be satisfied to support access for the Project.