TOWN OF WAYLAND

41 COCHITUATE ROAD
WAYLAND, MASSACHUSETTS 01778

Julia Junghanns, R.S., C.H.O.
DIRECTOR OF PUBLIC HEALTH
TEL. (508) 358-3617
www.wayland.ma.us

MEMORANDUM

Date: September 24, 2019

To: The Planning Board

From: Julia Junghanns, R.S., C.H.O., Director of Public Health

Subject: Preliminary Definitive Subdivision comments on Five Paths (Shaw Drive)

BSC Group was retained by the Board of Health to conduct a peer review on the Stormwater Management Design for this project as per the Wayland Board of Health Subdivision Regulations. A review was completed by Frank DiPietro, P.E., Senior Project Manager of BSC Group, and comments were provided (see attached) to the applicant and their engineer. A Board of Health meeting was held on September 18, 2019 and a hearing took place to consider this Definitive Subdivision. Kyle Burchard, Project Manager of GPR, attended to represent the applicant and Frank DiPietro of BSC Group attended and discussions took place regarding the project and a review of the comments.

Our understanding from the discussion at the Board of Health meeting, was that the Applicant may look to obtain clearer guidance from the Planning Board regarding whether or not the Proposed Alternative Driveway Plan may be acceptable for this development before providing the information requested at the meeting as noted above. Although we are aware that this option as shown does not reflect a "Conservation Cluster Zoning Bylaw" that is recognized by the town. We are unsure why this option is not being considered.

Concerns were discussed at the BoH meeting including; soil testing results and many areas of refusal/ledge. There are areas of testing that meet the state requirements for constructing leaching fields, however, test hole numbers and soil testing areas need to be verified. We also have concerns regarding areas where drainage basins and minipools are shown, with respect to ledge/refusal and concerns for water retention that could create mosquito breeding areas. Other Board concerns included, runoff to abutting properties due to steep cut/fill areas, excessive tree removal and questions about how that would impact the drainage calculations (with consideration for refusal/ledge areas).

The BoH is providing GPR more opportunity to respond to the comments (given the limited time that was provided). We also understand that the Planning Board is still reviewing the 2 options being proposed. The applicant has provided an extension to October 22, 2019 for the Board of Health to review responses to the comments from BSC Group, consider new information and make a decision.

Attachments; BSC Group comment letter dated September 16, 2019
Follow up email from BSC Group dated September 23, 2019

BSC GROUP
Transportation ▪ Energy ▪ Land Development

803 Summer Street
Boston, MA 02127

Tel: 617-896-4300
800-288-8123

www.bscgroup.com

September 16, 2019

Wayland Board of Health
Town of Wayland
c/o Ms. Julia, Junghanns, R.S. C.H.O.
Director of Public Health
41 Cochituate Road
Wayland, Massachusetts 01778

RE: Five Paths Definitive Subdivision
Wayland, MA
Stormwater Management Design Preliminary Peer Review

Dear Board of Health Members and Ms. Junghanns:

BSC Group, Inc. (BSC) has completed a preliminary peer review of the Stormwater Management Design for the Five Paths Definitive Subdivision submission. This work is being undertaken under BSC's contract dated September 10, 2019, as approved by the Town of Wayland on September 13, 2019.

BSC is aware that the Five Paths Definitive Subdivision is on the agenda for the Board's meeting scheduled for Monday, September 16, 2019. Due to the limited time to undertake this review, prepare and submit BSC's Comments, and prepare to attend the September 16, 2019 public hearing, BSC offers the following comments as our Preliminary Peer review regarding the Stormwater Management Design for the Five Paths Definitive Subdivision.

BASIS OF CURRENT REVIEW

For this peer review, BSC reviewed the following documents:

Board of Health:

- Definitive Residential Subdivision Plan Five Paths, Wayland, MA, prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019;
- Residential Development Definitive Subdivision Application, Five Paths, Wayland, MA prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019;
- Decision on Application for Preliminary Subdivision Plan for property located at Shaw Drive, Assessors Map 39 Parcel 15A, prepared by Wayland Planning Board, Sarkis Sarkisian, Planner Director, filed with the Wayland Town Clerk on February 8, 2019;

- Site visit with Julia Junghanns, Director of public Health and Linda Hansen, Conservation Administrator, on Friday, September 13, 2019.

Applicable Regulations:

- Town of Wayland Board of Health Regulations, adopted 12/03/1987, relating to Definitive Subdivisions;
- Massachusetts Department of Environmental Protection (DEP) Massachusetts Stormwater Handbook;
- The Town of Wayland Bylaws, Chapter 193, Stormwater and Land Disturbance.

PROJECT REVIEW COMMENTS

BSC offers the Board of Health the following comments based on our preliminary review of the project and information detailed above.

I. Procedural Items and/or misc. comments

a. Within the Application for Approval of Definitive Plan, (Page 4 of 91), Under Item 4 it is noted *"A preliminary plan of the proposed subdivision was approved by the Board on January 22, 2019, with modifications, which modifications have been incorporated into the accompanying plan."* The Definitive Plan submission includes a request with waivers for a standard subdivision approval as well as a request for an alternative subdivision with waivers.

In the decision provided by the Planning Board relative to the Preliminary Plan, the Board notes at the bottom of Page 2 of this decision, *"The Board did not take a formal vote on the original plan (Exhibit 1), as the Applicant requested Board action on the two proposed alternatives (Exhibits 11 and 12.)"* and at the bottom of Page 2 and continuing onto page 3, *"since a vote to approve a subdivision plan requires a majority of the Board, and not just a majority of a quorum of the Board, Concept 2 was not approved, and Concept 3 was conditionally approved, subject to further review during the definitive plan phase of permitting."*

b. Form O: Environmental data Form, pages 24 through 30,

i. Under Item 2 it is noted *"Stormwater shall be conveyed from the various land cover areas into two (2) infiltration basins, via multiple catch basins, drain manholes, outfalls, and swales in order to effectively handle the drainage under the various stormwater scenarios as required by the Wayland Regulations and Massachusetts Stormwater Standards."*

ii. In the response to Item 8, the applicant's representative notes *"No pollution to groundwater is anticipated. Drainage from all pavement areas is designed to be controlled by the system and infiltrated to the basins in order to properly treat this stormwater to 96% TSS* [removal – BSC]."

The Drainage Summary Narrative, (pages 38 through 60 of 91) does not contain a completed copy of the DEP Stormwater Management Standards response or standard calculations to support the 96% TSS removal noted under item 8 above.

While details for and a brief summary of the erosion and sedimentation controls is provided within the Definitive Subdivision Site Plans, no detailed descriptions or performance standards for short term construction related erosion and sedimentation measures and long-term post construction maintenance are provided within the application.

It is recommended that the Board of Health request the applicant to provide these materials as part of the Definitive Submission.

iii. Item 2 under Impacts on Soils, states, "*excavated material will be processed and stored in stockpile locations as indicated by the erosions and sediment control details.*"

The Definitive Subdivision Site Plans indicate considerable cut will be required for the proposed standard subdivision. See as an example, Sheet C4.1, Land Disturbance Plan upon which Generally Deep Cuts and Generally Shallow Cuts are shown in red over considerable potions of the proposed subdivision roadway. Sheet C5.1, Roadway Plan and Profile, indicates that between the proposed subdivision roadway stations of approximately 2+30 to 6+80, a length of around 450 feet, the

roadway surface will require vertical cuts of from 0 to 10 feet, with the proposed utilities infrastructure below the roadway requiring additional vertical cuts of between 3 to 6 feet. Based upon the soils investigations performed across this site and witnessed by the Board of health staff, it is likely much of this excavation will be within bedrock ledge.

In the materials provided to BSC for this review, no quantities of potential excavated material have been provided with the Definitive Subdivision application. It is possible some of this material could be used for the fill required between roadway stations 0+00 to 2+50. The statement under item iii. above does not clarify whether excavated materials will be removed from the site when not needed or will remain in stockpiles indefinitely, and thus require an extended period for erosion and sedimentation controls to remain in place.

c. Plan for Obtaining Local, State, and Federal Permits,

   i. Under Wayland Conservation Commission, page 36, the applicant's representative notes "*However, the Wayland Conservation Commission is the permitting authority for Land Disturbance and Stormwater Management Permit (SMLDP), in which detailed drainage calculations and land disturbance activities are fully reviewed. Both the Definitive Plan and Alternate Driveway Plan drainage systems have been fully designed in accordance with the MassDEP Stormwater Management Handbook and Town of Wayland Bylaws, Chapter 193. Generally, at the time of the final architectural designs and resulting site adjustments, full SMLDP application (-s) will be filed as appropriate.*"

Within Chapter 193, Stormwater and Land Disturbance, the following are noted under Section 193-1. Purposes and objectives:

A. (4) Protect streams, rivers, and private property from additional flood damage from changed flow patterns.
B. (1) through (10) provides the objectives to achieve goals, all of which are related to stormwater management and control, design, BMP measures, and protection of downstream properties.

In the information provided to BSC for our review, the total area of proposed land disturbance is not given. A quick evaluation by BSC indicates that approximately 3.5 acres of the land will be disturbed out of the total 6.4 acres of land contained with the proposed Five Paths Definitive Subdivision. This amounts to a land disturbance of over 50% of the total land area involved within the proposed development.

Based upon a review of the purposes and objectives of the SMLDP, it would seem reasonable to apply this Bylaw to the overall Definitive Subdivision stormwater management design, and not just to the "final architectural designs and resulting site adjustments" as noted above.

In addition, the proposed development, either under the Standard Subdivision or the Alternate Driveway Subdivision will disturb more than 1 acre of land, the project will be subject to a EPA NPDES Permit. This will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) and the filing for a federal permit. This filing is not noted within this section of the Definitive Subdivision application.

It is suggested that the Board of Health require that the applicant provide s copy of the SWPPP and EPA application to the Board staff prior to the commencement of any construction activities on the site.

d. Under the Board of Health Subdivision Approval regulations, under the DRAINAGE Section, it is noted "*If detention or retention ponds are utilized, slopes shall be no steeper than 4 horizontal to 1 vertical nor shall design water depth exceed 3 feet. Minimum bottom slope shall be 2 percent.*"

The Definitive Subdivision Site Plans appear to indicate the proposed Detention Basins and Micropool all have side slopes of 3 horizontal to 1 vertical. It also appears Detention Basins 1, 2 and 4 could have design water depths of over three feet during some design storms.

BSC recommends the Board of Health requests clarification from the applicant's design team as to compliance with the above Subdivision Approval regulations.

II. Definitive Subdivision Site Plans and Drainage Summary Narrative (pages 38 to 60 of 91)

a. Due to the overlain proposed development details, it is difficult to clearly see the numbers of the soils testing – test pits and percolation tests – shown on some, but not all, of the Site Plans. For example, the soils testing information is NOT shown on Sheet C4.4, Drainage Plan.

BSC would request that the soil testing information be clearly and legibly shown on the appropriate Definitive Subdivision Site plans, especially the Existing Conditions Plan, Drainage and Utilities Plans for both the Standard and Alternative Subdivision Plans.

b. No evaluation is provided in the materials BSC has received for our peer review of the specific retention time for stormwater to remain within each of the proposed Detention Basins 1 through 4 or the proposed Micropool. The concern here relates to the length of time standing water may remain in one or more of these Basins, with particular attention given to potentially providing a venue for mosquito generation.

On page 39 of 91, the applicant's engineer states a HSG A infiltration rate of 2.41 in/hr per Rawls Chart has been applied within stormwater infiltration areas. However, the Percolation test infiltration rates within several of these Detention Basins, as observed by the Board of Health staff, ranged from 2 to 10 minutes per inch.

In the case of proposed Detention Basin 3, the bottom of the basin is at elevation 297. The observed depth to bedrock, based upon the test pits taken within this area, indicate bedrock elevations of between 294 and 295. This 2-3-foot separation from the bedrock to the bottom of the basin may not provide as effective an infiltration rate as noted in the Drainage Summary.

For Detention Basin 4, a test pit, which appears to be 519-6, has a surface grade of about elevation 295. The test pit log indicates ledge was found at a depth of 7.5 feet below the surface or at an elevation of about 287.5. The grading for this proposed Detention Basin indicates the bottom of the basin to be at 287, indicating the bottom of the basin would be at the bedrock. There is an obvious scrivener's error as the elevation noted on the plan is 277. Counting the adjacent contour lines, this number should be 287.

The proposed Micropool is located between and immediately adjacent to two exposed areas of ledge, as indicated on the existing topographic information on the Site Pans. Using the topographic plan, these ledge areas have surface elevations of between 300 to 305. The Micropool proposed elevations range between 302 to 304. No test pit investigations were made within the area of the proposed Micropool.

BSC recommends that the Board of Health request additional information and clarification from the applicant regarding the infiltration capacities and duration of water retention within these proposed Detention Basins and Micropool.

c. The currently existing stormwater management "system" distributes runoff generally as sheet flow over a heavy forest cover that acts to intercept and distribute this flow over large surface areas. The proposed Stormwater management system will direct stormwater runoff collected from new paved or disturbed slope areas into Detention Basins where it will be collected, infiltrated, and discharged over a level spreader, which, depending upon the Detention Basin or Micropool, have lengths from 15 to 60 feet. The flow out of these Basins will overflow from the level spreader onto adjacent downstream properties. The concern is that, while the overflow under proposed conditions is spread out due to the level spreaders, it will be more concentrated than under existing conditions.

d. On page 40 of 91, within the Drainage Summary Narrative it is noted Detention Basins 1 and 2 the configuration of these detention structures "*are of a scale that are anticipated to be beyond the regular maintenance and upkeep capacities of the homeowners and their assigns....*" The Narrative indicates it is proposed to have the Wayland DPW take on the maintenance and upkeep of these Detention Basins.

BSC would recommend that the Board confirm that the Wayland DPW is willing to accept and undertake the ongoing maintenance and upkeep of these two Detention Basins. If the Wayland DPW is not amiable to this, a detailed long-term Operations and Maintenance Plan should be prepared by the applicant, and measured be put in place by the land owners to implement this plan.

e. On pages 43 and 44 of 91, drainage summary tables are presented comparing the pre-development and post development peak flows and runoff volumes for the Standard Subdivision and Alternative Driveway Subdivision for the 0.5 in, 1.0 in, 2-year, 10-year, 25-year and 100-year storm events. Upon reviewing the drainage calculation sheets that follow these tables, it is not clear form where the values contained within these tables have been taken. The only detailed calculation sheets provided are for the 25-year rainfall event.

   It is recommended that the Board request that the applicant's engineer clarify this issue and provide the detailed stormwater calculation sheets for the other storm events noted within these tables.

f. It is accurate to state, as the applicant's engineer does within the Drainage Narrative, that the Alternative Driveway Subdivision provides considerably less land disturbance and the creation of much less overall impervious area.

   However, a review of the drainage summary tables presented on pages 43 and 44 of 91 appear to indicate the Standard Subdivision post development peak flow rates and runoff volumes are generally lower for the same discharge locations than those resulting from the Alternative Driveway Subdivision.

   While the stormwater management system for the Alternative Driveway Subdivision do show a reduction in offsite flow rates and volumes, these reduced rates are greater than the rates indicated for the Standard Subdivision.

   Examples from these two tables are provided below:

Location	Subdivision Option	Peak Flow Rates, cfs			Runoff Volumes, cf		
		Post	Pre	Net	Post	Pre	Net
AP2	25-year Standard	0	3.4	-3.4	0	13,347	-13,347
AP2	25-year Alternative	2.6	3.4	-2.6	8,309	13,347	- 5,038
AP4	10-year Standard	0	0.8	-0.8	0	3,488	- 3,488
AP4	10-year Alternative	2.6	3.4	-2.6	0	3,488	- 3,488
AP5	100-year Standard	4.2	5.7	-1.5	21,533	29,282	- 7,749
AP2	100-year Alternative	4.6	5.7	-1.1	23,344	29,282	- 5,938

BSC recommends the Board request that the applicant's engineer clarify this issue.

We look forward to discussing this project with you further at the public hearing on Monday, September 16, 2019. Please feel free to contact me at (617) 896-4471 or fdipietro@bscgroup.com should you have any questions on the information in this report.

Sincerely
BSC Group, Inc.

Frank D DiPietro

Frank DiPietro, P.E.,

Senior Project Manager / Senior Associate

cc: Melissa Kaplan, BSC Group
Linda Hansen, Conservation Administrator

Junghanns, Julia

From: DiPietro, Frank <fdipietro@bscgroup.com>
Sent: Monday, September 23, 2019 4:06 PM
To: Junghanns, Julia; Hansen, Linda
Cc: Kaplan, Melissa
Subject: Five Paths Definitive Subdivision Peer Review follow-up

Hi Julia and Linda,

As a follow-up to the Board of Health meeting last Monday, September 18, 2019, and based upon my notes from the meeting and BSC's letter, I wanted to provide a listing of my understanding of the materials that GPR would be providing in response to the discussion at that meeting and as was noted in BSC's peer review dated September 18, 2019.

Here are the items I understand will be provided for further evaluation by GPR:

1. An updated Site Plan, upon which the soil investigation locations are clearly and legibly shown.

2. Full drainage calculations for the 0.5 inch, 1.0 inch, 2-year, 10-year, 25-year and 100-year storm events for Existing Site Conditions, Proposed Definitive Subdivision Conditions, and Proposed Alternative Driveway Plan Conditions. These calculations should include all of the Hydro-Cad input and output sheets for the above referenced storm events and conditions. The data provided should be consistent with the Five Paths Stormwater Outflows summary sheets as shown on pages 43 and 44 of 91, which provide the Peak Flow Discharges and Volumetric Discharges for each storm event and Condition.

3. If not contained within the full drainage calculations noted above, information regarding the duration of water retention in the Drainage Basins and Minipool as shown on both the Definitive Subdivision and Proposed Alternative Driveway Plan.

4. Calculations, consistent with the Mass DEP Stormwater Regulations to support the 96% TSS removal rate noted under Item 8), page 25 of 91, of Form O: Environmental Data Form. These calculations should be provided for all proposed routes of runoff associated with both the Definitive Subdivision and Proposed Alternative Driveway Plan.

5. A preliminary evaluation of the amount of cut/fill to be required to construct the Definitive Subdivision roadway, as well as any cut/fill associated with the proposed three residential dwellings proposed as part of the Definitive Subdivision. This evaluation should include the amount of ledge material to be removed on the site. The amount of excess material, if any, to be removed from the site should be provided. If excess cut material is to remain on the site, the post-construction location (-s) of this material should be noted, as well as any measures needed to stabilize the surface of the material. It is understood that this evaluation is an estimate, and based upon available soils explorations on this site.

6. An update on the status of the ongoing discussions with the Wayland DPW regarding their potential acceptance of the long-term maintenance of Drainage Basins 1 and 2 as proposed under the Definitive Subdivision Plan. If the DPW has decided not to accept this maintenance responsibility, a long-term Operations and Maintenance Plan should be provided to be implemented by the future owners of the three lots contained within the subdivision should be provided.

While it was noted that some of the technical references and requirements within the Board's 1987 Regulations relating to Definitive Subdivisions may be out of date, the Board of Health and its staff should consider whether or not a waiver from portions of these Regulations is required.

As I understood the discussion at the September 18 Board of Health meeting, the Applicant may look to obtain clearer guidance from the Planning Board regarding whether or not the Proposed Alternative Driveway Plan may be acceptable for this development before providing the information requested at the meeting as noted above. This may delay providing some of the information noted above.

Where some of this information is readily available as indicated by the applicant's engineer, BSC would have no problem with having GPR provide to us electronic copies of these materials for our detailed review.

Please feel free to contact me with any questions or comments regarding the above information.

Take care,

Frank

Frank DiPietro, P. E.
Senior Associate/Senior Project Manager

BSC Group, Inc
803 Summer Street
Boston, MA.

Direct office: 617-896-4471'
Cell phone: 617-594-8831

E-mail: fdipietro@bscgroup.com