Merrill
Engineers and Land Surveyors

October 12, 2021

Zoning Board of Appeals
Town Hall
345 Main Street
Norwell, MA

RE: Stormwater Review
15 High Street Comprehensive Permit
Norwell, Massachusetts

Dear Members of the Board:

We offer the following responses to the Plan Review, Comprehensive Permit – 15 High Street, Norwell, MA performed by Chessia Consulting Services (CCS), LLC, dated July 12, 2021. Revised Site Plans and a Stormwater Management Report for the above referenced project will be provided separately. Our response will follow the format presented in the CCS review.

301-10.4 Elements of the Complete Application

A. Preliminary Site Development Plans

An Overview Site Layout Plan with an aerial photo background will be added to the plan set which illustrates the surrounding buildings on the abutting properties and properties across High Street.

Stormwater Management Regulations:

Standard 1 – Untreated Stormwater

No response required.

Standard 2 – Post Development Peak Discharge Rates

The 1-year storm event has been added to the drainage analysis. The peak rates are met during the 1-year storm event.

Existing Conditions

Additional spot grades within the site and the offsite low area in the northwesterly corner will be added to the existing conditions plan.

The time of concentration calculations have been reviewed and adjusted. The short grass has been revised to dense grass for lawn areas and unpaved segments have been corrected.

Proposed Conditions

Since we have included the low area in the north west corner of the site, we have adjusted the drainage analysis to include the low area as part of the analysis to ensure no increase in flooding will occur in this area. A small portion of wooded area has been added to Subcatchment 3 to include this area in the design. Design Point 3 is now modeled as a depression pond. The results indicate no increase in peak flow or peak volume to this area.

A permeability test was performed within the proposed stormwater facility location on August 27th, 2021 by Briggs Engineering & Testing. The test resulted in a stabilized infiltration rate of 32 in/hr. Therefore, the design rate was adjusted to a constant velocity of 16 in/hr, which is 50%

of the infiltration rate determined by the testing. Refer to the attached test results. The drainage analysis has been updated with the 16 in/hr constant velocity design rate. This has resulted in the reduction of the subsurface chamber system size by 24 chamber units. The proposed roof leader collection system will also be added to the Grading and Drainage Plan.

Standard 3 – Recharge to Groundwater

No response needed

Standard 4 – 80% TSS Removal

An additional catch basin (CB-7) will be added to reduce the impervious area tributary to CB3.

Standard 5 – Higher Potential Pollutant Loads

Not applicable, No response needed

Standard 6 – Protection of Critical Areas

The project is not located in a Critical Area, but the design uses the 1" treatment requirement for BMP sizing as required by local regulations. No response needed

Standard 7 – Redevelopment Projects

The project was considered new development for the purposes of design. No response needed

Standard 8 – Erosion/Sediment Control

A SWPPP shall be prepared and submitted prior to construction to allow for the site contractor's input on the construction sequence and staging for the site.

Standard 9 – Operation and Maintenance Plan

The Operation and Maintenance Plan provided within the Stormwater Report will be provided as a separate standalone document.

Standard 10 – No Illicit Discharges

A signed certification will be provided.

B. Existing Site Conditions with Narrative Report

A sight distance plan shall be provided. Please see detailed discussion of site distances in traffic engineer's response letter, dated 10/12/221 to CHA traffic peer review.

C. Preliminary Scaled Architectural Drawings – Outside of civil engineering scope. Please see documents provided by applicant and/or appropriate consultant.

D. Tabulations – No further comment. The applicant agrees to modify the architectural plans as required to ensure that no den has a closet.

E. Preliminary Subdivision Plan – Not applicable.

F. Preliminary Utilities Plan

a. A new site hydrant will be centrally located near the Pavilion as requested by the Fire Department comments.
b. Further utility services such as transformers etc shall be conceptually located. Final design shall be determined by the utility companies.
c. The subsurface infiltration chamber system details have been updated with site specific information including inspection port requirement and will be shown on the Construction Details.

d. Storm drainage sizing computations are provided for the 100 year storm event in Section 3 of the Stormwater Management Report.
e. The septic design will be submitted to the Board of Health for approval.

G. **Traffic Survey –** Outside of civil engineering scope. Please see documents provided by applicant and/or appropriate consultant.

H. **Stormwater Management –** Please refer to previous stormwater management responses.

I. **Waivers –** Outside of civil engineering scope. Please see documents provided by applicant.

J. **Abutters List –** No further comment.

K. **Proof of filing of notification form with Massachusetts Historical Commission –** Outside of civil engineering scope. Please see documents provided by applicant.

L. **Proof of filing with Massachusetts Natural Heritage and Endangered Species Program –** Not applicable.

M. **Smart Growth –** Outside of civil engineering scope. Please see documents provided by applicant.

N. **Compliance with Massachusetts Governor's Executive Order 385 –** Outside of civil engineering scope. Please see documents provided by applicant.

O. **Pro Forms –** Outside of civil engineering scope. Please see documents provided by applicant.

P. **Property Appraisal –** Outside of civil engineering scope. Please see documents provided by applicant.

Q. **Review Fee –** No further comment.

R. **Project Eligibility –** No further comment.

S. **Other Applications and Submissions –** As noted, a Disposal Works Construction Permit from the Board of Health, Scenic Road Permit from the Planning Board, Street Opening and Building Permit will be filed for the project.

T. **Permits, Approvals and Grants –** No further comment.

U. **Development and Marketing Team –** Outside of civil engineering scope. Please see documents provided by applicant.

V. **Prior Development Projects –** No further comment.

W. **Article 9**

301-9.1 Requirements and purpose

Please see previous stormwater response comments to address the stormwater compliance.

301-9.2 Documents and plans

The DEP Stormwater Checklist will be added to the Stormwater Management Report. Additional offsite information including approximate location of abutting structures and topographic information have been incorporated into the site plans. The existing storm drain system within easement along the southern property line has been field located and shown on the Existing Conditions plan including invert information. Additional soil permeability testing was

performed within the subsurface infiltration system location and the drainage analysis has been adjusted accordingly.

301-9.3 Drainage specifications

No further comment.

301-9.4 Drainage design

No further comment.

301-9.5 General Requirements

The 1-year storm event has been included in the stormwater analysis. Refer to previous stormwater response comments.

301-9.6 Data Submission

No further comment.

301-9.7 Construction plan/erosion and sedimentation control

A construction plan including additional information regarding construction phasing, staging and erosion and sedimentation controls shall be provided with the SWPPP prior to construction so that input from the Site Contractor can be included in the document preparations.

Should you have any questions, please do not hesitate to contact our office.

Very truly yours,

MERRILL ENGINEERS AND LAND SURVEYORS

Deborah W. Keller, P.E.
Senior Project Manager

Cc: Northland Residential, Applicant
File

Briggs Engineering & Testing
A Division of PK Associates, Inc.

Merrill Engineers and Land Surveyors
c/o Ms. Deborah Keller, PE
427 Columbia Road
Hanover, MA 02339

September 29, 2021
Briggs Project No. 31782

RE: Field Infiltrometer Tests – August 27, 2021
Proposed Infiltration Area
35 High Street, Norwell, MA

Briggs completed one double ring infiltrometer test at the proposed stormwater disposal system area in the west central part of the site. Refer to attached Figure 1 for locations. Test locations, methods, results, discussions and conclusions are summarized as follows:

Proposed Construction

A single infiltration area is proposed along the west boundary of the subject property. The infiltration area is rectangular shaped and approximately 60 by 130 feet in plan area based on the "Site Plan" dated Jan 29, 2021 with graphical scale provided by Merrill to Briggs. Refer to Briggs' Figure 1 for proposed infiltration area and site features presented on the above noted Site Plan from Merrill.

Test Pits and Soil Conditions

A single test pit was excavated about 12 feet below current site grade within the proposed infiltration area. The test pit is labelled D-6 by Merrill and is located on the attached Figure 1. The excavation extended through topsoil and subsoil into undisturbed gravelly sands with trace silt content based on textural examination by Briggs.

Test Procedure

Briggs completed infiltrometer tests via ASTM method D3385-16. The test was accomplished in the center of the test pit at the base of excavation. Briggs hand shovel excavated about 4 inches below the base of excavation to access undisturbed soils that were not loosened by the teeth of the excavator bucket. Per method ASTM method D3385-16, retained water height (head) in the infiltrometer rings was maintained at 4 to 6 inches for all tests satisfying the specified water head at 1 to 6 inches. Multiple flow rates were measured until consistent infiltration rates were recorded for a least two successive readings for a total of at least 30 minutes of water flow at the 4 to 6 inch water head.

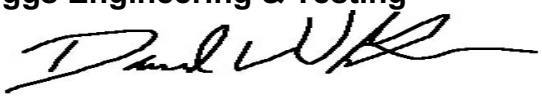
The infiltrometer test revealed a stabilized rate of 32 inches per hor (IPH).

Conclusions

Merrill states that the design infiltration rate was 20 IPH. Measure rate is 32 IPH. The measured rate exceeds the design rate assigned by Merrill to their drainage area calculations, therefore the soil at the infiltrometer test location will drain faster than estimated by Merrill.

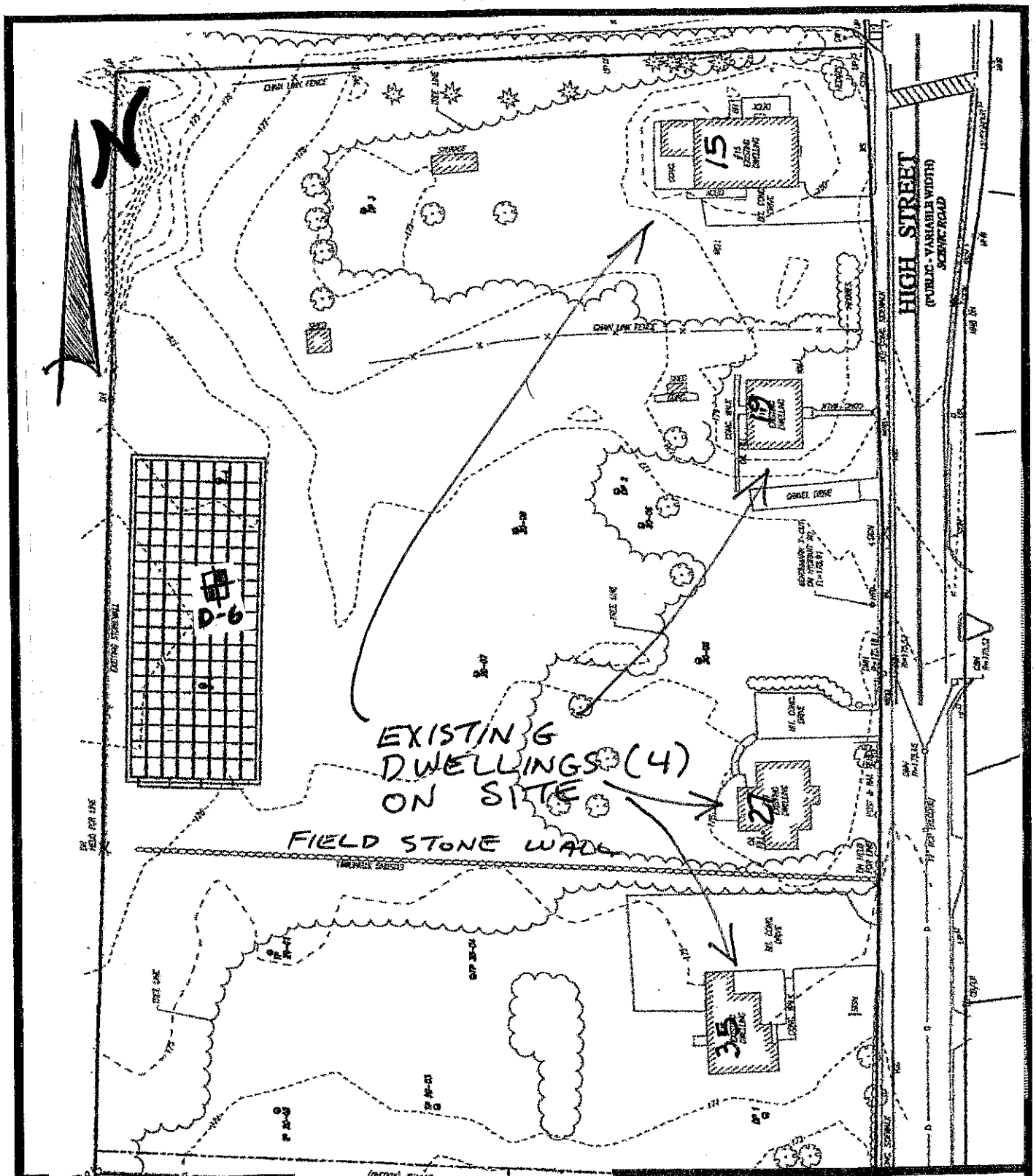
If you have any questions, please do not hesitate to contact us at your convenience.

Very truly yours,
Briggs Engineering & Testing



David W. Geisser
Geotechnical Department Manager

DWG:dg
Enclosure: Figure 1



BRIGGS

Briggs Engineering & Testing
A Division of PK Associates, Inc.

LEGEND:
D6 Number and approximate location of test pit.

PROPOSED INFILTRATION AREA
35 HIGH STREET NORWELL, MASS.

Scale: N.T.S.	*Drawn:* DWG	FIG. 1
8-27-21	*Check:* DWG	