GZA
GeoEnvironmental, Inc.

Engineers and Scientists

VIA EMAIL

April 27, 2011
File No. 17.0028435.00

Mr. David Garvey
Garvey and Company, Ltd.
P.O. Box 935
Durham, New Hampshire 03824

Re: High Intensity Soil Survey
Tax Map 8, Lot 2
Pudding Hill Road and Evans Road
Madbury, New Hampshire

202 Kent Place
Newmarket
New Hampshire
03857
603-659-3559
FAX 603-659-7750
www.gza.com

Dear Dave:

This letter, in conjunction with the attached Base Plan, is considered an integral component of the High Intensity Soil Survey (HISS) conducted by GZA GeoEnvironmental, Inc. (GZA). The site is approximately 60 acres and is a mix of field and forest.

The HISS was conducted on April 14, 15, and 16, 2011 using the standards and criteria presented in the Society of Soil Scientists of Northern New England Special Publication No. 1 "High Intensity Soil Maps for New Hampshire Standards", dated April 2008. A 50-scale base plan (1 inch = 50 feet), prepared by McEneaney Survey Associates, was used to compile the soil survey information. This base plan contains 2-foot topographic contours and reference points used for ground control as well as property boundary information. Tile spade, auger probes, and test pit information were used to classify existing soil conditions. Soil boundaries were transferred to the base plan using hand compass and pace methods to measure from known locations to soil boundaries. A copy of the plan with the soil boundaries added is attached.

The following is a list of soils map units identified on the property:

- 111BH = An excessively drained glacial outwash with no restrictive features within 40 inches of the soil surface. Slopes range between 0 percent and 8 percent.
- 111CH = An excessively drained glacial outwash with no restrictive features within 40 inches of the soil surface. Slopes range between 8 percent and 15 percent.
- 111DH = An excessively drained glacial outwash with no restrictive features within 40 inches of the soil surface. Slopes range between 15% and 25%.
- 161BH(E) = An excessively drained excavated area with no restrictive features within 40 inches of the soil surface. Slopes range between 0% and 8%.

- 161CH(E) = An excessively drained excavated area with no restrictive features within 40 inches of the soil surface. Slopes range between 8% and 15%.
- 161EH(E) = An excessively drained excavated area with no restrictive features within 40 inches of the soil surface. Slopes are greater than 25 %.
- 224BH = A well drained glacial till material with bedrock present in the soil profile 0-20 inches below the surface. Slopes range between 0% and 8%.
- 228BH = A well drained glacial till complex where the depth to bedrock is so variable that individual map units identifying soil depth ranges cannot be separated. Slopes range between 0% and 8%.
- 228CH = A well drained glacial till complex where the depth to bedrock is so variable that individual map units identifying soil depth ranges cannot be separated. Slopes range between 8% and 15%.
- 228DH = A well drained glacial till complex where the depth to bedrock is so variable that individual map units identifying soil depth ranges cannot be separated. Slopes range between 15% and 25%.
- 311BH = A moderately well drained glacial outwash with no restrictive features within 40 inches of the soil surface. Slopes range between 0% and 8%.
- 361BH(E) = A moderately well drained soil with no mineral restrictive features within 40 inches of the soil surface that has been excavated. Slopes range between 0% and 8%.
- 343BH = A moderately well drained soil of loamy/sandy deposits over silts/clays. A mineral restrictive layer is within 40 inches of the soil surface. Slopes range between 0% and 8%.
- 343CH = A moderately well drained soil of loamy/sandy deposits over silts/clays. A mineral restrictive layer is within 40 inches of the soil surface. Slopes range between 8% and 15%.
- 343DH = A moderately well drained soil of loamy/sandy deposits over silts/clays. A mineral restrictive layer is within 40 inches of the soil surface. Slopes range between 15% and 25%.
- 323BH = A moderately well drained glacial till with a mineral restrictive layer within 40 inches of the soil surface. Slopes range between 0% and 8%.
- 323DH = A moderately well drained glacial till with a mineral restrictive layer within 40 inches of the soil surface. Slopes range between 15% and 25%.
- 322BH = A moderately well drained glacial till, bouldery. Slopes range between 0% and 8%.
- 443BH = A somewhat poorly drained loamy/sandy soil over silt/clay deposits with a mineral restrictive layer within 40 inches of the soil surface. Slopes range between 0% and 8%.

- 443CH = A somewhat poorly drained loamy/sandy soil over silt/clay deposits with a mineral restrictive layer within 40 inches of the soil surface. Slopes range between 8% and 15%.
- 553BH = A poorly drained soil of silts and clays with a mineral restrictive feature within 40 inches of the soil surface. Slopes range between 0% and 8%.
- 653BH = A very poorly drained soil of silts and clays with a mineral restrictive feature within 40 inches of the soil surface. Slopes range between 0% and 8%.

Due to the limitations of manual tools, GZA soil scientists were unable to dig to the required 40-inch depth within the control sections of the areas mapped as variable depths to bedrock (228*H). These areas may be able to be re-classified with the use of an excavator in order to determine if the 40-inch depth requirement is exceeded.

Please contact James Long at 659-3559 extension 111 if you have any questions or if we can be of further assistance.

Very truly yours,

GZA, GEOENVIRONMENTAL, INC.

James H. Long, CSS, CWS
Senior Technical Specialist

Lawrence E. Morse
Associate Principal

Michael L. Parsont
Consultant/Reviewer

JHL/LEM/MLP:erc
P:\0028400s\17.0028435.00\Report\DRAFT 28435 HISS RPT 042711.docx

TEST PIT EVALUATION REPORT

File No. 17.0028435.00

Garvey and Co.
Evans Property, Evans Road
Madbury, New Hampshire

Evaluated by: James H. Long **Designer:** 988 **Witnessed by:** Mike Cuomo **Date:** 04/04/11

Test Pit No. 27

Depth (inches)	Description
2-0	Forest mat
0-6	10YR3/3 Dark brown, very fine sandy loam, granular, friable
6-16	10YR5/6 Yellowish brown, fine sandy loam, granular, friable
16-32	10YR5/4 Yellowish brown, fine sandy loam, granular, friable
32-72	2.5Y5/4 Light olive brown, silt loam, massive, firm with redoximorphic features

Estimated Seasonal High Water Table: 32 Observed Water Table: None
Restrictive: 32 Refusal: None Roots: 32
Percolation Rate = 10 Minutes / Inch @ 30

NOTES:

Test Pit No. 28

Depth (inches)	Description
2-0	Forest mat
0-8	10YR3/3 Dark brown, very fine sandy loam, granular, friable
8-16	10YR5/6 Yellowish brown, fine sand, granular, friable
16-26	10YR5/4 Yellowish brown, fine sandy loam, granular, friable
26-60	2.5Y5/3 Light olive brown, silty clay, angular, blocky, firm with redoximorphic features

Estimated Seasonal High Water Table: 26 Observed Water Table: None
Restrictive: 26 Refusal: None Roots: 30
Percolation Rate = 16 Minutes / Inch @ 24

NOTES:

TEST PIT EVALUATION REPORT

File No. 17.0028435.00

Garvey and Co.
Evans Property, Evans Road
Madbury, New Hampshire

Evaluated by: James H. Long **Designer:** 988 **Witnessed by:** Mike Cuomo **Date:** 04/04/11

Test Pit No. 29

Depth (inches)	Description
2-0	Forest mat
0-4	10YR3/3 Dark brown, very fine sandy loam, granular, friable
4-16	10YR5/6 Yellowish brown, fine sandy loam, granular, friable
16-26	10YR5/4 Yellowish brown, fine sandy loam, granular, friable
26-72	2.5Y5/3 Light olive brown, loamy sand, massive, firm with redoximorphic features

Estimated Seasonal High Water Table: 26 Observed Water Table: 72
Restrictive: 26 Refusal: None Roots: 32
Percolation Rate = 8 Minutes / Inch @ 24

NOTES:

Test Pit No. 30

Depth (inches)	Description
2-0	Forest mat
0-6	10YR3/3 Dark brown, very fine sandy loam, granular, friable
6-16	10YR5/6 Yellowish brown, fine sandy loam, granular, friable
16-28	10YR5/4 Yellowish brown, fine sandy loam, granular, friable
28-60	2.5Y5/3 Light olive brown, loamy sand, massive, firm with redoximorphic features

Estimated Seasonal High Water Table: 28 Observed Water Table: None
Restrictive: 28 Refusal: None Roots: 32
Percolation Rate = 8 Minutes / Inch @ 24

NOTES: