

Brem-146-01.08.2015

THE BIRCHES

LONG RIDGE ROAD

CARLISLE, MA

RECEIVED
JAN 08 2015

TOWN CLERK-CARLISLE
CHARLENE M. HINTON

SOIL TESTING

BREM – 2012, 2014

Submitted by:

MEISNER BREM CORPORATION

142 Littleton Road

Westford, MA 01886

Submitted to Peer Review:

December 16, 2014

Job 2066

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Owner Name JEFF BOEM Map/Lot # 1038
Address 100 LONG RIDGE ROAD Publication Scale 1:24,000
City/Town/State CALVER State MA Zip Code 01822

B. Site Information

1. Construction ☒ New Construction ☐ Upgrade ☐ Repair ☐
2. Pulls from Soil Survey Available? ☒ Yes ☐ No
3. Soil Map Unit Very Limited Soil Map Unit 3113

4. Sufficient Geological Report Available? ☐ Yes ☒ No
5. Landform Very Limited Publication Scale 1:24,000 Map Unit 3113

6. Flood Risk Insurance Map
At the 500-year flood boundary? ☐ Yes ☐ No
Within the 500-year flood boundary? ☐ Yes ☐ No

7. Wetland Area: National Wetland Inventory Map
Wetlands Conservancy Program Map
Range: ☐ Above Normal ☐ Normal ☐ Below Normal

8. Current Water Resource Conditions (USGS):
Other references reviewed:



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 301 Date: 12.9.12 Time: 11:00 AM Weather: Sunny

1. Location

Ground Elevation at Surface of Hole: _____ Location (Identify on plan): _____

2. Land Use WOODS Surface Stones Few Slopes (%) 2-4
(e.g., woodland, agricultural field, vacant lot, etc.)
Vegetation FOREST Landform V-AME

3. Distances from: Open Water Body 7100 feet Drainage Way 750 feet Possible Wet Area > 100 feet
Property Line 7100 feet Drinking Water Well 7100 feet Other _____ feet

4. Parent Material: ICE CONTACT OUTWASH Unsuitable Materials Present ☐ Yes ☒ No
If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Imperious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole _____
Estimated Depth to High Groundwater: 57 inches elevation _____
U.C.C. H.C. MOTTLES



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

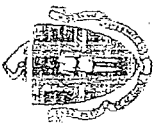
Deep Observation Hole Number: 301

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Radio-morphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
7	A	10YR 3/3				L.S.	0	0	MASSIVE FALSBLE		
24	B	10YR 6/3				L.S.	10		"		
48	C ₁	2.5Y 8/2				FINE SAND		30-40	"		
126	C ₂	10YR 6/2	57"	10YR 6/8 7.5YR 6/1	5	L.S.	10	10	"	MOIST BOTTON	PLATY

Additional Notes:

C₁ LAYER IS MIXED WITH COBBLES IN HALF DT4 AND SANDS IN

OTHER



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 302

Date: 12.5.12

Time: 11:00 AM

Weather: Sunny

1. Location

Ground Elevation at Surface of Hole: _____

Location (identify on plan): _____

2. Land Use

WOODLAND
(e.g., woodland, agricultural field, vacant lot, etc.)

Forest
Vegetation

WAME
Landscape

Surface Stones: FEW

Slope (%): 2-4

3. Distances from:

Open Water Body

7100
feet

Drainage Way

750
feet

Position on Landscape (attach sheet)

Property Line

7100
feet

Drinking Water Well

7100
feet

Possible Wet Area

7100
feet

ICE CONCRETE CURB

4. Parent Material:

OUTWASH

Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil

☐ Fill Material

☐ Impervious Layer(s)

☐ Weathered/Fractured Rock

☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No

Estimated Depth to High Groundwater: _____

If yes: _____

Depth Weeping from Pit _____

Depth Standing Water in Hole _____

inches

elevation

W.C. MOTTUS



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

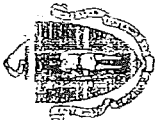
C. On-Site Review (continued)

Deep Observation Hole Number: 302

Depth (In.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features (mottles)		Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color		Gravel	Cobbles & Stones			
0	A	10YR 3/3			L-4			MASSIVE FRACTION	-	
20	B	10YR 6/8			L-4	10	5	"		
40	C ₁	2.5Y 8/2	80	10YR 6/8	ARE TO CLAY SAND	10	10	"		

Additional Notes:

No WATER



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 303 Date: 12.5.12 Time: 11:30 Weather: SUNNY

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use WOODS FEW Surface Stones 2-4
(e.g., woodland, agricultural field, vacant lot, etc.) Slope (%)

Vegetation FOREST Landform FLAT Position on Landscape (attach sheet)

3. Distances from: Open Water Body 7100 feet Drainage Way 750 feet Possible Wet Area 7100 feet

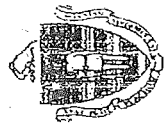
Property Line 7100 feet Drinking Water Well 7100 feet Other _____ feet

4. Parent Material: ICE CONTAMINATED Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: _____ inches _____ elevation



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 307

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features (mottles)		Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color		Gravel	Cobbles & Stones			
0	A	10YR 3/3			L.S.			ACTIVE FLACQUE		
20	B	10YR 6/8			L.S.	10	5	"		
57	C	10YR 6/2			L.S.	10	10	"		

Additional Notes:

Rock @ Bottom 57" TOTAL DEPTH



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 304 Date: 12-5-12 Time: 11:00 Weather: Sunny

1. Location

Ground Elevation at Surface of Hole: _____ Location (Identify on plan): _____

2. Land Use WOODLAND FOREST Vegetation LANDFORM Drainage Way 750 feet Surface Stones FEW Slope (%) 2-4

3. Distances from: Open Water Body 700 feet Drinking Water Well 7100 feet Position on Landscape (attach sheet) Possible Wet Area 7100 feet Other _____ feet

4. Parent Material: LOE CONTACT BUT WASH Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: 48 Inches elevation 48'



Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 304

Depth (ft.)	Soil Horizon/ Layer	Soil Matrix: Color- Molai (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Molai)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0	A	10YR 7/3				L.S.	0	0	Whitish Plumbic		
24	B	10YR 6/8				L.S.	10	5	"		
48	C ₁	2.5Y 8/2	48	10YR 6/8	5	F.S.			"		
108	C ₂	10YR 6/2				L.S.	10	10	"		

Additional Notes:



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 305 Date: 12.9.12 Time: 11:00 Weather: cloudy

1. Location

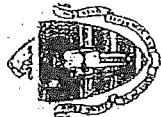
Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use WOODLAND FEW 2-4
(e.g., woodland, agricultural field, vacant lot, etc.) Surface Stones Slope (%)

Vegetation FOREST Landform HAMPSHIRE Position on Landscape (attach sheet)
Distances from: Open Water Body 7100 feet Drainage Way 750 feet Possible Wet Area feet
Property Line feet Drinking Water Well 7100 feet Other feet

4. Parent Material: VEGETATION Unsuitable Materials Present: ☐ Yes ☒ No
If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No 35 If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole _____
Estimated Depth to High Groundwater: _____ inches H.C. MOTTUS



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

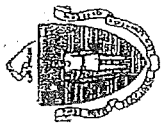
C. On-Site Review (continued)

305

Deep Observation Hole Number:

Depth (In.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones		
3	A	10YR 7/3				LS			Weakly Plastic	
24	B	10YR 6/3				LS	10	5	"	
64	C	10YR 6/2	35	10YR 6/3	5	LS	5	5	"	

Additional Notes:



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Sullability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserved disposal area)

Deep Observation Hole Number: 206 Date: 12-5-12 Time: 11:00 Weather: 9:00 AM

1. Location

Ground Elevation at Surface of Hole: _____ Location (Identify on plan): _____

2. Land Use WOODLAND PGW 2-4
(e.g., woodland, agricultural field, vacant lot, etc.) Surface Stones Slope (%)

Topset Landform Position on Landscape (attach sheet)
Vegetation _____

3. Distances from: 7100 Drainage Way 750 Possible Wet Area 7100
Open Water Body feet feet feet feet

Property Line 7100 Drinking Water Well 7100 Other feet
feet feet feet feet

4. Parent Material: ICE CONTACT GUTWATER Unsuitable Materials Present: ☐ Yes ☐ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Standing Water In Hole _____

Estimated Depth to High Groundwater: _____ inches _____ elevation _____

4-6' MOTTLED



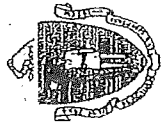
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 706

Depth (In.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
3	A	10YR 7/3				L.S.	0	0	MASSIVE FRACTIONAL		
24	B	10YR 6/3				L.S.	10	5	"		
66	C	10YR 6/2	29	10YR 6/8	5	L.S.	5	5	"		

Additional Notes:



Commonwealth of Massachusetts
City/Town of _____
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: _____ Date: _____ Time: _____ Weather: _____

1. Location _____

Ground Elevation at Surface of Hole: _____ Location (Identify on plan): _____

2. Land Use _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Surface Stones _____ Slope (%) _____

Vegetation _____ Landform _____ Position on Landscape (attach sheet)

3. Distances from: _____

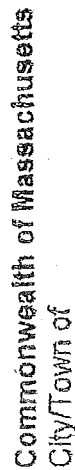
Open Water Body	_____ feet	Drainage Way	_____ feet	Possible Wet Area	_____ feet
Property Line	_____ feet	Drinking Water Well	_____ feet	Other	_____ feet

4. Parent Material: _____ Unsuitable Materials Present: ☐ Yes ☐ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole _____

Estimated Depth to High Groundwater: _____ inches _____ elevation _____



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number:

[illegible]

Additional Notes:



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

- ☐ Depth observed standing water in observation hole
- ☐ Depth weeping from side of observation hole
- ☐ Depth to soil redoximorphic features (mottles)
- ☐ Groundwater adjustment (USGS methodology)

A.	N/A	B.	N/A
inches		inches	
A.	N/A	B.	N/A
inches		inches	
A.	24" MIN	B.	30" MAX
inches		inches	
A.		B.	
inches		inches	

2.

Index Well Number

Reading Date

Adjusted Groundwater Level

Adjustment Factor

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

- a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

- b. If yes, at what depth was it observed?

Upper boundary:

8 inches

Lower boundary:

inches



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Michael J. DiModica

Signature of Soil Evaluator

MICHAEL J. DiMODICA

Typed or Printed Name of Soil Evaluator / License #

ROB FRADO

Name of Board of Health Witness

Date

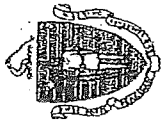
12/6/12

Date of Soil Evaluator Exam

CARLISLE

Board of Health

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.



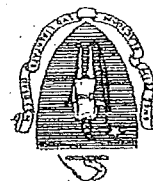
Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of
Percolation Test
Form 12



Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

A. Site Information

Owner Name: Jeff Brum
Street Address or Lot #: 100 Route 21
City/Town: Uxbridge
State: MA
Zip Code: 01569
Contact Person (if different from Owner):
Telephone Number:

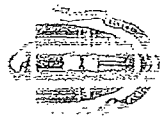
B. Test Results

Observation Hole #	Depth of Perc	Start Pre-Soak	End Pre-Soak	Time at 12"	Time at 9"	Time at 6"	Time (9"-6")	Rate (Min./Inch)
PT 302	42"	11:14	11:29	11:29	11:31	11:38	7	3
PT 304	68"	11:20	11:36	11:36	11:45	12:08	18	6

Date: 12/5/12 11:00
Date: 12/5/12 11:00

Test Passed: ☒ Test Failed: ☐
Test Passed: ☒ Test Failed: ☐

Test Performed By: MIKE DIMONICH
Witnessed By: ROB FRADO
Comments:



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

205

Deep Observation Hole Number:

Depth (ft.)	Soil Horizon, Layer	Soil Matrix Color, Munsell (Munsell)	Rock/Morphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
3	A	10YR 7/3				L.S.			Weakly platy		
24	B	10YR 4/8				L.S.	10	5	"		
44	C	10YR 6/2	35	10YR 6/3	5	L.S.	5	5	"		

Additional Notes:



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Owner Name JEFF BDEM Map/Lot # _____
Street Address 100 LONG RIDGE RD Zip Code _____
City CANNISSE MA 01741 State _____

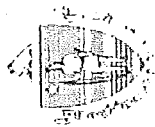
B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair
2. Soil Survey Available? ☒ Yes ☐ No If yes: _____ Source _____ Soil Map Unit _____
- Soil Name WILSONVILLE CHARTER TOWN
Soil Limitations _____
Landform _____
If yes: 1995 1:24,000 103 B
Year Published/Source Publication Map Unit
3. Surficial Geological Report Available? ☐ Yes ☒ No
4. Flood Rate Insurance Map
Above the 500-year flood boundary? ☒ Yes ☐ No Within the 500-year flood boundary? ☐ Yes ☒ No
If Yes, continue to #5. Within the 100-year flood boundary? ☐ Yes ☒ No
5. Within a velocity zone? ☐ Yes ☒ No
6. Within a Mapped Wetland Area? ☐ Yes ☒ No
7. Current Water Resource Conditions (USGS): _____
Month/Year _____
8. Other references reviewed: _____

MassGIS Wetland Data Layer:

Wetland Type

Range: ☐ Above Normal ☐ Normal ☐ Below Normal



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (minimum of two holes required at every proposed primary and reserve disposal area)

Deep Observation Hole Number: 401 12/3/14 1:15 PM Cloudy 35°
Date Time Weather

1. Location
Ground Elevation at Surface of Hole: 102.0 feet Latitude/Longitude: 1

Description of Location:
2. Land Use OPEN FIELD - ON SCAR None 10-15
(e.g., woodland, agricultural field, vacant lot, etc.) Surface Stones (e.g., cobbles, stones, boulders, etc.) Slope (%)

Vegetation FLAME
Landform
3. Distances from: Open Water Body 7200 feet Drainage Way 7200 feet Wetlands 7200 feet
Property Line 7100 feet Drinking Water Well 7100 feet Other 7200 feet

4. Parent Material: ICE CONTACT OUTWASH Unsuitable Materials Present: ☐ Yes ☐ No
If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 54" Depth Standing Water in Hole None
Estimated Depth to High Groundwater: 48" inches elevation 98.0

NOTES, VARY EXISTED



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: _____

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
12	A	10 YR 3/3				L.C.			MASSIVE FRACTION	-	
24	B	10 YR 6/8				L.C.	20	10	"		
78	C	10 YR 6/4	48"	10 YR 6/8	FAIRLY 5	FRACTION	20	10	"		

Additional Notes:

WATER WEAVING @ ONE SPOT @ 54" HIGHLY OXIDIZED

Soil FILLABLE & HIGH MOISTURE DUE TO RECENT RAINS



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

- ☒ Depth observed standing water in observation hole
- ☒ Depth weeping from side of observation hole
- ☒ Depth to soil redoximorphic features (mottles)
- ☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)

Obs. Hole # 401 Obs. Hole # _____
inches _____ inches _____
NONE
inches _____
54
inches _____
48" ms.
inches _____
inches _____

Index Well Number

Reading Date

$$S_h = S_c - [S_r \times (OW_c - OW_{max}) / OW_r]$$

Obs. Hole #	_____	S_c	_____	S_r	_____	OW_c	_____	OW_{max}	_____	OW_r	_____	S_h	_____
Obs. Hole #	_____	S_c	_____	S_r	_____	OW_c	_____	OW_{max}	_____	OW_r	_____	S_h	_____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

- a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☒ Yes ☐ No

- b. If yes, at what depth was it observed?

Upper boundary: _____ inches
Lower boundary: _____ inches

- c. If no, at what depth was impervious material observed?

Upper boundary: _____ inches
Lower boundary: _____ inches