



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

## A. Facility Information

Owner Name

0 Old School Street

Street Address

Manchester by the Sea

City

MA

State

Map 43 Lot 0 18

Map/Lot #

01944

Zip Code

## B. Site Information

1. (Check one)  New Construction  Upgrade  Repair

2. Soil Survey Available?  Yes  No

If yes:

UC Davis NRCS  
Source

102E  
Soil Map Unit

Chatfield-Hollis-Rock Outcrop  
Soil Name

High runoff  
Soil Limitations

Glacial Till, coarse-loamy melt-out till derived from  
granite, gneiss, and/or schist

Shoulder  
Landform

3. Surficial Geological Report Available?  Yes  No

If yes:

MassGIS  
Year Published/Source

Till/Bedrock  
Map Unit

Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway?  Yes  No

5. Within a velocity zone?  Yes  No

6. Within a Mapped Wetland Area?  Yes  No

If yes, MassGIS Wetland Data Layer:

NA  
Wetland Type

7. Current Water Resource Conditions (USGS):

11/30/2020  
Month/Day/ Year

Range:  Above Normal

Normal  Below Normal

8. Other references reviewed:

Station 423506070491401, MA-WPW 76R, Wenham, MA



## 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: OSE-TP-1      11-18-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A										
3-16	Bw	Loamy Sand	10 YR 5/6				2	0	Massive	Very Friable	Roots to 16"
16-120	C	Loamy Sand	10 YR 4/4				10	10	Massive	Very Friable	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>1</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 3 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE-TP-2      11-18-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Latitude      Longitude:      Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)  
 Slope (%)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4	A										
4-23	Bw	Loamy Sand	10 YR 5/6					2	Massive	Very Friable	
23-120	C	Loamy Sand	10 YR 5/4				10		Massive	Very Friable	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>2</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches         | _____ inches |

\_\_\_\_\_ Index Well Number

\_\_\_\_\_ Reading Date

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 4 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE-TP-3      11-18-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Latitude      Longitude:  
 1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)  
 Slope (%): \_\_\_\_\_

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
 Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	A										
6-18	Bw	Loamy Sand	10 YR 5/8					2	Massive	Very Friable	
23-120	C	Loamy Sand	10 YR 5/4				30	10	Massive	Very Friable	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>3</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 6 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE-TP-4      11-18-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	A										
5-18	Bw	Fine Loamy Sand	10 YR 5/8					2	Massive	Very Friable	Roots to 18"
18-120	C	Loamy Sand	10 YR 5/4				10		Massive	Very Friable	

Additional Notes:  
No water, no mottles, no redox





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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>4</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 5 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE-TP-5      11-18-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Latitude      Longitude:      Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)  
 Slope (%) \_\_\_\_\_

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A										
3-22	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
22-120	C	Loamy Sand	10 YR 5/4				10	10	Massive	Firm in Place, Friable in hand	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>5</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches         | _____ inches |

\_\_\_\_\_ Index Well Number

\_\_\_\_\_ Reading Date

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 3 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE-TP-6      11-18-2020      PM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Latitude      Longitude:      Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)  
 Slope (%)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A										
3-24	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
24-120	C	Loamy Sand	10 YR 5/4					2	Massive	Firm in Place, Friable in hand	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>6</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 3 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE TP-7      11-18-2020      PM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	A										
5-17	Bw	Loamy Sand	10 YR 5/4						Massive	Very Friable	
17-120	C	Loamy Sand	10 YR 4/6					2	Massive	Firm in Place, Friable in hand	Isolated pockets of Medium to Coarse Sand

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>7</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 5 inches Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches Lower boundary: \_\_\_\_\_ inches



## 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: OSE TP-8      11-18-2020      PM      Sunny  
Hole #      Date      Time      Weather  
 1. Land Use Woodland      Trees, light underbrush      Some      \_\_\_\_\_  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Latitude  
 Longitude: 3-8%  
Slope (%)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
 Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil       Fill Material       Weathered/Fractured Rock       Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-7	A										
7-17	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
17-67	C	Loamy Sand	10 YR 5/4					2	Massive	Firm in Place, Friable in hand	Ledge at 67"

Additional Notes:  
No water, no mottles, no redox





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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>8</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 7 inches      Lower boundary: 67 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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.

*Paul Ruzala*

Signature of Soil Evaluator

Paul Ruzala, License #14111

Typed or Printed Name of Soil Evaluator / License #

Paul Blain

Name of Approving Authority Witness

12-2-2020

Date

6/30/2023

Expiration Date of License

MassDEP

Approving Authority

**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](#).

**Field Diagrams:** Use this area for field diagrams:

Test pits will be field surveyed and shown on the effluent disposal system design plans.



Commonwealth of Massachusetts  
 City/Town of Manchester by the Sea  
**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.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Site Information**

Owner Name  
 0 Old School Street  
 Street Address or Lot #  
 Manchester by the Sea MA 01944  
 City/Town State Zip Code

Contact Person (if different from Owner) Telephone Number

**B. Test Results**

	11-18-2020	9:48 AM		
	Date	Time	Date	Time
Observation Hole #	OSE TP-1			
Depth of Perc	32"			
Start Pre-Soak	9:48 AM			
End Pre-Soak	10:03 AM			
Time at 12"	10:03 AM			
Time at 9"	10:10 AM			
Time at 6"	10:18 AM			
Time (9"-6")	8 minutes			
Rate (Min./Inch)	3 minutes/inch			
	Test Passed: <input checked="" type="checkbox"/>		Test Passed: <input type="checkbox"/>	
	Test Failed: <input type="checkbox"/>		Test Failed: <input type="checkbox"/>	

Raymond Willis, P.E.  
 Test Performed By:  
 Paul Blain, MassDEP  
 Board of Health Witness

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_



Commonwealth of Massachusetts  
 City/Town of Manchester by the Sea  
**Percolation Test**  
**Form 12**

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**A. Site Information**

Owner Name		
0 Old School Street		
Street Address or Lot #		
Manchester by the Sea	MA	01944
City/Town	State	Zip Code
Contact Person (if different from Owner)		Telephone Number

**B. Test Results**

	11-18-2020	11:14 AM		
	Date	Time	Date	Time
Observation Hole #	OSE TP-2			
Depth of Perc	32"			
Start Pre-Soak	11:14 AM			
End Pre-Soak	11:29 AM			
Time at 12"	11:29 AM			
Time at 9"	11:35 AM			
Time at 6"	11:41 AM			
Time (9"-6")	6 minutes			
Rate (Min./Inch)	2 minutes/inch			
	Test Passed:	<input checked="" type="checkbox"/>	Test Passed:	<input type="checkbox"/>
	Test Failed:	<input type="checkbox"/>	Test Failed:	<input type="checkbox"/>

Raymond Willis, P.E.  
 Test Performed By:  
 Paul Blain, MassDEP  
 Board of Health Witness

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_



Commonwealth of Massachusetts  
 City/Town of Manchester by the Sea  
**Percolation Test**  
**Form 12**

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**A. Site Information**

Owner Name  
 0 Old School Street  
 Street Address or Lot #  
 Manchester by the Sea MA 01944  
 City/Town State Zip Code  
 Contact Person (if different from Owner) Telephone Number

**B. Test Results**

	11-18-2020	2:17 PM		
	Date	Time	Date	Time
Observation Hole #	OSE TP-5			
Depth of Perc	48"			
Start Pre-Soak	2:17 PM			
End Pre-Soak	2:32 PM			
Time at 12"	2:32 PM			
Time at 9"	2:54 PM			
Time at 6"	3:19 PM			
Time (9"-6")	25 minutes			
Rate (Min./Inch)	8.3 minutes/inch			
	Test Passed: <input checked="" type="checkbox"/>		Test Passed: <input type="checkbox"/>	
	Test Failed: <input type="checkbox"/>		Test Failed: <input type="checkbox"/>	

Raymond Willis, P.E.  
 Test Performed By:  
 Paul Blain, MassDEP  
 Board of Health Witness

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_



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

## A. Facility Information

Owner Name

0 Old School Street

Street Address

Manchester by the Sea

City

MA

State

Map 43 Lot 0 18

Map/Lot #

01944

Zip Code

## B. Site Information

1. (Check one)  New Construction  Upgrade  Repair

2. Soil Survey Available?  Yes  No

If yes:

UC Davis NRCS  
Source

102E  
Soil Map Unit

Chatfield-Hollis-Rock Outcrop  
Soil Name

High runoff  
Soil Limitations

Glacial Till, coarse-loamy melt-out till derived from  
granite, gneiss, and/or schist

Shoulder  
Landform

3. Surficial Geological Report Available?  Yes  No

If yes:

MassGIS  
Year Published/Source

Till/Bedrock  
Map Unit

Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway?  Yes  No

5. Within a velocity zone?  Yes  No

6. Within a Mapped Wetland Area?  Yes  No

If yes, MassGIS Wetland Data Layer:

NA  
Wetland Type

7. Current Water Resource Conditions (USGS):

11/30/2020  
Month/Day/ Year

Range:  Above Normal

Normal  Below Normal

8. Other references reviewed:

Station 423506070491401, MA-WPW 76R, Wenham, MA



# 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: OSE TP-9      11-19-2020      AM      Sunny  
Hole #      Date      Time      Weather  
 Latitude \_\_\_\_\_ Longitude: 3-8%  
Slope (%)

1. Land Use Woodland      Trees, light underbrush      Some  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)  
 Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock

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

### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	A										
6-28	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	Roots to 28"
28-120	C	Loamy Sand	10 YR 5/4				10		Massive	Firm in Place, Friable in hand	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                      |              |
|---|----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>9</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches   | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches   | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches         | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches         | _____ inches |

Index Well Number \_\_\_\_\_

Reading Date \_\_\_\_\_

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 6 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches





## 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: OSE TP-10      11-19-2020      AM      Sunny  
Date      Time      Weather      Latitude      Longitude:  
 1. Land Use Woodland      Trees, light underbrush      Some      3-8%  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Slope (%)

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material       Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5	A										
5-26	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
26-120	C	Loamy Sand	10 YR 5/4				2		Massive	Firm in Place, Friable in hand	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                       |              |
|---|-----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>10</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches    | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches    | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches          | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches          | _____ inches |

\_\_\_\_\_ Index Well Number

\_\_\_\_\_ Reading Date

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 5 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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: OSE TP-11      11-19-2020      AM      Sunny  
Date      Time      Weather      Latitude      Longitude:  
 1. Land Use Woodland      Trees, light underbrush      Some      \_\_\_\_\_  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Slope (%)  
3-8%

Description of Location: \_\_\_\_\_

2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material       Weathered/Fractured Rock     Bedrock

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

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	A										
3-23	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
32-58	C	Loamy Sand	10 YR 5/4				2	15	Massive	Firm in Place, Friable in hand	Ledge at 58"

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                       |              |
|---|-----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>11</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole             | <u>None</u> inches    | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                   | <u>None</u> inches    | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                           | _____ inches          | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater ( $S_h$ ) (USGS methodology) | _____ inches          | _____ inches |

\_\_\_\_\_ Index Well Number

\_\_\_\_\_ Reading Date

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

Obs. Hole/Well# \_\_\_\_\_  $S_c$  \_\_\_\_\_  $S_r$  \_\_\_\_\_  $OW_c$  \_\_\_\_\_  $OW_{max}$  \_\_\_\_\_  $OW_r$  \_\_\_\_\_  $S_h$  \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 3 inches      Lower boundary: 58 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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:** OSE TP-12      11-19-2020      AM      Sunny  
Date      Time      Weather      Latitude      Longitude:  
12      3-8%
1. Land Use Woodland      Trees, light underbrush      Some      \_\_\_\_\_  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Slope (%)
- Description of Location: \_\_\_\_\_
2. Soil Parent Material: Glacial Till      Kame      SH  
Landform      Position on Landscape (SU, SH, BS, FS, TS)
3. Distances from:      Open Water Body >100 feet      Drainage Way >10 feet      Wetlands >50 feet  
    Property Line >10 feet      Drinking Water Well >100 feet      Other \_\_\_\_\_ feet
4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil     Fill Material     Weathered/Fractured Rock     Bedrock
5. Groundwater Observed:  Yes     No      If yes: NA Depth Weeping from Pit      NA Depth Standing Water in Hole

#### Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4	A										
4-17	Bw	Loamy Sand	10 YR 5/6						Massive	Very Friable	
17-120	C	Loamy Sand	10 YR 5/4				2	15	Massive	Firm in Place, Friable in hand	

Additional Notes:  
No water, no mottles, no redox



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

### D. Determination of High Groundwater Elevation

- |   |                       |              |
|---|-----------------------|--------------|
| 1. Method Used:   | Obs. Hole # <u>12</u> | Obs. Hole #  |
| <input checked="" type="checkbox"/> Depth observed standing water in observation hole                     | <u>None</u> inches    | _____ inches |
| <input checked="" type="checkbox"/> Depth weeping from side of observation hole                           | <u>None</u> inches    | _____ inches |
| <input type="checkbox"/> Depth to soil redoximorphic features (mottles)                                   | _____ inches          | _____ inches |
| <input type="checkbox"/> Depth to adjusted seasonal high groundwater (S <sub>h</sub> ) (USGS methodology) | _____ inches          | _____ inches |

\_\_\_\_\_ Index Well Number

\_\_\_\_\_ Reading Date

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

Obs. Hole/Well# \_\_\_\_\_ S<sub>c</sub> \_\_\_\_\_ S<sub>r</sub> \_\_\_\_\_ OW<sub>c</sub> \_\_\_\_\_ OW<sub>max</sub> \_\_\_\_\_ OW<sub>r</sub> \_\_\_\_\_ S<sub>h</sub> \_\_\_\_\_

2. Estimated Depth to High Groundwater: 120"+ inches

### 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 (exclude A and O Horizons)?

Upper boundary: 4 inches      Lower boundary: 120 inches

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

Upper boundary: \_\_\_\_\_ inches      Lower boundary: \_\_\_\_\_ inches



## 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.

*Paul Ruzala*

Signature of Soil Evaluator

Paul Ruzala, License #14111

Typed or Printed Name of Soil Evaluator / License #

Paul Blain

Name of Approving Authority Witness

12-2-2020

Date

6/30/2023

Expiration Date of License

MassDEP

Approving Authority

**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](#).

**Field Diagrams:** Use this area for field diagrams:

Test pits will be field surveyed and shown on the effluent disposal system design plans.



# Commonwealth of Massachusetts

## City/Town of Manchester by the Sea

### 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.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



### A. Site Information

Owner Name		
0 Old School Street		
Street Address or Lot #		
Manchester by the Sea	MA	01944
City/Town	State	Zip Code
Contact Person (if different from Owner)		Telephone Number

### B. Test Results

	11-19-2020	9:11 AM		
	Date	Time	Date	Time
Observation Hole #	OSE TP-9			
Depth of Perc	34"			
Start Pre-Soak	9:11 AM			
End Pre-Soak	9:26 AM			
Time at 12"	9:26 AM			
Time at 9"	9:41 AM			
Time at 6"	9:56 AM			
Time (9"-6")	15 minutes			
Rate (Min./Inch)	5 minutes/inch			
	Test Passed: <input checked="" type="checkbox"/>		Test Passed: <input type="checkbox"/>	
	Test Failed: <input type="checkbox"/>		Test Failed: <input type="checkbox"/>	

Raymond Willis, P.E.  
 Test Performed By:  
 Paul Blain, MassDEP  
 Board of Health Witness

Comments:

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Commonwealth of Massachusetts  
 City/Town of Manchester by the Sea  
**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.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Site Information**

Owner Name		
0 Old School Street		
Street Address or Lot #		
Manchester by the Sea	MA	01944
City/Town	State	Zip Code
Contact Person (if different from Owner)		Telephone Number

**B. Test Results**

	11-19-2020	10:58 AM		
	Date	Time	Date	Time
Observation Hole #	OSE TP-12			
Depth of Perc	34"			
Start Pre-Soak	10:58 AM			
End Pre-Soak	11:13 AM			
Time at 12"	11:13 AM			
Time at 9"	11:31 AM			
Time at 6"	11:49 AM			
Time (9"-6")	18 minutes			
Rate (Min./Inch)	6			
	Test Passed: <input checked="" type="checkbox"/>		Test Passed: <input type="checkbox"/>	
	Test Failed: <input type="checkbox"/>		Test Failed: <input type="checkbox"/>	

Raymond Willis, P.E.  
 Test Performed By:  
 Paul Blain, MassDEP  
 Board of Health Witness

Comments:  
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