Recharge Volume Calculations

Recharge Volume Calculations

Job: SM-4051A

Calculated by: WJH
Date: 5/5/2016

Subsurface Infiltration

Soils: Merrimac fine sandy loam
Hydrologic Group: A
Required Recharge Volume
0.6 inches of runoff x impervious area

Impervious area: 0.20 acres
8,833 s.f.

Required Recharge Volume (Rv)

$$Rv = 8{,}833 \text{ s.f.} \times \frac{0.6}{12} = \mathbf{442 \text{ c.f.}}$$

Simple Dynamic Method
A=Rv / (D+KT)

D (depth of infiltration facility):	3.33	ft
K (saturated hydraulic conductivity):	8.27	inches/hour
T (time):	2	hours
Min. Area=	22	s.f.
Min. Volume= AxD=	74	C.F.
Bottom Area=	902	s.f.
# of Units=	30	
Volume Per Unit=	15	C.F.
Volume=	1,466	c.f.

72 Hour Drawdown
Rv/(K x Bottom Area)= 0.71 Hours
0.71 < 72 hours O.K.

First Flush Volume Calculations

First Flush Volume Calculations

Job: SM-4051A

Calculated by: WJH
Date: 5/5/2016

Lined Basin
Soils: Merrimac Fine Sandy Loam
Hydrologic Group: A
Required Water Quality Volume
1 inches of runoff x impervious area

Impervious area: 0.203 acres
8,833 s.f.

Lined Basin				
Elev. (FT)	Change Elev. (FT)	Area (SF)	Inc. Volume (CF)	
214	0	199		
215	1	405	302	
216	***1***	***666***	***535.5***	**837.5**
217	*1*	*1000*	*833*	1670.5

Required Water Quality Volume

$$V = 8{,}833 \text{ s.f.} \times \frac{1}{12} = \mathbf{736} \text{ c.f.}$$

Volume Provided 838 c.f.

838 c.f. > 736 c.f. O.K.

72 hour Drawdown:

$$T = \frac{V}{k*A}$$

T= 72 hours
V= 838 CF
A= 199 SF

k= 0.0585 ft/hr
0.7014 in/hr max. permeability

Sediment Forebay
Soils: Merrimac Fine Sandy Loam
Hydrologic Group: A
Required Sizing Volume
0.1 inches of runoff x impervious area

Impervious area: 0.203 acres
8,833 s.f.

Sediment Forebay				
Elev. (FT)	Change Elev. (FT)	Area (SF)	Inc. Volume (CF)	
214	0	74		
215	1	127	100.5	***101***

Required Water Quality Volume

$$V = 8{,}833 \text{ s.f.} \times \frac{0.1}{12} = \mathbf{74} \text{ c.f.}$$

Volume Provided 101 c.f.

101 c.f. > 74 c.f. O.K.

TSS Removal Calculations

INSTRUCTIONS:

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Non-automated: Mar. 4, 2008

Location: 111 Summer St, Acton; Subcatchment P-1

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Hydroworks HG4i	91%	1.00	0.91	0.09
Infiltration Basin w/ Sediment Forebay	80%	0.09	0.07	0.02

Total TSS Removal = 98%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: SM-4051A
Prepared By: WJH
Date: 5/11/16

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

Water Balance Calculations

Water Balance Calculations

SM-4051A

Project: 111 Summer Street | By: WJH | Date: 5/11/2016

Location: Acton MA | Checked: | Date:

Pre-Development Recharge

CN=	45.5					
From Figure 1, infiltration=	19.8	in/year				
Drainage Area=	95,832	s.f.				
Recharge=	95,832	x	19.8	/12 in/ft	158,123	c.f./year

Pre-Development Sewage Flow

111 Summer Street:

Total Design Flow=	440	gpd					
440	gpd x	365	days/year x	0.134	s.f./gal =	21,468	c.f./year
					Average(50%)=	10,734	c.f./year

Pre-Development Total

158,123	+	10,734	=	168,857	c.f./year

Post-Development Recharge

CN=	47.2					
From Figure 1, infiltration=	19.6	in/year				
Drainage area=	95,832	s.f.				
Recharge=	95,832	x	19.6	/12 in/ft	156,526	c.f./year

Post-Development Sewage Flow

Total Design Flow=	990	gpd					
990	gpd x	365	days/year x	0.134	s.f./gal =	48,302	c.f./year
					Average(50%)=	24,151	c.f./year

Post-Development Subsurface Infiltration

From calculations (sheet 2): 39,548 cf

Post-Development Total

156,526	+	63,700	=	220,225	c.f./year

Post-Development	Vs.	Pre-Development
220,225	>	168,857
c.f./year		c.f./year

Overall CN Calculations

SM-4051A

Project: 111 Summer Street | By: WJH | Date: 5/11/2016

Location: Acton MA | Checked: | Date:

Total CN

Pre				**Post**			
Subcatchment	Area	CN	Sum		Area	CN	Sum
1	1.68	47.8	80.30	1	1.10	53.6	58.96
2	0.17	47.7	8.11	2	0.17	47.7	8.11
3	0.35	33.2	11.62	3	0.25	34.8	8.70
				4	0.61	34.6	21.11
				Drywell 1	0.07	98.0	6.86
Total	2.20		100.03	Total	2.20		103.74
	Overall CN:	45.5			Overall CN:	47.2	

Infiltration of Roof Runoff:

Area of roof being infiltrated for 100 year storm:	3,000	sf
Runoff from roofs (CN=98):	30.5	in/year
Total runoff from roofs being infiltrated:	7,625	cf/year

Infiltration BMP'S:

Designed for 100 year storm (6.4 in rain)

	Subcatchment Impervious Area (sf)	CN	% of Annual Runoff Infiltrated	From Graph 1 Annual Runoff (in/year)	Annual Infiltration (cf)
Subcatchment 1:	12,560	98.0	100	30.5	31,923

Annual Infiltration of Stormwater (including Roofs): 39,548 cf/year

Pipe Sizing Calculations

DESIGN STORM: 100 YEAR
DATE: 5/11/2016
DONE BY: WJH
FILE: 4051A RATIONAL METHOD.xlsx

STORM SEWER DESIGN

(ADS N-12)"n"= 0.010 4"-10"
(ADS N-12)"n"= 0.012 12"-36"
(ADS N-12)"n"= 0.013 42"-60"
(Cast Iron)"n"= 0.011

PROJECT: SM-4051A
LOCATION: Acton, MA

FROM	TO	LENGTH (FT)	TRIBUTARY AREA INCR. (ACRES)	TRIBUTARY AREA TOTAL (ACRES)	TIME OF FLOW TO UPPER END (MIN)	TIME OF FLOW TIME IN SECTION (MIN)	RUNOFF COEFF. "C"	RAINFALL INTENSITY (IN/HR)	"Q" TOTAL RUNOFF (CFS)	SLOPE of PIPE (FT/FT)	DIAM (IN)	MANN. "n"	CAPACITY FULL (CFS)	VELOCITY FULL (FPS)	DESIGN FLOW VELOCITY (FPS)	DESIGN FLOW VELOCITY HEAD (FT)	DESIGN FLOW DEPTH OF FLOW (FT)	DESIGN FLOW TOTAL ENERGY HEAD (FT)	MANHOLE INVERT DROP (FT)	FALL IN PIPE (FT)	DRAIN INV. ELEVATION UPPER END	DRAIN INV. ELEVATION LOWER END
CB-1	DMH-1	10	1.10	1.10	10	0.03	0.38	7.6	3.17	0.010	12	0.012	3.85	4.91	5.48	0.47	0.69	1.16	0.10	0.10	214.40	214.30
DMH-1	Infiltration	12	0.00	1.10	10	0.04	0.38	7.6	3.17	0.010	12	0.012	3.85	4.91	5.48	0.47	0.69	1.16	0.12	0.12	214.20	214.08

Closed Drainage System **SM-4051A**

Project: 111 Summer Street By WJH Date 5/11/2016

Location: Acton, MA Checked _____ Date _____

Rational Method

Q = peak flow rate, (cfs) i = rainfall intensity inches/hour

C = runoff coefficient, A = area (ac)
C = 0.90 impervious
C = 0.20 landscaped / grass
C = 0.15 woods

CB-1

Surface Cover	A (ac)	C	Product A x C
impervious	0.29	0.9	0.260
lands/grass	0.72	0.2	0.143
woods	0.10	0.15	0.015
sum =	1.10	sum =	0.42

C = **0.38** = total product / total area

DMH-1

Surface Cover	A (ac)	C	Product A x C
DI-1	1.10	0.38	0.417
sum =	1.10	sum =	0.42

C = **0.38** = total product / total area

Inlet Grate Capacity Calculations

Inlet Grate Capacity Calculations

Job: SM-4051A
Project: 111 Summer Street

Calculated by: WJH
Date: 5/11/2016

CAMPBELL FOUNDRY COMPANY 2816 inlet grate pass area A = 294 sq. in.
2.04 sq. ft.

Q = (C*A* SQRT(2*g*h))*f

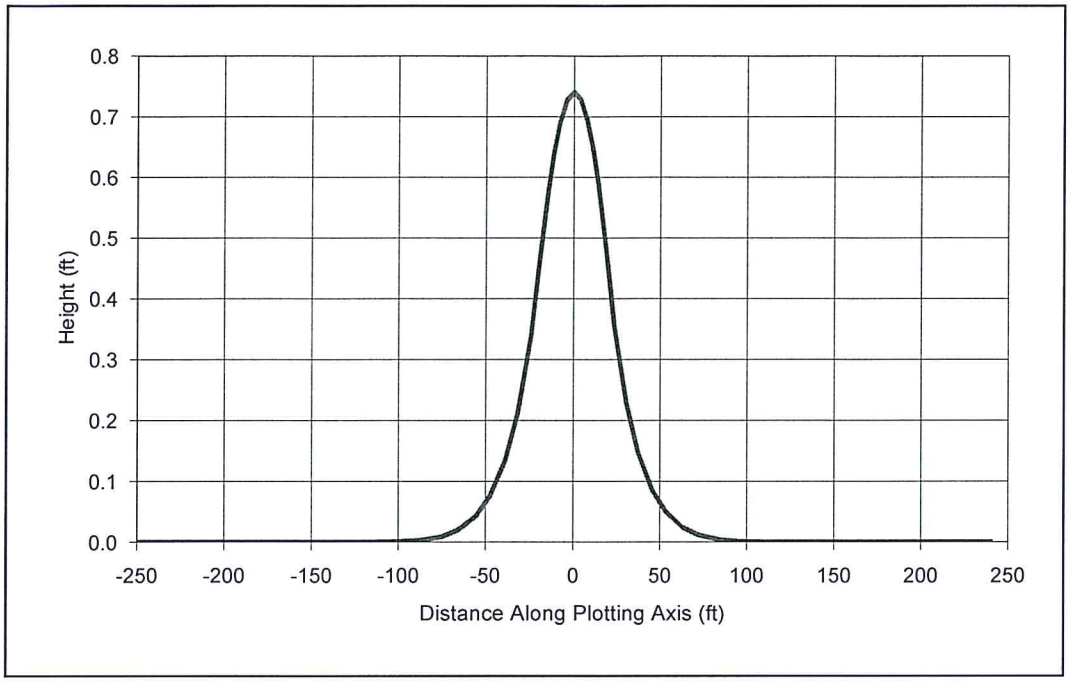
C = orifice coefficient
C = 0.6 square edges
A = inlet area
A = 2.04 sq. ft.
g = gravitational constant
g = 32.2 ft/sec^2
h = head on inlet
h = 0.5 ft. (low points)
0.17 ft. (on slope)
f = clogging factor
f = 0.66

Single Grate
Q (MAX)= 4.59 cfs (LP) low points
Q (MAX)= 2.68 cfs (OS) on slope
Double Grate
Q (MAX)= 9.18 cfs (LP) low points
Q (MAX)= 5.35 cfs (OS) on slope

	TRIBUTARY AREA (AC)	TIME OF CONC.	100 YR INTENSITY	C	Q=CiA Q100	POSITION	Q (MAX)	single grate	double grate
CB-1	1.10	10	7.6	0.33	2.76	LP	4.59	yes	

Groundwater Mounding Analysis

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)



COMPANY: Stamski and McNary, Inc.

PROJECT: 111 Summer Street, Acton

ANALYST: William Hall

DATE: 1/7/2016 TIME: 3:01:54 PM

INPUT PARAMETERS

Application rate: 0.816 c.ft/day/sq. ft
Duration of application: 1 days
Fillable porosity: 0.35
Hydraulic conductivity: 39 ft/day
Initial saturated thickness: 5 ft
Length of application area: 37.6 ft
Width of application area: 23.98 ft
Constant head boundary used at: 240 ft
Plotting axis from Y-Axis: 329 degrees
Edge of recharge area:
positive X: -12 ft
positive Y: 20 ft
Total volume applied: 735.7448 c.ft

MODEL RESULTS

X (ft)	Y (ft)	Plot Axis (ft)	Mound Height (ft)
128.8	-214.3	-250	0
108.3	-180.2	-210	0
87.8	-146.1	-170	0
67.3	-112.1	-131	0
51.2	-85.3	-99	0
38.8	-64.5	-75	0.01
28.6	-47.5	-55	0.04
19.9	-33.2	-39	0.14
12.5	-20.8	-24	0.34
7.5	-12.4	-14	0.58
4.1	-6.8	-8	0.69
0	0	0	0.74
-3.9	6.5	8	0.7
-7.2	11.9	14	0.59
-12	19.9	23	0.36
-19.1	31.9	37	0.15
-27.4	45.6	53	0.05
-37.2	61.9	72	0.01
-49.2	81.9	95	0
-64.6	107.6	125	0
-84.3	140.3	164	0
-104	173	202	0
-123.6	205.7	240	0

Soil Evaluation

Commonwealth of Massachusetts
City/Town of Acton

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

A. Facility Information

Owner Name: Paulette Barros

Street Address: 111 Summer Street

Map/Lot #: F1-87

City: Acton

State: MA

Zip Code: 01720

B. Site Information

1. (Check one) ☑ New Construction ☐ Upgrade ☐ Repair

2. Published Soil Survey Available? ☐ Yes ☐ No If yes: Year Published ____ Publication Scale ____ Soil Map Unit ____

   Soil Name ____ Soil Limitations ____

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes: Year Published ____ Publication Scale ____ Map Unit ____

   Geologic Material ____ Landform ____

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☑ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☑ No

   Within the 500-year flood boundary? ☐ Yes ☑ No Within a velocity zone? ☐ Yes ☑ No

5. Wetland Area: National Wetland Inventory Map — Map Unit: On-Site Delineation; Name: ____

   Wetlands Conservancy Program Map — Map Unit: ____; Name: ____

6. Current Water Resource Conditions (USGS): Oct. 2013 (Month/Year) Range: ☐ Above Normal ☑ Normal ☐ Below Normal

7. Other references reviewed: ____

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program
Site Address or Map/Lot Number

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

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole A: 10/8/13 (Date) 8:30 (Time) CLEAR (Weather)

1. Deep Observation Hole Logs

   Deep Hole Number _____ Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) FEW (Surface Stones) 0-3% (Slope (%))

   SMALL TREES (Vegetation) _____ (Landform) ON-SLOPE (Position on landscape (attach sheet))

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area 100'+ feet

   Property Line 710' feet Drinking Water Well — feet Other _____

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 ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water In Hole —

   Estimated Depth to High Groundwater: 710' (Inches) _____ (elevation)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program
111 SUMMER ST
Site Address or Map/Lot Number
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep Observation Hole A: Deep Hole Number: TP-1

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			
0-6"	A	10YR 3/3	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
6"-18"	B	10YR 5/6	—	—	—	LOAMY SAND	—	—	MASSIVE	FIRM IN PLACE	
18"-10'	C	2.5Y 4/4	—	—	—	SAND	—	20%	SG	LOOSE	

Additional Notes _____

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

Site Address or Map/Lot Number

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

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole A: 10/8/13 (Date) 9:00 (Time) CLEAR (Weather)

1. Deep Observation Hole Logs

   Deep Hole Number _____ Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: WOODLAND (e.g. woodland, agricultural field, vacant lot, etc.) FEW (Surface Stones) 0-3% (Slope (%))

   SMALL TREES (Vegetation) _____ (Landform) DW-SLOPE (Position on landscape (attach sheet))

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >10' feet

   Property Line >10' feet Drinking Water Well — feet Other _____

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 ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: >10' inches _____ elevation

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

111 SUMMER

Site Address or Map/Lot Number

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

Deep Observation Hole A: Deep Hole Number: TP-2

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			
0-6"	A	10YR 3/3	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
6"-20"	B	10YR 5/6	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
20"-40"	C	2.5Y 6/4	—	—	—	SAND	—	10%	SG	LOOSE	

Additional Notes OTS. FILE

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

Site Address or Map/Lot Number

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

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole A: 9:20 (Date) 10/8/13 (Time) CLEAR (Weather)

1. Deep Observation Hole Logs

   Deep Hole Number _____ Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: YARD (e.g. woodland, agricultural field, vacant lot, etc.) NONE (Surface Stones) 0-5% (Slope (%))

   GRASS (Vegetation) _____ (Landform) ON-SLOPE (Position on landscape (attach sheet))

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area >100' feet

   Property Line >10' feet Drinking Water Well — feet Other _____

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 ☐

   If Yes: Depth Weeping from Pit 10'6" Depth Standing Water In Hole 10'6"

   Estimated Depth to High Groundwater: 9' (inches) _____ (elevation)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

111 SUMMER ST (Site Address or Map/Lot Number)

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

Deep Observation Hole A: Deep Hole Number: TP-3

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			
0-6"	A	10YR 3/3	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
6"-22"	B	10YR 5/6	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
22"-11'	C	2.5Y 6/4	9'	HIGH	5%	SAND	—	15%	SG	LOOSE	

Additional Notes OBS. PIPE

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

Site Address or Map/Lot Number

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

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole A: 10/8/13 (Date) 9:45 (Time) CLEAR (Weather)

1. Deep Observation Hole Logs

   Deep Hole Number _____ Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: YARD (e.g. woodland, agricultural field, vacant lot, etc.) NONE (Surface Stones) 0-3% (Slope (%))

   GRASS (Vegetation) _____ (Landform) SUMMIT (Position on landscape (attach sheet))

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Possible Wet Area 710' feet

   Property Line 710' feet Drinking Water Well — feet Other _____

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 ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water In Hole —

   Estimated Depth to High Groundwater: 710' (Inches) _____ (elevation)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program

1/1 SUMMER ST (Site Address or Map/Lot Number)

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

Deep Observation Hole A: Deep Hole Number: TP-4

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			
0-6"	A	10YR 2/3	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
6"-24"	B	10YR 4/6	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
24"-10'	C	2.5 6/4	—	—	—	SAND	5%	5%	SG	LOOSE	

Additional Notes _____

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program
Site Address or Map/Lot Number

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

C. On-Site Review

(minimum of two holes required at every proposed disposal area)

Deep Observation Hole A: 10/8/13 (Date) 10:15 (Time) CLEAR (Weather)

1. Deep Observation Hole Logs

   Deep Hole Number _____ Ground Elevation at Surface of Hole _____

   Location (Identify on Plan) _____

2. Land Use: YARD (e.g. woodland, agricultural field, vacant lot, etc.) NONE (Surface Stones) 0-3% (Slope (%))

   GRASS (Vegetation) _____ (Landform) SUMMIT (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 _____

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 ☒

   If Yes: Depth Weeping from Pit — Depth Standing Water in Hole —

   Estimated Depth to High Groundwater: 110' (Inches) _____ (elevation)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wastewater Permitting Program
111 SUMMER ST (Site Address or Map/Lot Number)

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

Deep Observation Hole A: Deep Hole Number: TP-5

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			
0-6"	A	10YR 3/3	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
6"-18"	B	10YR 4/6	—	—	—	LOAMY SAND	—	—	MASSIVE	FRIABLE	
18"-110"	C	2.5Y 6/4	—	—	—	SAND	5%	5%	SG	LOOSE	

Additional Notes _____

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.

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

111 SUMMER ST

Street Address or Lot #

ALTON | MA | 01770

City/Town | State | Zip Code

Contact Person (if different from Owner) | Telephone Number

B. Test Results

	Date	Time	Date	Time
	10/8/13	9:00	10/8/13	9:00
Observation Hole #	PT-A		PT-B	
Depth of Perc	48"		48"	
Start Pre-Soak	UTS		UTS	
End Pre-Soak				
Time at 12"				
Time at 9"				
Time at 6"				
Time (9"-6")				
Rate (Min./Inch)	<2 MPI		<2 MPI	

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

Test Performed By: STAMSKI AND McNARY, INC (BENJAMIN EWING)

Witnessed By: ALTON BOARD OF HEALTH (EVAN CARLONI)

Comments:

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.

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

Street Address or Lot #: 111 SUMMER ST

City/Town: ACTON | State: MA | Zip Code: 01720

Contact Person (if different from Owner) | Telephone Number

B. Test Results

	Date: 10/8/13 Time: 10:00	Date: 10/8/13 Time: 10:00
Observation Hole #	PT-C	PT-D
Depth of Perc	48"	50"
Start Pre-Soak	10:00	10:05
End Pre-Soak	UTS	UTS
Time at 12"		
Time at 9"		
Time at 6"		
Time (9"-6")		
Rate (Min./Inch)	<2 MI	<2 MI
	Test Passed: ☒ Test Failed: ☐	Test Passed: ☒ Test Failed: ☐

Test Performed By: STAMSKI AND McNARY, INC (BENJAMIN EWING)

Witnessed By: ACTON BOARD OF HEALTH (EVAN CARLONI)

Comments:

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	A. _____ inches	B. _____ inches
☐ Depth weeping from side of observation hole	A. _____ inches	B. _____ inches
☒ Depth to soil redoximorphic features (mottles)	A. SEE ATTACHED inches	B. SOIL LOGS inches
☐ Groundwater adjustment (USGS methodology)	A. _____ inches	B. _____ inches

2. _____ Index Well Number _____ Reading Date _____ Index Well Level

_____ Adjustment Factor _____ Adjusted Groundwater Level

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: SEE ATTACHED inches Lower boundary: SOIL LOGS inches

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.

Signature of Soil Evaluator	Date: 10/8/13
Typed or Printed Name of Soil Evaluator / License #: BENJAMIN RUING SE 2985	Date of Soil Evaluator Exam: 10/24/05
Name of Board of Health Witness: RYAN CARLOSI	Board of Health: ACTON

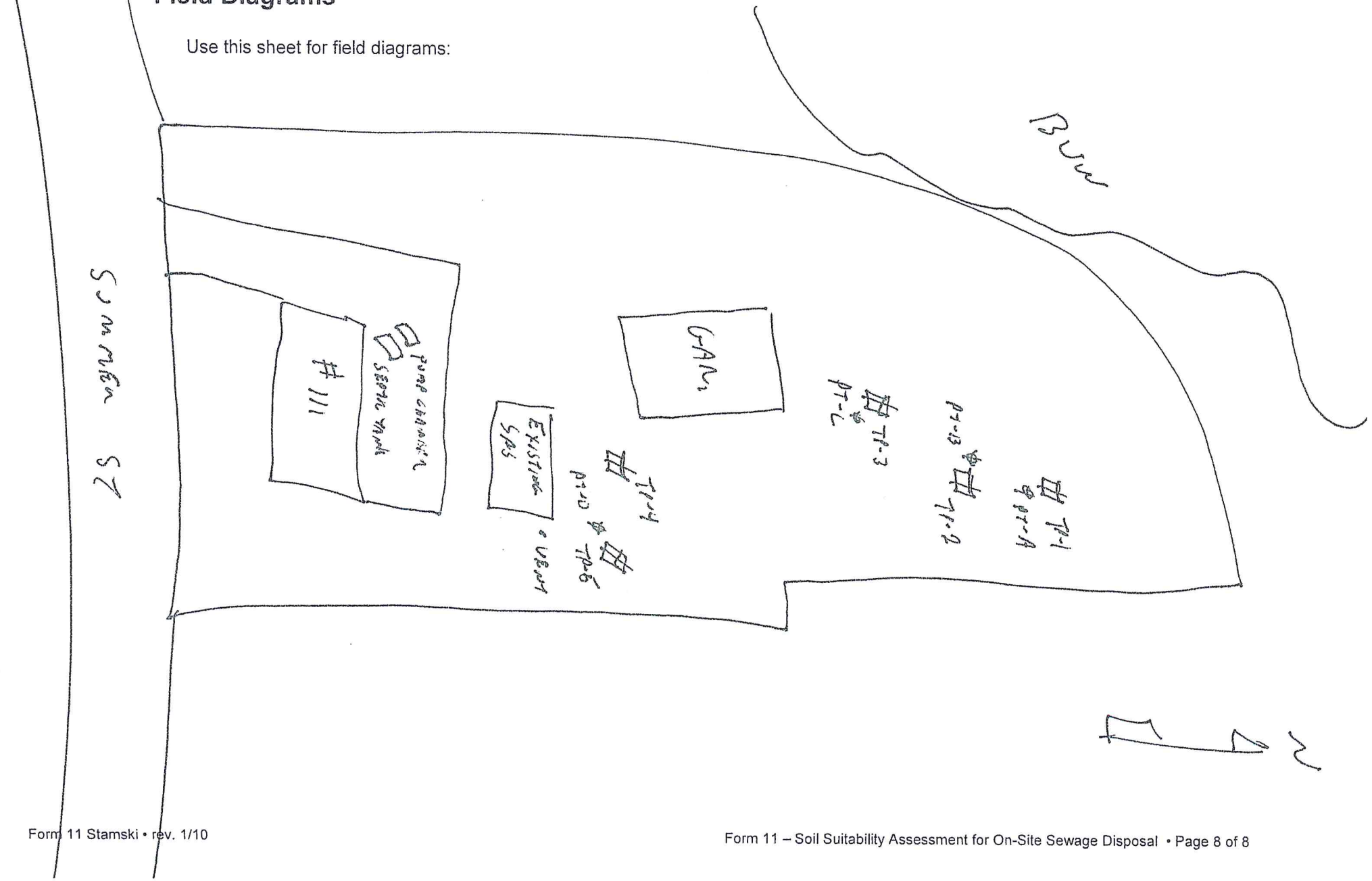
Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of

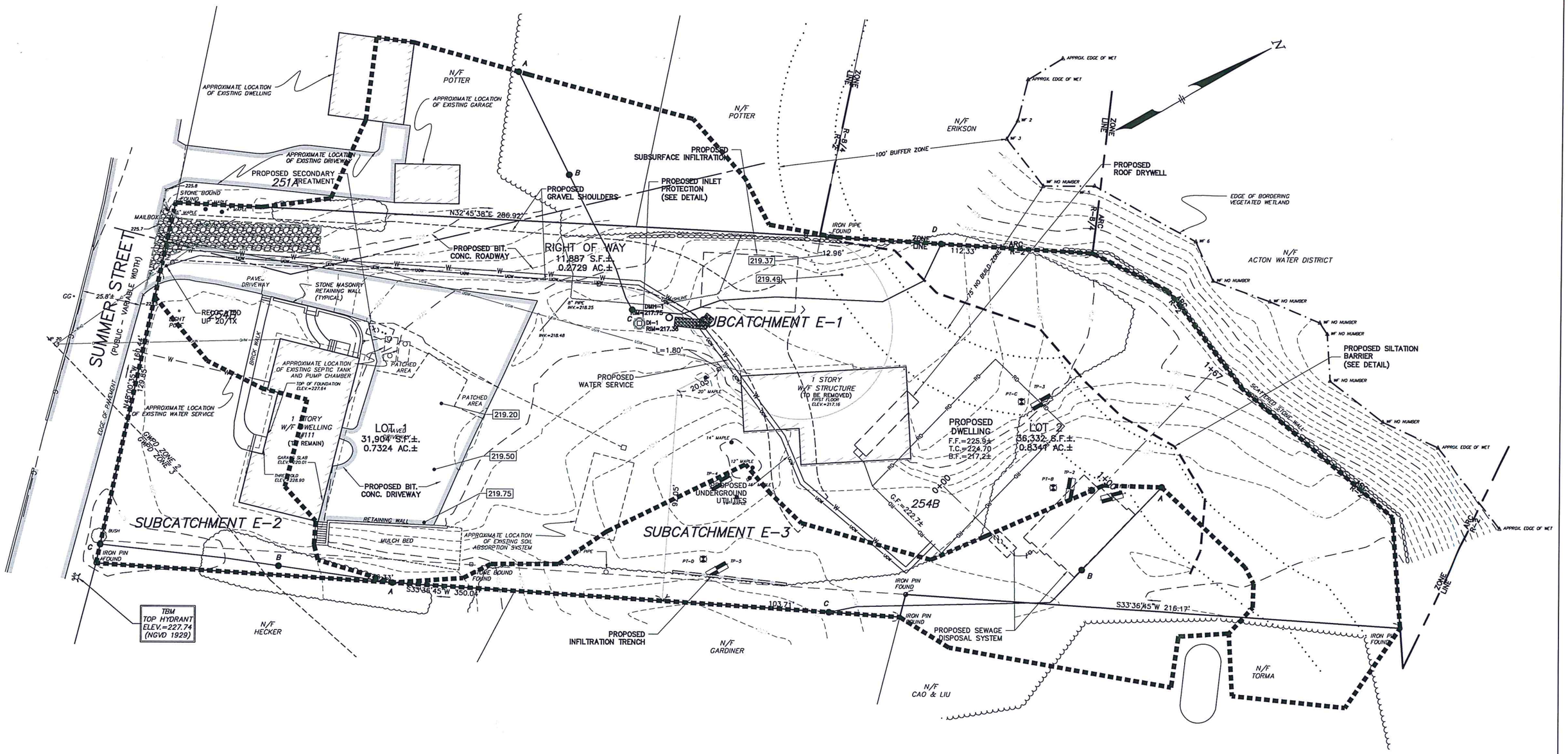
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:



Drainage Maps



DEFINITIVE PLAN

FOR

SUMMER PLACE

IN

ACTON, MA

PRE-DEVELOPMENT DRAINAGE MAP

FOR: PAULETTE BARROS

SCALE: 1"=20'

DATE: MAY 11, 2016

STAMSKI AND McNARY, INC.

1000 MAIN STREET ACTON, MASS.

ENGINEERING - PLANNING - SURVEYING

0 10 20 40 80

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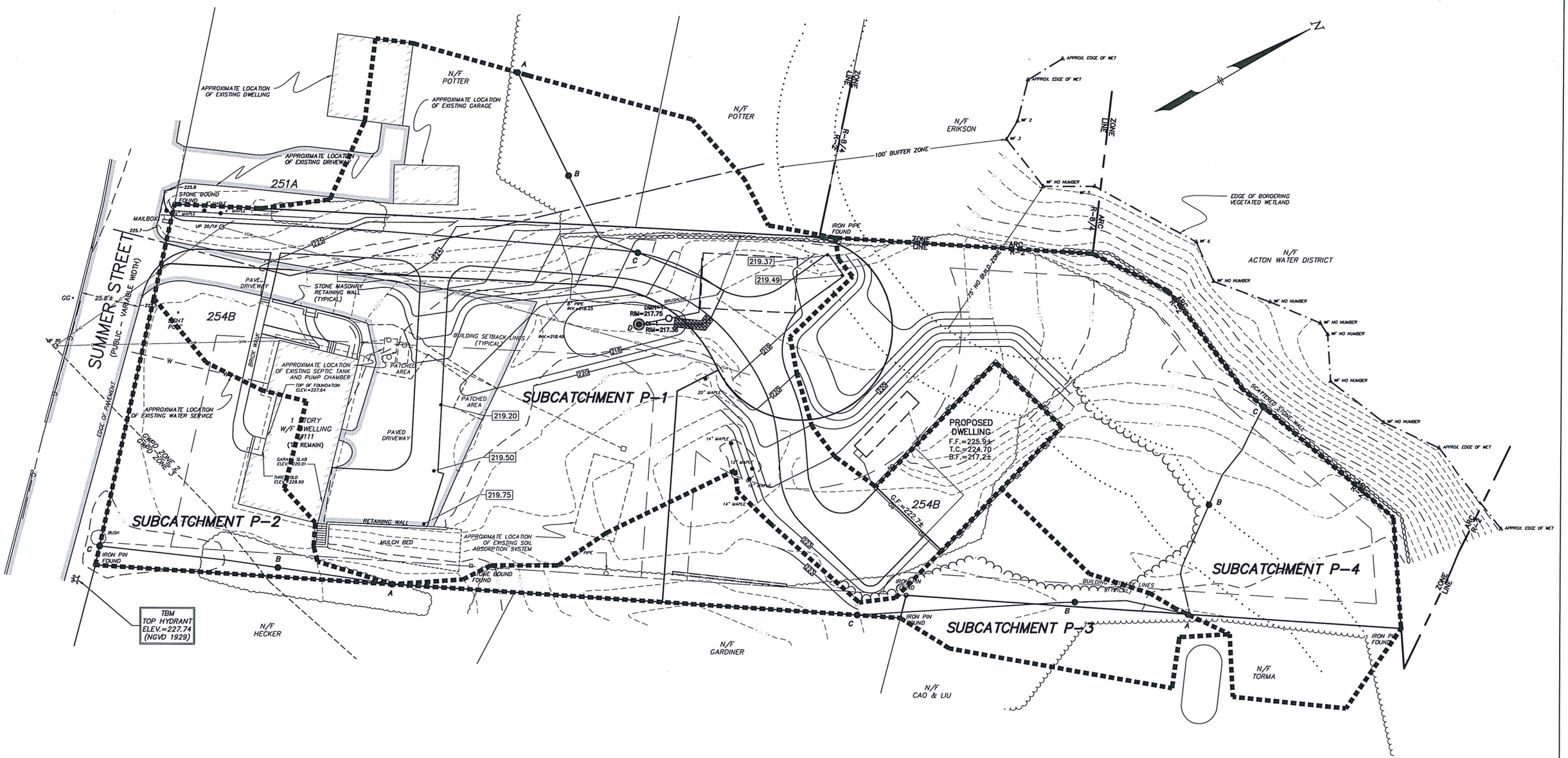

DEFINITIVE PLAN
FOR
SUMMER PLACE
IN
ACTON, MA

POST-DEVELOPMENT DRAINAGE MAP

FOR: PAULETTE BARROS
SCALE: 1"=20'
DATE: MAY 11, 2016

STAMSKI AND McNARY, INC.
1000 MAIN STREET ACTON, MASS.
ENGINEERING - PLANNING - SURVEYING

0 10 20 40 80

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