GRADY CONSULTING, L.L.C.
Civil Engineers ♦ Land Surveyors ♦ Landscape Architects

December 29, 2023

Duxbury Board of Health
878 Tremont Street
Duxbury, MA 02332

RE: Keene's Mill Village Septic System Designs – North Street and Keene Street
Applicant: Old Myrtle Street LLC – John Baldwin

Dear Board Members:

On behalf of the applicant, we hereby submit these applications for the installation of two septic systems at the above referenced property. This project is a 40B housing development with 16 total proposed single-family dwellings. These units have been divided into two areas; South Hamlet (units 1-14) and North Hamlet (units 1-2). Each area, its proposed flow, and its proposed septic system are as follows:

South Hamlet (Units 1-14)

Proposed Flow: 14 units x 3 bedrooms/unit x 110 GPD/bedroom = 4,620 GPD

Proposed System: 1-10,000-gallon septic tank (to serve as the first compartment), 1-5,000-gallon septic tank (second compartment), 1-5,000-gallon pump chamber, 1-2,000-gallon PC wet well, 1-splitter box, 2-distribution boxes and 2-102' long x 28.5 wide Presby Environmental Wastewater Treatment System with 18-100' rows of pipe.

North Hamlet (Units 1-2)

Proposed Flow: 2 units x 3 bedrooms/unit x 110 GPD/bedroom = 660 GPD

Proposed System: 1-2,500-gallon 2-compartment septic tank, 1-1,500-gallon pump chamber, 1-distribution box, and 1-57' long x 13.5' wide Presby Environmental Wastewater Treatment System with 8-55' rows of pipe.

This application is submitted in accordance with Duxbury Board of Health Supplementary Results & Regulations Section 1.15 Construction In Fill.

Enclosed please find the following:

1. 3 sets of the Site Plan;
2. Copy of Soil Logs;
3. Application for Disposal System Construction Permit;
4. Check for $460 Application fee ($230 per system);
5. I/A Approval Letters
6. Drainage Calculations
7. Architectural Drawings

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

Sincerely,

GRADY CONSULTING, L.L.C.

Richard Grady

Richard Grady, P.E.
Principal Engineer

Cc: John Baldwin
PO Box 1071
Duxbury, MA 02331

J:\2016\16-221\40B\BOH\BOH letter.doc

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE #230 -

BOARD OF HEALTH

TOWN OF DUXBURY

APPLICATION FOR DISPOSAL SYSTEM CONSTRUCTION PERMIT

Application for a Permit to Construct (✓) Repair ( ) Upgrade ( ) Abandon ( ) - ☑ Complete System ☐ Individual Components

NORTH HAMLET - KEENE & NORTH STREET Location	ZERO NORTH STREET NOMINEE TRUST Owner's Name
009-010-001 Map/Parcel #	PO BOX 1071 DUXBURY MA 02331 Address
Lot #	781-789-8480 Telephone #
Installer's Name	GRADY CONSULTING LLC Designer's Name
Address	71 EVERGREEN ST KINGSTON MA 02364 Address
Telephone #	781-585-2300 Telephone #

Type of Building: 2-SINGLE FAMILY RESIDENCES Lot Size 98,824 Sq. feet

Dwelling — No. of Bedrooms 6 Garbage Grinder ( )

Other — Type of Building _____ No. of persons _____ Showers ( ), Cafeteria ( )

Other fixtures _____

Design Flow (min. required) 660 gpd Calculated design flow 660 gpd Design flow provided 660 gpd

Plan: Date 5-16-2023 Number of sheets 14 Revision Date 12-29-2023

Title A SITE PLAN CONDITIONAL

Description of Soil(s) LOAMY SAND

Soil Evaluator Form No. _____ Name of Soil Evaluator PAUL BROGNA Date of Evaluation 10-30-2013

DESCRIPTION OF REPAIRS OR ALTERATIONS 2,500 GALLON 2-COMPARTMENT SEPTIC TANK, 1,500 GALLON PUMP CHAMBER, D-BOX, 57' x 13.5' PRESBY ENVIRO-SEPTIC BED

The undersigned agrees to install the above described Individual Sewage Disposal System in accordance with the provisions of TITLE 5 and further agrees not to place the system in operation until a Certificate of Compliance has been issued by the Board of Health.

Signed _____ Date _____

Inspections _____

COMMONWEALTH OF MASSACHUSETTS
RICHARD J. GRADY
CIVIL
No. 38072
PROFESSIONAL ENGINEER

FORM 1 - APPLICATION FOR DSCP **DEP APPROVED FORM 5/96**

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE _____

DUXBURY BOARD OF HEALTH

CERTIFICATE OF COMPLIANCE

Description of Work: ☐ **Individual Component(s)** ☑ **Complete System**

The undersigned hereby certify that the Sewage Disposal System; Constructed (✓), Repaired ( ), Upgraded ( ), Abandoned ( )

by: _____

at NORTH HAMLET - KEENE & NORTH STREET

has been installed in accordance with the provisions of 310 CMR 15.00 (Title 5) and the approved design plans/as-built plans relating to application No. _____ dated _____. Approved Design Flow _____(gpd)

Installer _____

Designer: _____ Inspector _____ Date _____

The issuance of this certificate shall not be construed as a guarantee that the system will function as designed.

FORM 3 - CERTIFICATE OF COMPLIANCE **DEP APPROVED FORM 5/96**

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE _____

DUXBURY BOARD OF HEALTH

DISPOSAL SYSTEM CONSTRUCTION PERMIT

Permission is hereby granted to Construct (✓) Repair ( ) Upgrade ( ) Abandon ( ) an individual sewage disposal system at NORTH HAMLET - KEENE & NORTH STREET as described

in the application for Disposal System Construction Permit No. _____, dated _____.

Provided: Construction shall be completed within three years of the date of this permit. All local conditions must be met.

Date _____ Board of Health _____

FORM 2 - DSCP **DEP APPROVED FORM 5/96**

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE #230-

BOARD OF HEALTH

TOWN OF DUXBURY

APPLICATION FOR DISPOSAL SYSTEM CONSTRUCTION PERMIT

Application for a Permit to Construct (✓) Repair ( ) Upgrade ( ) Abandon ( ) - ☑ Complete System ☐ Individual Components

SOUTH HARLEY - KEENE & NORTH STREET Location	ZERO NORTH STREET NOMINEE TRUST Owner's Name
023-010-003 Map/Parcel #	PO BOX 1071 DUXBURY MA 02331 Address
Lot #	781-789-8480 Telephone #
Installer's Name	GRADY CONSULTING LLC Designer's Name
Address	71 EVERGREEN ST KINGSTON MA 02364 Address
Telephone #	781-585-2300 Telephone #

Type of Building: 14 - SINGLE FAMILY RESIDENCES Lot Size 479,585 Sq. feet

Dwelling — No. of Bedrooms 14 x 3 = 42 Garbage Grinder ( )

Other — Type of Building _____ No. of persons _____ Showers ( ), Cafeteria ( )

Other fixtures _____

Design Flow (min. required) 4,620 gpd Calculated design flow 4,620 gpd Design flow provided 4,620 gpd

Plan: Date 5-16-2023 Number of sheets 14 Revision Date 12-29-2023

Title 5 CONDITIONAL SITE PLAN

Description of Soil(s) LOAMY SAND

Soil Evaluator Form No. _____ Name of Soil Evaluator _____ Date of Evaluation _____

DESCRIPTION OF REPAIRS OR ALTERATIONS _____

The undersigned agrees to install the above described Individual Sewage Disposal System in accordance with the provisions of TITLE 5 and further agrees not to place the system in operation until a Certificate of Compliance has been issued by the Board of Health.

Signed _____ Date _____

COMMONWEALTH OF MASSACHUSETTS RICHARD J. GRADY CIVIL No. 38072 PROFESSIONAL ENGINEER

Inspections _____

FORM 1 - APPLICATION FOR DSCP **DEP APPROVED FORM 5/96**

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE _____

_____ BOARD OF HEALTH

CERTIFICATE OF COMPLIANCE

Description of Work: ☐ **Individual Component(s)** ☐ **Complete System**

The undersigned hereby certify that the Sewage Disposal System; Constructed ( ), Repaired ( ), Upgraded ( ), Abandoned ( )

by: _____

at _____

has been installed in accordance with the provisions of 310 CMR 15.00 (Title 5) and the approved design plans/as-built plans relating to application No. _____ dated _____. Approved Design Flow _____(gpd)

Installer _____

Designer: _____ Inspector _____ Date _____

The issuance of this certificate shall not be construed as a guarantee that the system will function as designed.

FORM 3 - CERTIFICATE OF COMPLIANCE **DEP APPROVED FORM 5/96**

No. _____ THE COMMONWEALTH OF MASSACHUSETTS FEE _____

_____ BOARD OF HEALTH

DISPOSAL SYSTEM CONSTRUCTION PERMIT

Permission is hereby granted to Construct ( ) Repair ( ) Upgrade ( ) Abandon ( ) an individual sewage disposal system at _____ as described

in the application for Disposal System Construction Permit No. _____, dated _____.

Provided: Construction shall be completed within three years of the date of this permit. All local conditions must be met.

Date _____ Board of Health _____

FORM 2 - DSCP **DEP APPROVED FORM 5/96**

Commonwealth of Massachusetts

DUXBURY, Massachusetts

Soil Suitability Assessment for On-site Sewage Disposal

Performed by: Richard Grady, P.E. Date: 9-14-22
GRADY CONSULTING, L.L.C.
71 Evergreen Street, Suite 1
Kingston, MA 02364
Phone: (781) 585-2300 Fax: (781) 585-2378

Witnessed by: PAT BRENNAN

Location Address or Lot #
0 NORTH STREET
009-010-001 + 023-010-003

*Owner's Name
*Address &
*Telephone #
ZERO NORTH STREET TRUST
PO BOX 1071
DUXBURY, MA 02331
781-789-8480

New Construction ✓ Repair ___

Office Review

Published Soil Survey Available: No ___ Yes ✓
Year Published: 2010 Publication Scale: 1:12000 Soil Map Unit: 420B, 431B
Drainage Class: WELL DRAINED Soil Limitations: NONE

Surficial Geology Report Available: No ✓ Yes ___
Year Published: _____ Publication Scale: _____
Geologic Material (Map Unit): _____
Landform: _____

Flood Insurance Rate Map:
Above 500 year flood boundary: No ___ Yes ✓
Within 500 year flood boundary No ✓ Yes ___
Within 100 year flood boundary No ✓ Yes ___

Wetland Area:
National Wetland Inventory Map (map unit): N/A - DELINEATED ON SITE
Wetlands Conservancy Program Map (map unit): _____

Current Water Resource Conditions (USGS): **Month:** *SEPTEMBER
Range: **Above Normal** ___ **Normal** ✓ **Below Normal** ___

Other References Reviewed: *USGS NATIONAL WATER DASHBORD - DUX 79R

Depth of Naturally Occurring Pervious Material

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

If not, what is the depth of naturally occurring pervious material?

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 on the attached soil evaluation form, are accurate and in accordance with CMR 15.100 through 15.107.

Signature: _____ Date: 9-14-22

TITLE 5 ON-SITE REVIEW

Deep Hole # D-1 **Date** 9-14-22 **Time** 9:00 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 2-3 **Surface Stones** FEW
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area 60± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 200+ ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	Ap	SANDY LOAM	10YR3/2		
12"-32"	BW	LOAMY SAND	10YR5/4		
32"-72"	C1	COBBLY LOAMY SAND	2.5Y6/3		LOOSE STRUCTURELESS
72"-120"	C2	LOAMY SAND	2.5Y6/3	7.5Y5/8 @96"	FRIABLE STRUCTURELESS

SOIL SAMPLE TAKEN FROM C2 FOR SIEVE ANALYSIS

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** 10B **Weeping from Pit Face** 10B"
Estimated Seasonal High Groundwater 96"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 96 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well # _____ **Reading Date** _____ **Index well level** _____ **Adj.factor** _____ **Adj.Groundwater level** ____

PERCOLATION TEST **Date** _____ **Time** _____

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed** _____ **Site Failed** _____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-2 **Date** 9-14-22 **Time** 9:15 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 2-4 **Surface Stones** FEW
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area 60± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 200+ ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-15"	AP	SANDY LOAM	10YR 3/2		
15"-32"	BW	LOAMY SAND	10YR 5/4		
32"-108"	C	COBBLY LOAMY SAND	2.5Y 6/3	7.5Y 5/6 @ 58"	LOOSE STRUCTURELESS

SOIL SAMPLE TAKEN FROM C FOR SIEVE ANALYSIS

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** 96" **Weeping from Pit Face** 96"
Estimated Seasonal High Groundwater 58"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 58 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**_____
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 22-2B **Date** 9-14-22 **Time** 10:30 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan)
Land Use RESIDENTIAL **Slope(%)** 2-4 **Surface Stones** FEW
Vegetation GRASS FIELD **Landform**

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well 200± ft.
Drainageway N/A ft. Propertyline 35± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-13"	Ap	SANDY LOAM	10YR 3/2		
13"-29"	Bw	LOAMY SAND	10YR 5/6		
29"-120"	C	LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 58"	FRIABLE STRUCTURELESS

Parent Material (geologic) **Depth to Bedrock**
Depth to Groundwater: **Standing Water in Hole:** — **Weeping from Pit Face** —
Estimated Seasonal High Groundwater 58

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 58 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 9-14-22 **Time**

Observation Hole #	22-2B			**Time at 9"**	11:17		
Depth of Perc	36"-56"			**Time at 6"**	11:39		
Start Presoak	10:49			**Time (9"-6")**	22		
End Presoak	11:04		✓	**Rate Min/Inch**	8 MIN/IN		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 22.29 **Date** 9-14-22 **Time** 12:00 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 2-4 **Surface Stones** FEW
Vegetation GRASS FIELD **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well 200+ ft.
Drainageway N/A ft. Propertyline 35 ± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-16"	Ap	SANDY LOAM	10YR 3/2		
16"-27"	Bw	LOAMY SAND	10YR 5/6		
27-49"	C1	LOAMY SAND	2.5Y 6/3		FRIABLE STRUCTURELESS
49"-110"	C2	VERY COBBLY LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 52"	FRIABLE STRUCTURELESS

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater 52

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 52 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**_____
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 22-30 **Date** 9-14-22 **Time** 12:15 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 2-4 **Surface Stones** FEW
Vegetation GRASS FIELD **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well 200+ ft.
Drainageway N/A ft. Propertyline 35± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-15"	Ap	SANDY LOAM	10YR 3/2		
15"-38"	Bw	LOAMY SAND	10YR 5/6		
38"-85"	C1	LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 64"	FRIABLE STRUCTURELESS
85"-120"	C2	COBBLY LOAMY SAND	2.5Y 4/3		FRABLE STRUCTURELESS

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** 118 **Weeping from Pit Face** 118
Estimated Seasonal High Groundwater 64

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 64 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well # _____ **Reading Date** _____ **Index well level** _____ **Adj.factor** _____ **Adj.Groundwater level** ____

PERCOLATION TEST **Date** _____ **Time** _____

Observation Hole #	22-30		**Time at 9"**	12:19		
Depth of Perc	38"-56"		**Time at 6"**	12:27		
Start Presoak	11:58		**Time (9"-6")**	8		
End Presoak	12:13		**Rate Min/Inch**	3		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed** _____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-3 **Date** 9-14-22 **Time** 1:00 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan)
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** FEW
Vegetation WOODS **Landform**

Distances from: Open Water Body N/A ft. Possible Wet Area 60± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 40± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-8"	Ap	SANDY LOAM	10YR 3/2		
8"-33"	Bw	LOAMY SAND	10YR 5/6		
33"-60"	C	COBBLY LOAMY SAND	2.5Y 4/3	7.5Y 5/8	LOOSE ≥50% STRUCTURELESS
D=5'-0" (REFUSAL)					

Parent Material (geologic) **Depth to Bedrock** 60"
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater 50"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 50 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** **Time**

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-4 **Date** 9-14-22 **Time** 1:15 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan)
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** FEW
Vegetation WOODS **Landform**

Distances from: Open Water Body N/A ft. Possible Wet Area 60± ft. Drinking Water Well >150 ft:
Drainageway N/A ft. Propertyline 40± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	Ap	SANDY LOAM	10YR 3/2		
12"-28"	Bw	LOAMY SAND	10YR 5/6		
28"-36	C	LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 36"	FRIABLE STRUCTURELESS
D=3'-0" (REFUSAL)					

Parent Material (geologic) **Depth to Bedrock** 36
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater 36"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 36 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** **Time**

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRAMY **Certification #**
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-5 **Date** 9-14-22 **Time** 1:30 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 2-3 **Surface Stones** FEW
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area 100± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 50± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	AP	SANDY LOAM	10YR 3/2		
12"-32"	BW	LOAMY SAND	10YR 5/6		
32"-72"	C	COBBLY LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 42"	FRIABLE STRUCTURELESS

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** 70" **Weeping from Pit Face** 66
Estimated Seasonal High Groundwater 42

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles: 42 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #		**Time at 9"**		
Depth of Perc		**Time at 6"**		
Start Presoak		**Time (9"-6")**		
End Presoak		**Rate Min/Inch**		

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**_____
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-6 **Date** 9-14-22 **Time** 1:45 **Weather** 70° PARTLY SUNNY
Location(identify on Site Plan)
Land Use RESIDENTIAL **Slope(%)** 3-6 **Surface Stones** FEW
Vegetation WOODS **Landform**

Distances from: Open Water Body N/A ft. Possible Wet Area 100 ± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 150± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-10"	AP	SANDY LOAM	10YR 3/2		
10"-24"	BW	LOAMY SAND	10YR 5/6		
24"-36"	C	COBBLY LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 36"	FRIABLE STRUCTURELESS
D = 2' → 3' (REFUSAL)					

Parent Material (geologic) **Depth to Bedrock**
Depth to Groundwater: **Standing Water in Hole:** — **Weeping from Pit Face** —
Estimated Seasonal High Groundwater 36"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 36 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** **Time**

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**
Witnessed By PAT BRENNAN
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-7 **Date** 9-14-22 **Time** 2:00 **Weather** 70°
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** _____ **Surface Stones** _____
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area 150± ft. Drinking Water Well >150 ft.
Drainageway N/A ft. Propertyline 10± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-13"	Ap	SANDY LOAM	10YR 3/2		
13'-40	BW	LOAMY SAND	10YR 5/6		
40"-77"	C	LOAMY SAND	2.5Y 6/3	7.5Y 5/8 @ 40"	

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** 68 **Weeping from Pit Face** _____
Estimated Seasonal High Groundwater 40"

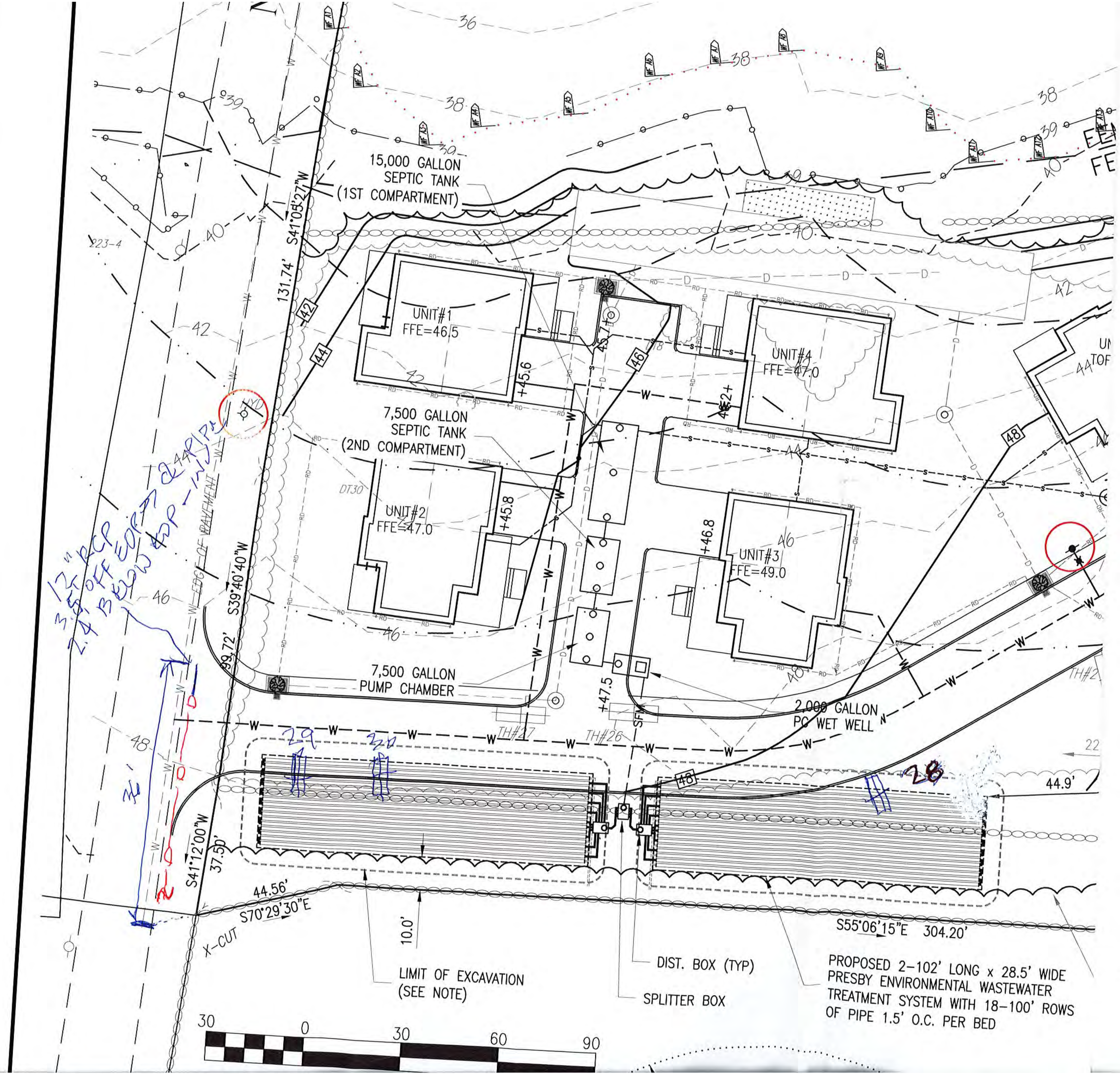
DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ✓ Depth to soil mottles: 40" inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well # _____ **Reading Date** _____ **Index well level** _____ **Adj.factor** _____ **Adj.Groundwater level** ____

PERCOLATION TEST **Date** _____ **Time** _____

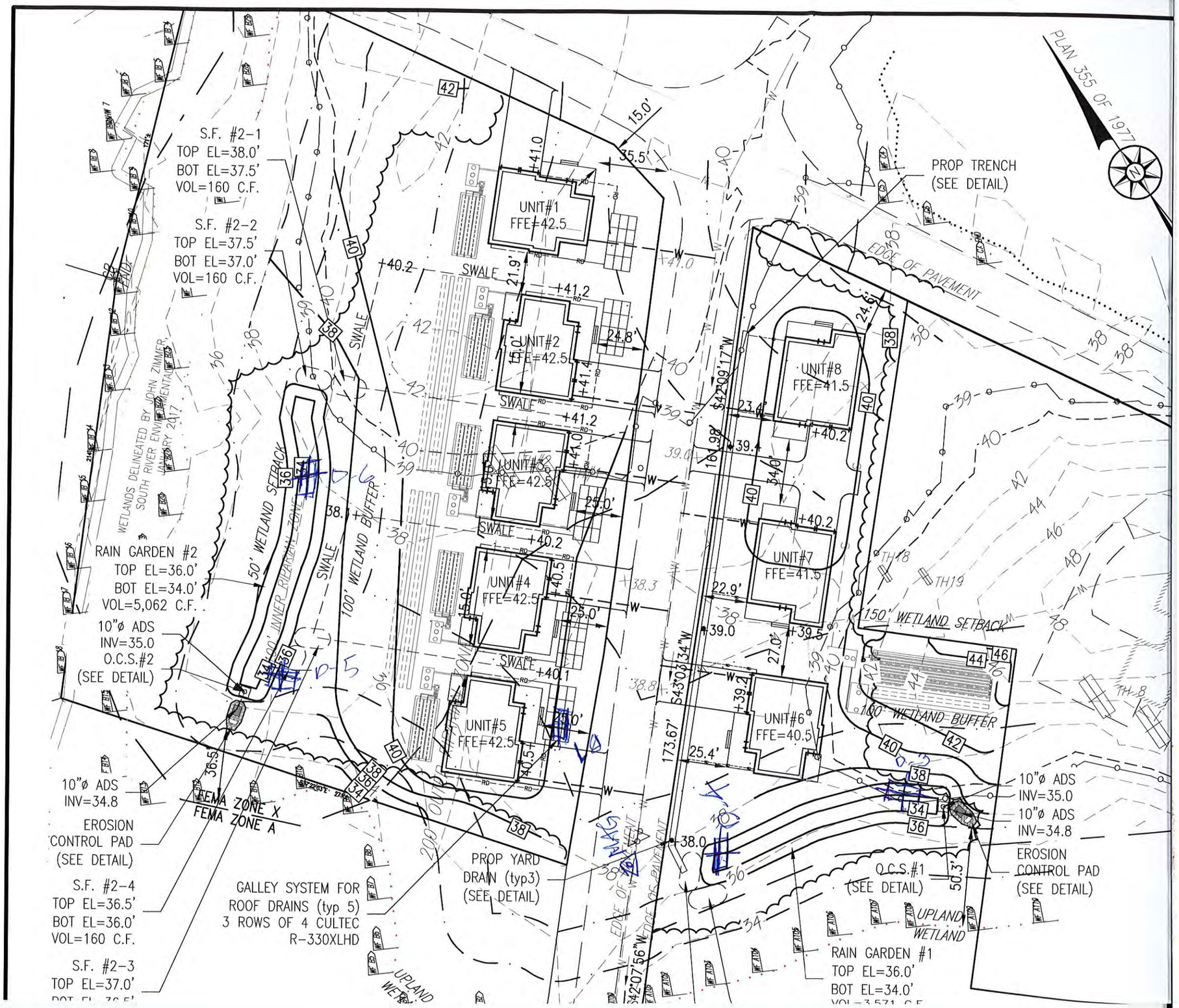
Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed** _____ **Site Failed** _____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By PAT BRENNAN
Comments:


15,000 GALLON SEPTIC TANK (1ST COMPARTMENT)
7,500 GALLON SEPTIC TANK (2ND COMPARTMENT)
7,500 GALLON PUMP CHAMBER
2,000 GALLON PC WET WELL
UNIT#1 FFE=46.5
UNIT#2 FFE=47.0
UNIT#3 FFE=49.0
UNIT#4 FFE=47.0
S41°05'27"W
131.74'
S39°40'40"W
39.72'
S41°12'00"W
37.50'
44.56'
S70°29'30"E
X-CUT
EDGE OF PAVEMENT
44.9'
S55°06'15"E 304.20'
10.0'
LIMIT OF EXCAVATION (SEE NOTE)
DIST. BOX (TYP)
SPLITTER BOX
PROPOSED 2-102' LONG x 28.5' WIDE PRESBY ENVIRONMENTAL WASTEWATER TREATMENT SYSTEM WITH 18-100' ROWS OF PIPE 1.5' O.C. PER BED
TH#27
TH#26
30 0 30 60 90

*SEE SHEETS 11-12 FOR SEPTIC DETAILS

WETLAND
UPLAND
FEMA ZONE A
FEMA ZONE X
50' WETLAND BUFFER
PROP RET. WALL BOT EL=41.0
PROP FENCE
150' WETLAND BUFFER
TREELINE
UNIT#5
TOF=50.5
UNIT#6
TOF=52.5
SLAB=44.5
+43.8
UNIT#7
TOF=53.5
SLAB=45.5
+44.5
UNIT#8
TOF=55.0
SLAB=47.0
+46.0
UNIT#9
TOF=56.0
SLAB=48.0
UNIT#10
TOF=57.0
SLAB=49.0
UNIT#11
FFE=55.5
+54.5
UNIT#12
FFE=57.5
+55.8
UNIT#14
FFE=59.5
+57.0
UNIT#15
FFE=58.0
+56.8
UNIT#16
FFE=58.0
+56.4
UNIT#17
FFE=57.5
+55.5
UNIT#18
FFE=56.0
+54.3
UNIT#19
FFE=55.0
+52.5
UNIT#20
FFE=52.0
+51.0
+50.0
+52.0
+53.0
+54.5
+55.5
+56.5
+51.5
+52.5
+53.8
+55.0
+55.8
TH#23
TH#22
TH#21
TH#20
TH#19
TH#18
TH#17
TH#16
TH#15
TH#14
TH#13
TH#12
TH#11
TH#10
22.7'


S.F. #2-1
TOP EL=38.0'
BOT EL=37.5'
VOL=160 C.F.
S.F. #2-2
TOP EL=37.5'
BOT EL=37.0'
VOL=160 C.F.
WETLANDS DELINEATED BY JOHN ZIMMER, SOUTH RIVER ENVIRONMENTAL JANUARY 2017
50' WETLAND INNER RIPARIAN ZONE
100' WETLAND BUFFER
150' WETLAND SETBACK
SWALE
RAIN GARDEN #2
TOP EL=36.0'
BOT EL=34.0'
VOL=5,062 C.F.
10"ø ADS
INV=35.0
O.C.S.#2
(SEE DETAIL)
10"ø ADS
INV=34.8
EROSION
CONTROL PAD
(SEE DETAIL)
S.F. #2-4
TOP EL=36.5'
BOT EL=36.0'
VOL=160 C.F.
S.F. #2-3
TOP EL=37.0'
FEMA ZONE X
FEMA ZONE A
GALLEY SYSTEM FOR
ROOF DRAINS (typ 5)
3 ROWS OF 4 CULTEC
R-330XLHD
PROP YARD
DRAIN (typ3)
(SEE DETAIL)
UNIT#1
FFE=42.5
UNIT#2
FFE=42.5
UNIT#3
FFE=42.5
UNIT#4
FFE=42.5
UNIT#5
FFE=42.5
UNIT#6
FFE=40.5
UNIT#7
FFE=41.5
UNIT#8
FFE=41.5
PROP TRENCH
(SEE DETAIL)
EDGE OF PAVEMENT
PLAN 355 OF 1977
TH18
TH19
TH-8
O.C.S.#1
(SEE DETAIL)
RAIN GARDEN #1
TOP EL=36.0'
BOT EL=34.0'
UPLAND
WETLAND
S42°09'17"W
S43°03'34"W
S42°07'56"W

Commonwealth of Massachusetts

DUXBURY, Massachusetts

Soil Suitability Assessment for On-site Sewage Disposal

Performed by: Richard Grady, P.E.
GRADY CONSULTING, L.L.C.
71 Evergreen Street, Suite 1
Kingston, MA 02364
Phone: (781) 585-2300 Fax: (781) 585-2378

Date: 10-4-16

Witnessed by: _____

Location Address or Lot #: NORTH STREET
ASSESSORS 023-010-001

*Owner's Name
*Address &
*Telephone #: JOHN BALDWIN
P.O. BOX 1071
DUXBURY, MA 02331
781-789-8480

New Construction ✓ Repair ___

Office Review

Published Soil Survey Available: No ✓ Yes___
Year Published: _____ Publication Scale: _____ Soil Map Unit: _____
Drainage Class: _____ Soil Limitations: _____

Surficial Geology Report Available: No ✓ Yes ___
Year Published: _____ Publication Scale: _____
Geologic Material (Map Unit): _____
Landform: _____

Flood Insurance Rate Map:
Above 500 year flood boundary: **No** ___ **Yes** ✓
Within 500 year flood boundary **No** ✓ **Yes** ___
Within 100 year flood boundary **No** ✓ **Yes** ___

Wetland Area:
National Wetland Inventory Map (map unit): N/A - DELINEATED ON SITE
Wetlands Conservancy Program Map (map unit): _____

Current Water Resource Conditions (USGS): **Month:** *SEPTEMBER
Range: **Above Normal** _____ **Normal** _____ **Below Normal** ✓

Other References Reviewed: *USGS REAL-TIME DATA - DUX #79

Depth of Naturally Occurring Pervious Material

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

If not, what is the depth of naturally occurring pervious material?

Certification

I certify that on May 7, 1996 (date) I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017.

Signature: _____ Date: 10-4-16

TITLE 5 ON-SITE REVIEW

Deep Hole # 20 **Date** 10-4-16 **Time** _____ **Weather** 60° CLOUDY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** NO
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well >150 ft.

Drainageway N/A ft. Propertyline 60± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	A	SANDY LOAM	10YR 3/2		
12"-28"	B	LOAMY SAND	10YR 5/6		
28"-114"	C	LOAMY SAND	2.5Y 6/3		
D=9'-6" (NO WATER)					
(REFUSAL)					

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater NONE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:**_____ **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** _____ **Time** _____

Observation Hole #	20		**Time at 9"**	10:56		
Depth of Perc	28"-46"		**Time at 6"**	11:00		
Start Presoak	10:38		**Time (9"-6")**	4		
End Presoak	10:53		**Rate Min/Inch**	< 2 MIN/IN		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GROSS **Certification #** _____
Witnessed By TRACY MAYO
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 21 **Date** 10.4.16 **Time** _____ **Weather** 60° CLOUDY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** NO
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well >150 ft.

Drainageway N/A ft. Propertyline 60± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	A	SANDY LOAM	10YR 3/2		
12"-28"	B	LOAMY SAND	10YR 5/6		
28"-114"	C	LOAMY SAND	2.5Y 6/3		FRIABLE
D=9'-6" (REFUSAL)					

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater NONE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles:_____ inches
___ Depth to weeping from side of observation hole:____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST

Date _____ **Time** _____

Observation Hole #	21		**Time at 9"**	12:13		
Depth of Perc	28"-46"		**Time at 6"**	12:19		
Start Presoak	11:52		**Time (9"-6")**	6		
End Presoak	12:07		**Rate Min/Inch**	2 MIN/IN		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By TRACY MAYO
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 22 **Date** 10-4-16 **Time** _____ **Weather** 60° CLOUDY
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** NO
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well >150 ft.

Drainageway N/A ft. Propertyline 75± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-8"	A	SANDY LOAM	10YR 3/2		
8"-24"	B	LOAMY SAND	10YR 5/6		
24"-108"	C	LOAMY SAND	2.5Y 6/3		FRIABLE
D=9'-0" (REFUSAL)					

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater NONE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:**_____ **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** _____ **Time** _____

Observation Hole #	22			**Time at 9"**	1:19		
Depth of Perc	24"-42"			**Time at 6"**	1:35		
Start Presoak	12:52			**Time (9"-6")**	16		
End Presoak	1:07			**Rate Min/Inch**	6 MIN/IN		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By TRACY MAYO
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 23 **Date** 10-4-16 **Time** _____ **Weather** CLOUDY 60°
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 3-5 **Surface Stones** NO
Vegetation WOODS **Landform** _____

Distances from: Open Water Body N/A ft. Possible Wet Area >100 ft. Drinking Water Well >150 ft.

Drainageway N/A ft. Propertyline 75± ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-8"	A	SANDY LOAMY	10YR 3/2		
8"-24"	B	LOAMY SAND	10YR 5/6		
24"-108"	C	LOAMY SAND	2.5Y 6/3		FRIABLE
D=9'-0" NO WATER					
(REFUSAL)					

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater NONE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles:_____ inches
___ Depth to weeping from side of observation hole:____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** _____ **Time** _____

Observation Hole #	23		**Time at 9"**	1:35		
Depth of Perc	24"-42"		**Time at 6"**	1:39		
Start Presoak	1:16		**Time (9"-6")**	4		
End Presoak	1:31		**Rate Min/Inch**	< 2 MIN/IN		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #** _____
Witnessed By TRACY MAYO
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 24 **Date** 10-4-16 **Time** _____ **Weather** 60° cloudy
Location(identify on Site Plan) _____
Land Use RESIDENTIAL **Slope(%)** 3.5 **Surface Stones** NO
Vegetation WOODS **Landform** _____

Distances from: Open Water Body_____ ft. Possible Wet Area_____ ft. Drinking Water Well_____ft.

Drainageway_____ft. Propertyline_____ft Other_____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-15"	A	SL	10YR 3/2		
15"-30"	B	LS	10YR 5/6		
30"-54"	C	LS	2.5Y 6/3		
D=54" (REFUSAL)					

Parent Material (geologic) _____ **Depth to Bedrock** _____
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater NONE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:**_____ **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #			**Time at 9"**		
Depth of Perc			**Time at 6"**		
Start Presoak			**Time (9"-6")**		
End Presoak			**Rate Min/Inch**		

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**_____
Witnessed By TRACY MAYO
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 25 **Date** 10.4.16 **Time**_____ **Weather**_____
Location(identify on Site Plan)_____
Land Use_____ **Slope(%)**_____ **Surface Stones**_____
Vegetation_____ **Landform**_____

Distances from: Open Water Body_____ ft. Possible Wet Area_____ ft. Drinking Water Well_____ft.

Drainageway_____ft. Propertyline_____ft Other_____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	A	SANDY LOAM	10YR 3/2		
12"-30"	B	LOAMY SAND	10YR 4/4		
30"-68"	C	LOAMY SAND	2.5Y 6/3		FRACTURED ROCK

D = 68" (REFUSAL)

Parent Material (geologic)_____ **Depth to Bedrock**_____
Depth to Groundwater: **Standing Water in Hole:**_____ **Weeping from Pit Face**_____
Estimated Seasonal High Groundwater _____

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:**_____ **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #			**Time at 9"**			
Depth of Perc			**Time at 6"**			
Start Presoak			**Time (9"-6")**			
End Presoak			**Rate Min/Inch**			

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By RICK GRADY **Certification #**_____
Witnessed By TRACY MAYO
Comments:

LOT 2

307,759± S.F. OR 7.065± ACRES UPLAND
213,477± S.F. OR 4.901± ACRES WETLAND
521,236± S.F. OR 11.966± ACRES TOTAL

223,711± S.F. OR 5.136± ACRES UPLAND
OUTSIDE WPOD ABOVE ELEVATION 40 NGVD'29

APPROXIMATE TEST HOLE LOCATIONS
1"=50'±

(PUBLIC - VARIABLE WIDTH) STREET

WETLANDS PROTECTION OVERLAY DISTRICT
ELEVATION 40 NGVD'29 = ELEVATION 39.19 NAVD'88

FEMA ZONE A
FEMA ZONE X

WETLAND
UPLAND

150' WELL SETBACK

50' WETLAND BUFFER

100' WETLAND BUFFER

150' WETLAND BUFFER

LOT 1

40,136± S.F. OR 0.921±
ACRES UPLAND

S42°30'43"W 47.70'
S42°17'33"W 134.64'
S41°05'27"W 68.95'
S55°06'15"E 118.04'
S38°22'02"E 96.82'
S34°53'45"W 159.36'
S70°29'30"E 44.56'
S55°06'15"E 304.20'
N32°55'00"E 12.51'
S55°06'15"E 35.76'
S55°06'42"E 200.04'
S52°58'15"E 200.00'
N41°51'40"E 154.54'
N44°39'27"E 62.01'
N40°16'53"E 85.40'

ASSESSORS PARCEL 009-006-010
#399 NORTH STREET
N/F NEALE F. and DEBORAH D. FRANCESH

ASSESSORS PARCEL 023-006-005
#120 MYRTLE STREET
N/F KIM DONALD and MARY A. ABPLANALP
DEED BOOK 20921 PAGE 329

ASSESSORS PARCEL 023-006-006
#100 MYRTLE STREET
N/F RICHARD M. and KRISTINE L. BRENNEN
DEED BOOK 4282 PAGE 56

ASSESSORS PARCEL 023-007
N/F RICHARD

IRRIGATION

CBdh

Commonwealth of Massachusetts

Duxbury, Massachusetts

Soil Suitability Assessment for On-site Sewage Disposal

Performed by: Robert Carlezon
GRADY CONSULTING, L.L.C.
71 Evergreen Street, Suite 1
Kingston, MA 02364
Phone: (781) 585-2300 Fax: (781) 585-2378

Date: 9/28/2016

Witnessed by: Tracy Mayo

Location Address or Lot # North Street

*Owner's Name
*Address &
*Telephone #

John S. Baldwin
P.O. Box [redacted] 1071
Duxbury, MA 02331
781-789-8480

New Construction ✓ Repair ___ Title V Inspection ___

Office Review

Published Soil Survey Available: No ✓ Yes ___
Year Published: _____ Publication Scale: _____ Soil Map Unit: _____
Drainage Class: _____ Soil Limitations: _____

Surficial Geology Report Available: No ✓ **Yes** ___
Year Published: _____ Publication Scale: _____
Geologic Material (Map Unit): _____
Landform: _____

Flood Insurance Rate Map:
Above 500 year flood boundary: **No** ✓ **Yes** ___
Within 500 year flood boundary **No** ___ **Yes** ✓
Within 100 year flood boundary **No** ___ **Yes** ✓

Wetland Area:
National Wetland Inventory Map (map unit): N/A on Site Delineation
Wetlands Conservancy Program Map (map unit): _____

Current Water Resource Conditions (USGS): **Month:** * September
Range: **Above Normal** ___ **Normal** ___ **Below Normal** ✓

Other References Reviewed: * USGS Real Time Data - Dux #79

Depth of Naturally Occurring Pervious Material

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

If not, what is the depth of naturally occurring pervious material?

Certification

I certify that on July 1, 2015 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017.

Signature: Robert Carlezon Date: 9/28/2016

TITLE 5 ON-SITE REVIEW

Deep Hole # 16 **Date** 9/28/2016 **Time** 9:30 **Weather** Cloudy 62°
Location(identify on Site Plan)
Land Use Vacant **Slope(%)** 0-3 **Surface Stones** NONE
Vegetation Woodland, mainly pine **Landform**

Distances from: Open Water Body >200± ft. Possible Wet Area 175± ft. Drinking Water Well >200± ft.
Drainageway 50± ft. Propertyline 30± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-12"	A	Sandy Loam	10YR 4/2		
12"-40"	B	Loamy Sand	10YR 5/4		
40"-126"	C	Fine to Med Sand	2.5YR 5/8 (Mottles) 5Y 6/2	84"	granular 5% gravel, few cobbles

Depth 10'-6"

Mottling @ 7'-0"

Refusal @ 10'-6" (ledge)

Parent Material (geologic) **Depth to Bedrock** 126"
Depth to Groundwater: **Standing Water in Hole:** 124" **Weeping from Pit Face** 96"
Estimated Seasonal High Groundwater 84"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:** 84" **inches**
___ **Depth to weeping from side of observation hole:** ____**inches** ____ **Groundwater adjustment** ____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 9/28/2016 **Time** 10:00

Observation Hole #	16		**Time at 9"**	10:15	
Depth of Perc	46"-64"		**Time at 6"**	10:18	
Start Presoak	9:58		**Time (9"-6")**	3 min	
End Presoak	10:13		**Rate Min/Inch**	<2 min/in	

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**_____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 17 **Date** 9/28/16 **Time** 10:45 **Weather** Cloudy 62°
Location(identify on Site Plan)
Land Use Vacant (Residential) **Slope(%)** 0-3 **Surface Stones** NONE
Vegetation Woodland (mainly pine) **Landform**

Distances from: Open Water Body >200 ft. Possible Wet Area >150 ft. Drinking Water Well >200 ft.
Drainageway >50 ft. Propertyline 50± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-8"	A	Sandy Loam	10YR 4/2		
8"-36"	B	Loamy Sand	10YR 5/4		
36"-132"	C	Fine to Med Sand	2.5YR 5/8 (Mottles) 5Y 6/2	70"	granular 5% gravel, few cobbles

Depth = 11'-0"

Mottles @ 70" → 5'-10"

Parent Material (geologic) **Depth to Bedrock** N/A
Depth to Groundwater: **Standing Water in Hole:** 130" **Weeping from Pit Face** 98"
Estimated Seasonal High Groundwater 70"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:** 70" **inches**
___ **Depth to weeping from side of observation hole:** ____**inches** ____ **Groundwater adjustment** ____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 9/28/2016 **Time** 10:50

Observation Hole #	17		**Time at 9"**	11:18	
Depth of Perc	44-62		**Time at 6"**	11:23	
Start Presoak	10:57		**Time (9"-6")**	5 min	
End Presoak	11:12		**Rate Min/Inch**	<2 min/in	

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 18 **Date** 9/28/16 **Time** 11:40 **Weather** Cloudy 63°
Location(identify on Site Plan)
Land Use Vacant (Residential) **Slope(%)** 0-3 **Surface Stones** NONE
Vegetation Woodland (mainly pine) **Landform**

Distances from: Open Water Body >200 ft. Possible Wet Area 175± ft. Drinking Water Well >200 ft.
Drainageway 750± ft. Propertyline 100± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-8"	A	Sandy Loam	10YR 4/2		
8"-30"	B	Loamy Sand	10YR 5/4 2.5YR 5/8 (Mottles)		granular
30"-126"	C	Fine to Med Sand	5Y 6/2	50"	5% gravel, few cobbles

Depth = 10' - 6"

Mottles @ 50" → 4' - 2"

Parent Material (geologic) **Depth to Bedrock** N/A
Depth to Groundwater: **Standing Water in Hole:** 124" **Weeping from Pit Face** 116"
Estimated Seasonal High Groundwater 50"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles: 50" inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 9/28/16 **Time** 11:45 AM

Observation Hole #	18		**Time at 9"**	12:12	
Depth of Perc	36"-54"		**Time at 6"**	12:27	
Start Presoak	11:46		**Time (9"-6")**	15 min	
End Presoak	12:01		**Rate Min/Inch**	5 min/in	

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 19 **Date** 9/28/16 **Time** 12:40 **Weather** Cloudy 60°
Location(identify on Site Plan)
Land Use Vacant (Residential) **Slope(%)** 0-3 **Surface Stones** NONE
Vegetation Woodland (mainly pine trees) **Landform**

Distances from: Open Water Body >200 ft. Possible Wet Area > 175 ft. Drinking Water Well > 200± ft.
Drainageway >50 ft. Propertyline 75± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-8"	A	Sandy Loam	10YR 4/2		
8"-30"	B	Loamy Sand	10YR 5/4		
30"-132"	C	Fine to Med Sand	2.5YR 5/8 (Mottles) 5Y 6/2	50"	Granular 5% gravel, few cobbles

Depth = 11'-0"

Mottling @ 4'-2"

Parent Material (geologic) Outwash **Depth to Bedrock** N/A
Depth to Groundwater: **Standing Water in Hole:** 130" **Weeping from Pit Face** 120"
Estimated Seasonal High Groundwater 50"

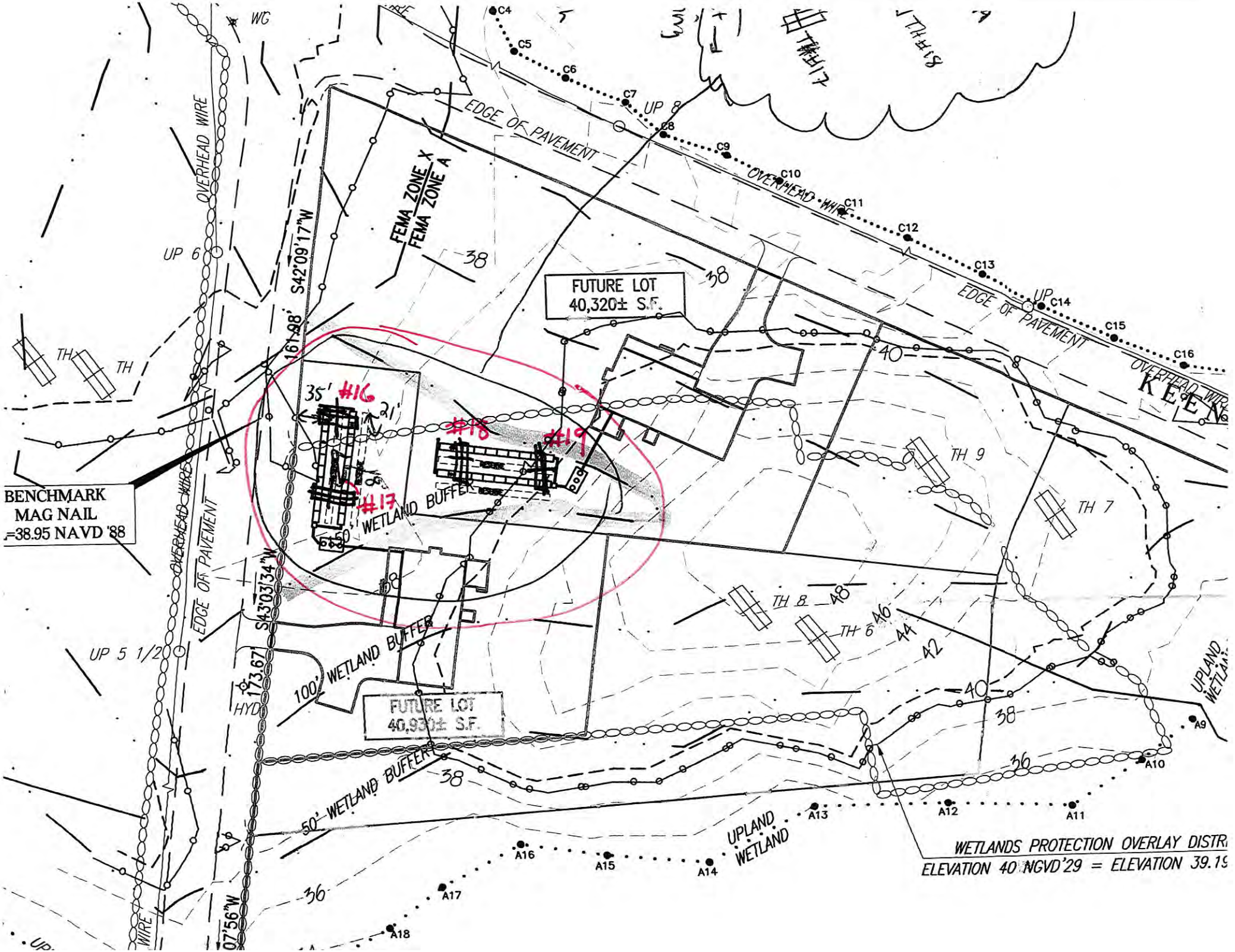
DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles: 50" inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 9/28/16 **Time** 12:30

Observation Hole #	19		**Time at 9"**	12:54		
Depth of Perc	38"-56"		**Time at 6"**	1:05		
Start Presoak	12:30		**Time (9"-6")**	11 min		
End Presoak	12:45		**Rate Min/Inch**	4 min/in		

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:


BENCHMARK
MAG NAIL
=38.95 NAVD '88
FUTURE LOT
40,320± S.F.
FUTURE LOT
40,930± S.F.
#16
#17
#18
#19
35'
21'
50' WETLAND BUFFER
100' WETLAND BUFFER
50' WETLAND BUFFER
EDGE OF PAVEMENT
OVERHEAD WIRE
FEMA ZONE X
FEMA ZONE A
UPLAND WETLAND
S42°09'17"W
161.98'
S43°03'34"W
173.67'
S07°56"W
UP 6
UP 8
UP 5 1/2
TH
TH 9
TH 8
TH 7
TH 6
HYD
WG
WETLANDS PROTECTION OVERLAY DISTR
ELEVATION 40 NGVD'29 = ELEVATION 39.19

Commonwealth of Massachusetts

Duxbury, Massachusetts

Soil Suitability Assessment for On-site Sewage Disposal

Performed by: Robert Carlezon
GRADY CONSULTING, L.L.C.
71 Evergreen Street, Suite 1
Kingston, MA 02364
Phone: (781) 585-2300 Fax: (781) 585-2378

Date: 10/17/2016

Witnessed by: Tracy Mayo

Location Address or Lot # Lot 1 North Street

*Owner's Name
*Address &
*Telephone # John Baldwin
P.O. Box 1071
Duxbury, MA 02331
781-585-7380

New Construction ✓ Repair ___ Title V Inspection ___

Office Review

Published Soil Survey Available: No ✓ Yes___
Year Published: _____ Publication Scale: _____ Soil Map Unit: _____
Drainage Class: _____ Soil Limitations: _____

Surficial Geology Report Available: No ✓ **Yes** ___
Year Published: _____ Publication Scale: _____
Geologic Material (Map Unit): _____
Landform: _____

Flood Insurance Rate Map:
Above 500 year flood boundary: **No** ___ **Yes** ✓
Within 500 year flood boundary **No** ✓ **Yes** ___
Within 100 year flood boundary **No** ✓ **Yes** ___

Wetland Area:
National Wetland Inventory Map (map unit): * N/A On-Site Delineation
Wetlands Conservancy Program Map (map unit): _____

Current Water Resource Conditions (USGS): **Month:** * October
Range: **Above Normal** _____ **Normal** _____ **Below Normal** ✓

Other References Reviewed: * USGS - Real Time Data - Dux #79

Depth of Naturally Occurring Pervious Material

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

If not, what is the depth of naturally occurring pervious material?

Certification

I certify that on July 1, 2015 I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017.

Signature: _____ Date: 10/17/2016

TITLE 5 ON-SITE REVIEW

Deep Hole # 26 **Date** 10/17/2016 **Time** 12:30 **Weather** Sunny 68°
Location(identify on Site Plan)
Land Use Vacant **Slope(%)** 3-8 **Surface Stones** NONE
Vegetation Grass, open field **Landform**

Distances from: Open Water Body >200 ft. Possible Wet Area >150 ft. Drinking Water Well >150 ft.
Drainageway >50' ft. Propertyline 30± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-12"	A	Sandy Loam	10YR 4/2		
12"-36"	B	Loamy Sand	7.5YR 5/3		
36"-120"	C	Loamy Sand	5Y 5/2	96"	few cobbles Compact, [redacted]
	Depth = 10'-0"				
	Mottling @ 8'-0"				

Parent Material (geologic) **Depth to Bedrock** NONE
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater 96"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:** 96 **inches**
___ **Depth to weeping from side of observation hole:** ____**inches** ____ **Groundwater adjustment** ____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 10/17/2016 **Time**

Observation Hole #	1		**Time at 9"**		
Depth of Perc	36"-54"		**Time at 6"**		
Start Presoak	2:17		**Time (9"-6")**		
End Presoak	2:25		**Rate Min/Inch**	<2 min/in Unable to Saturate	

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # 27 **Date** 10/17/2016 **Time** 2:45 **Weather** Sunny 65°
Location(identify on Site Plan)
Land Use Vacant / Residential **Slope(%)** **Surface Stones** NONE
Vegetation Lawn, grass **Landform**

Distances from: Open Water Body >200 ft. Possible Wet Area >150 ft. Drinking Water Well >150 ft.

Drainageway >50± ft. Propertyline 40± ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency,%Gravel
0"-12"	A	Sandy Loam	10YR 4/2		
12"-36"	B	Loamy Sand	7.5YR 5/3		
36"-120"	C	Loamy Sand	5Y 5/2		few cobbles, 5% gravel

Depth= 10'-0"

No Water, No Mottles

Parent Material (geologic) **Depth to Bedrock** NONE
Depth to Groundwater: **Standing Water in Hole:** NONE **Weeping from Pit Face** NONE
Estimated Seasonal High Groundwater 120" (Assumed)

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:** N/A **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date** 10/17/2016 **Time**

Observation Hole #	2		**Time at 9"**	3:27			
Depth of Perc	36"-54"		**Time at 6"**	3:55			
Start Presoak	2:52		**Time (9"-6")**	28 Min			
End Presoak	3:07		**Rate Min/Inch**	10 Min/in			

Site Suitability Assessment: **Site Passed** ✓ **Site Failed**____ **Additional Testing Needed:**
Performed By Robert Carlezon **Certification #**
Witnessed By Tracy Mayo
Comments:

10/30/13

Bany 40's

Brocna nata

Commonwealth of Massachusetts
City/Town of

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

388 north st

C. On-Site Review (continued)

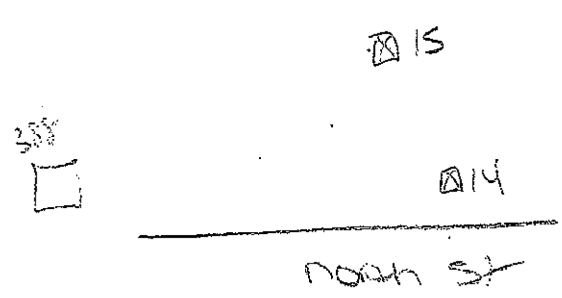
Deep Observation Hole Number: #14

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			
0-5	A	10yr 3/3									
5-23	B	10yr 5/8							LS		
23-93	C1	2.5y 6/4						15%	LS		
93-116	C2	2.5yr 3/4						20%	LS		

Additional Notes:

mottling 93"

perc @ 33" start 10:57
12" 11:12
9" 11:18
6" 11:25
7min
3mpi



10/30/13

40's raining

Commonwealth of Massachusetts
City/Town of

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

388 North St.

C. On-Site Review (continued)

Deep Observation Hole Number: #15

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			
0-5	O/A	10YR 3/3									
5-24	B	10YR 5/8							LS		
24-79	C_1	2.5Y 6/4							LS		
79-101	C_2	2.5YR 3/4							LS		
refusal											

Additional Notes:

mottling 29"

perc 27" Start 11:38
12" 11:53
9" 11:58
6" 12:03
5 min
2mpi

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 North St. Duxbury
Applicant/Owner: Frank Ness (Estate)
DEEP HOLE # 1 DATE: 8/21/13 WEATHER: Sunny TEMP: 70's
Location (identify on site plan): Refer to sketch attached
Land Use: Res Slope: 0-3%, Surface Stones: ____ Y ☐ N ☑
Vegetation: Grass Stone Walls: ____ Y ☑ N ☐
Landform: ____

Distance From: Open Water Bodies ____ ft. Possible Wet/Area 100'± ft. Drinking water Well ____ ft.
Drainageway ____ ft. Property Line 10'± ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-9"	Ap	Sandy Loam	10YR 3/3	-	Friable
9"-24"	B	Loamy Sand	10YR 5/6	-	Friable
24"-102"	C_1	Fine Loamy Sand	2.5Y 6/3	-	Friable 10% Gravel Pockets of Tight Loamy Sand
102"-140"	C_2	Loamy Sand	2.5Y 6/3	-	5% Stone

Parent Material (geologic): Glacial Till Depth to Bedrock: ____
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: ____
Estimated Seasonal High Groundwater: N/E

RECEIVED
SEP 17 2013
BOARD OF HEALTH
DUXBURY, MA 02332

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	8/21/13			
Observation Hole #:	1			
Depth to Perc:	44"-62"			
Start Presoak/Time@	1022			
End Presoak:	1037			
Time @ 9":	1047			
Time @ 6":	1058			
Time @ (9"-6")	11 min			
Rate Min./Inch:	4 min/in			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: Paul Brogna, PE. Site Suitability: Passes ☑
Witnesses By: Tracy Matic, RS. Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST DUXBURY

Applicant/Owner: FRANK NESS (ESTATE)

DEEP HOLE # 2 DATE: 8/21/13 WEATHER: SUNNY TEMP: 70'S

Location (identify on site plan): Refer to sketch attached

Land Use: RES Slope: 0-3%, Surface Stones: _____ Y ☐ N ☑

Vegetation: GRASS Stone Walls: _____ Y ☐ N ☐

Landform: _____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100'+ ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'+ ft. Other _____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-9"	Ap	SANDY LOAM	10YR 3/3	-	FRIABLE
9"-25"	B	LOAMY SAND	10YR 5/6	-	FRIABLE
25"-96"	C1	FINE LOAMY SAND	2.5Y 6/3	@ 76" 7.5YR 5/8 7.5YR 5/6	FRIABLE POCKETS OF TIGHT SAND
96"-144"	C2	LOAMY SAND	2.5Y 6/3		FRIABLE WET @ 144"

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: -

Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -

Estimated Seasonal High Groundwater: 76" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole _____ ☐ Depth to soil mottles: _____ in.
☐ Depth to weeping from side of obs. Hole _____ ☐ Groundwater adjustment _____ ft.

Index Well #: _____ Reading Date: _____ Index well Level: _____ Adj. Factor: _____ Adj. Ground water level: _____

PERCOLATION TEST

Date:	8/21/13			
Observation Hole #:	2			
Depth to Perc:	88-106"			
Start Presoak/Time@	1202			
End Presoak:	1217			
Time @ 9":	1221			
Time @ 6":	1225			
Time @ (9"-6")	4 MIN			
Rate Min./Inch:	2 MIN/IN.			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL PROLNA, PE Site Suitability: Passes ☑

Witnesses By: TRACY MAYO, RS Agent Failed ☐

Comments: _____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST DUXBURY
Applicant/Owner: FRANK NOSS (ESTATE)
DEEP HOLE # 3 DATE: 8/21/13 WEATHER: SUNNY TEMP: 80's
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: _____ Y ☐ N ☑
Vegetation: GRASS Stone Walls: _____ Y ☑ N ☐
Landform: _____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100'± ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'± ft. Other _____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-10"	Ap	SANDY LOAM	10YR 3/3	-	FRIABLE
10"-37"	B	LOAMY SAND	10YR 5/6	-	FRIABLE
37"-96"	C1	FINE LOAMY SAND	2.5Y 6/3	@ 62" 7.5YR 5/8 7.5YR 5/6	FRIABLE
96-146"	C2	FINE LOAMY SAND	2.5Y 6/3		FRIABLE MANY BOULDERS & COBBLES

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: -
Depth to Groundwater: Standing Water in Hole: 126" Weeping from Pit Face: -
Estimated Seasonal High Groundwater: 62" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole _____ ☐ Depth to soil mottles: _____ in.
☐ Depth to weeping from side of obs. Hole _____ ☐ Groundwater adjustment _____ ft.

Index Well #: _____ Reading Date: _____ Index well Level: _____ Adj. Factor: _____ Adj. Ground water level: _____

PERCOLATION TEST

Date:	8/21/13			
Observation Hole #:	3			
Depth to Perc:	37-55"			
Start Presoak/Time@	1334			
End Presoak:	1349			
Time @ 9":	1430			
Time @ 6":	1600			
Time @ (9"-6")	90 MIN			
Rate Min./Inch:	30 MIN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: DAVE TARGNA, P.E. Site Suitability: Passes ☑
Witnesses By: TARYN MARIO, RS Agent Failed ☐
Comments: _____ Additional Testing Needed: Y ☐ N ☐

* NOTE MOTTLING @ 62" DOES NOT COMPLY WITH DUXBURY RULES & REGULATIONS.

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST. SUDBURY
Applicant/Owner: FRANK NESS (ESTATE)
DEEP HOLE # 4 DATE: 8/21/13 WEATHER: SUNNY TEMP: 80'S
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: _____ Y ☐ N ☑ _____
Vegetation: GRASS Stone Walls: _____ Y ☑ N ☐ _____
Landform: _____

Distance From: Open Water Bodies ~ ft. Possible Wet/Area 100'+ ft. Drinking water Well ~ ft.
Drainageway ~ ft. Property Line 10'+ ft. Other _____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-10"	Ap	SANDY LOAM	10YR 3/3		FRIABLE
10-33"	B	LOAMY SAND	10YR 5/6		FRIABLE
33-150"	C	FINE SILTY SAND	2.5Y 6/3	@ 66" 7.5YR 5/8 7.5YR 5/6	FIRM IN PLACE 10% GRAVEL
					10% COBBLES

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: ~
Depth to Groundwater: Standing Water in Hole: 140" Weeping from Pit Face: ~
Estimated Seasonal High Groundwater: 66" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole _____ ☐ Depth to soil mottles: _____ in.
☐ Depth to weeping from side of obs. Hole _____ ☐ Groundwater adjustment _____ ft.

Index Well #: _____ Reading Date: _____ Index well Level: _____ Adj. Factor: _____ Adj. Ground water level: _____

PERCOLATION TEST

Date:	8/21/13			
Observation Hole #:	4			
Depth to Perc:	46"-64"			
Start Presoak/Time@	1425			
End Presoak:	1440			
Time @ 9":	1443			
Time @ 6":	1446			
Time @ (9"-6")	5 MIN			
Rate Min./Inch:	2 MIN/IN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL TORGNA, PE Site Suitability: Passes ☑
Witnesses By: TRACY MANO, RS Agent Failed ☐
Comments: _____ Additional Testing Needed: Y ☐ N ☐

RECEIVED

SEP 13 2013

BOARD OF HEALTH
SUDBURY, MA 01776

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 380 NORTH ST. SUDBURY
Applicant/Owner: FRANK NESS
DEEP HOLE # 5 DATE: 9/11/13 WEATHER: PTLY CLDY TEMP: 70'S
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3 Surface Stones: ____ Y ☐ N ☑ ____
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐ ____
Landform: ____

Distance From: Open Water Bodies ~ ft. Possible Wet/Area 100'+ ft. Drinking water Well ~ ft.
Drainageway ~ ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	O_A	—	10YR 3/3		FRIABLE
5"-25"	B	LOAMY SAND	10YR 6/3		FRIABLE
25"-63"	C_1	LOAMY SAND	2.5Y 7/2	@63" 7.5YR 6/8 7.5YR 6/6	FIRM IN PLACE 5% GRAVEL
63"-67"	C_2	LOAMY SAND	2.5Y 5/8		FIRM IN PLACE
67"-103"	C_3	SILT LOAM	2.5Y 5/4		VERY TIGHT
103"-108" (EST.)	C_4	LOAMY SAND	2.5Y 6/3		FIRM IN PLACE

Parent Material (geologic): TILL Depth to Bedrock: ~
Depth to Groundwater: Standing Water in Hole: ____ Weeping from Pit Face: 67"
Estimated Seasonal High Groundwater: 63" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	9/11/13			
Observation Hole #:	5			
Depth to Perc:	20"-38"			
Start Presoak/Time@	1015			
End Presoak:	1030			
Time @ 9":	1036			
Time @ 6":	1042			
Time @ (9"-6")	6 MIN			
Rate Min./Inch:	2 MIN.			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL TORGNA, PE Site Suitability: Passes ☑
Witnesses By: TRACY HATCH, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

* MOTTLING @ 63" WILL NOT PERMIT A SEPTIC SYSTEM IN ACCORDANCE WITH SUDBURY BOARD OF HEALTH RULES & REGULATIONS.

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST., SWANSEA
Applicant/Owner: FRANK NESS
DEEP HOLE # 6 DATE: 9/11/13 WEATHER: PARTLY CLOUDY TEMP: 80s
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 3-5% Surface Stones: ____ Y ☑ N ☐ ____
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐ ____
Landform: ____

Distance From: Open Water Bodies ~ ft. Possible Wet/Area 100+ ft. Drinking water Well ~ ft.
Drainageway ~ ft. Property Line 10+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	Oa	~	10YR 3/3	~	FRIABLE
5"-15"	B	LOAMY SAND	10YR 5/8	~	FRIABLE
15"-92"	C	LOAMY SAND	2.5Y 6/4	~	FRIABLE
REFUSAL LEDGE					

Parent Material (geologic): TILL Depth to Bedrock: 92"
Depth to Groundwater: Standing Water in Hole: ~ Weeping from Pit Face: ~
Estimated Seasonal High Groundwater: 92" DUE TO LEDGE

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	9/11/13			
Observation Hole #:	6			
Depth to Perc:	35-53"			
Start Presoak/Time@	1300			
End Presoak:	1315			
Time @ 9":	1318			
Time @ 6":	1323			
Time @ (9"-6")	5 MIN			
Rate Min./Inch:	2 MIN/IN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL PROGNA PE Site Suitability: Passes ☑
Witnesses By: TOBEY MAYO, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST. DUXBURY
Applicant/Owner: FRANK NOSS
DEEP HOLE # 7 DATE: 9/11/13 WEATHER: SUNNY TEMP: 80's
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 3-5% Surface Stones: ____ Y ☑ N ☐ ____
Vegetation: WOODS Stone Walls: ____ Y ☐ N ☑ ____
Landform: ____

Distance From: Open Water Bodies — ft. Possible Wet/Area 100' + ft. Drinking water Well — ft.
Drainageway — ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-7"	OA	—	10YR3/3	—	FRIABLE
7"-22"	B	LOAMY SAND	10YR5/6	—	FRIABLE
22"-100"	C	FINE LOAMY SAND	2.5Y 6/4	@ 62" 7.5YR 5/6 7.5YR 5/6	FIRM IN PLACE 10% GRAVEL & STONES
REFUSAL LEDGE					

Parent Material (geologic): TILL Depth to Bedrock: 100"
Depth to Groundwater: Standing Water in Hole: — Weeping from Pit Face: —
Estimated Seasonal High Groundwater: 62" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:				
Observation Hole #:				
Depth to Perc:				
Start Presoak/Time@				
End Presoak:				
Time @ 9":				
Time @ 6":				
Time @ (9"-6")				
Rate Min./Inch:				

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: ____ Site Suitability: Passes ☐
Witnesses By: ____ Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

NO PERC, MOTTLING @ 62" DOES NOT PERMIT A
SYSTEM MADE

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST BOXBOROUGH
Applicant/Owner: FRANK WEISS
DEEP HOLE # 8 DATE: 9/11/13 WEATHER: PTLY CLDY TEMP: 80's
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 3-5% Surface Stones: ____ Y ☑ N ☐ ____
Vegetation: WOODS Stone Walls: ____ Y ☐ N ☑ ____
Landform: ____

Distance From: Open Water Bodies — ft. Possible Wet/Area 100+ ft. Drinking water Well — ft.
Drainageway — ft. Property Line 10+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	OA	-	10YR 3/3	-	FRIABLE
5"-20"	B	LOAMY SAND	10YR 5/6	-	FRIABLE
20-60"	C	LOAMY SAND	2.5Y 6/4	-	FRIABLE
RESTRICTIVE LEDGE					

Parent Material (geologic): TILL Depth to Bedrock: 60"
Depth to Groundwater: Standing Water in Hole: — Weeping from Pit Face: —
Estimated Seasonal High Groundwater: 60" DUE TO LEDGE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:				
Observation Hole #:				
Depth to Perc:				
Start Presoak/Time@				
End Presoak:				
Time @ 9":				
Time @ 6":				
Time @ (9"-6")				
Rate Min./Inch:				

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: ____ Site Suitability: Passes ☐
Witnesses By: ____ Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

NO PERC. LEDGE @ 60" DOES NOT PERMIT A SYSTEM HERE.

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST, DUXBURY
Applicant/Owner: FRANK HESS
DEEP HOLE # 9 DATE: 9/11/13 WEATHER: PTLY CLDY TEMP: 90
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 3-5% Surface Stones: ____ Y ☑ N ☐ ____
Vegetation: WOODS Stone Walls: ____ Y ☐ N ☐ ____
Landform: ____

Distance From: Open Water Bodies — ft. Possible Wet/Area 100+ ft. Drinking water Well — ft.
Drainageway — ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	O/A	-	10YR3/3	-	FRIABLE
5"-16"	B	LOAMY SAND	10YR5/8	-	FRIABLE
16-70"	C	FINE-LOAMY SAND	2.5Y6/4	-	FRIABLE
REFUSAL LEDGE					

Parent Material (geologic): TILL Depth to Bedrock: 70"
Depth to Groundwater: Standing Water in Hole: — Weeping from Pit Face: —
Estimated Seasonal High Groundwater: 70" DUE TO LEDGE

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	9/11/13			
Observation Hole #:	9			
Depth to Perc:	28-46"			
Start Presoak/Time@	1547			
End Presoak:	1602			
Time @ 9":	1606			
Time @ 6":	1611			
Time @ (9"-6")	5 MIN			
Rate Min./Inch:	2 MIN/IN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: DAVID TAGLIENA PE. Site Suitability: Passes ☑
Witnesses By: TRACY MAYO, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST., SALISBURY
Applicant/Owner: FRANK NESS (ESTATE)
DEEP HOLE # 10 DATE: 10/16/13 WEATHER: CLOUDY TEMP: 60°
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 3-5% Surface Stones: ____ Y ☐ N ☑
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐
Landform: ____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100'+ ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'± ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-7"	OA	-	10YR3/3	-	LEAF, MULCH
7-26"	B	LOAMY SAND	10YR5/8	-	FRIABLE
26-121"	C	LOAMY SAND	2.5Y 6/3	-	FRIABLE, 5% GRAVEL
REFUSAL LEDGE					

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: 121"
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -
Estimated Seasonal High Groundwater: 121" DUE TO REFUSAL

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	10/16/13			
Observation Hole #:	10			
Depth to Perc:	36"-54"			
Start Presoak/Time@	1235			
End Presoak:	1250			
Time @ 9":	1255			
Time @ 6":	1301			
Time @ (9"-6")	6 min			
Rate Min./Inch:	2 min/in			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: RAUL BRAGA, PE Site Suitability: Passes ☑
Witnesses By: TRACY MAYO, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST, SUDBURY
Applicant/Owner: FRANK NESS ESTATE
DEEP HOLE # 11 DATE: 10/16/13 WEATHER: CLOUDY TEMP: 60°
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: ____ Y ☐ N ☑
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐
Landform: ____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100+ ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	O_A	-	10YR 3/3	-	LOAM, MULCH
5"-17"	B	LOAMY SAND	10YR 5/6	-	FRIABLE
17"-120"	C_1	LOAMY SAND	2.5Y 6/3	-	FRIABLE, FEW STONES
120"-144"	C_2	LOAMY SAND	2.5Y 6/6	-	LOOSE, SINGLE GRAIN

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: -
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -
Estimated Seasonal High Groundwater: N/E

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	10/16/13			
Observation Hole #:	11			
Depth to Perc:	33-51"			
Start Presoak/Time@	1145			
End Presoak:	1206			
Time @ 9":	1211			
Time @ 6":	1225			
Time @ (9"-6")	14 MIN			
Rate Min./Inch:	5 MIN/IN.			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL BORGNA, PE. Site Suitability: Passes ☑
Witnesses By: TRACY MAYO, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST. SUDBURY
Applicant/Owner: FRANK NOBIS (ESTATE)
DEEP HOLE # 12 DATE: 10/16/13 WEATHER: CLOUDY TEMP: 60°
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: ____ Y ☐ N ☑ ____
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐ ____
Landform: ____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100+ ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-4"	OA	-	10YR 3/3	-	LOAM, MULCH
4"-34"	B	LOAMY SAND	10YR 5/6	-	FRIABLE
34"-102"	C	LOAMY SAND	2.5Y 6/3	-	FRIABLE
REFUSAL LEDGE					

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: 102"
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -
Estimated Seasonal High Groundwater: 102" DUE TO REFUSAL

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	10/16/13			
Observation Hole #:	12			
Depth to Perc:	43-61"			
Start Presoak/Time@	1515			
End Presoak:	1530			
Time @ 9":	1535			
Time @ 6":	1542			
Time @ (9"-6")	7 MIN.			
Rate Min./Inch:	3 MIN/IN.			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL TAGLIENA, PE Site Suitability: Passes ☑
Witnesses By: TRACY DANTOS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST, DUXBURY
Applicant/Owner: FRANK NESS (ESTATE)
DEEP HOLE # 13 DATE: 10/16/13 WEATHER: CLOUDY TEMP: 60°
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: ____ Y ☐ N ☑
Vegetation: WOODS Stone Walls: ____ Y ☑ N ☐
Landform: ____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100' ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'* ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-3"	O_A	-	10YR3/3	-	LEAF, MULCH
3"-22"	B	LOAMY SAND	10YR5/8	-	FRIABLE
22-73"	C	LOAMY SAND	2.5Y6/3	-	FRIABLE, 5% GRAVEL
REFUSAL LEDGE					

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: 73"
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -
Estimated Seasonal High Groundwater: 73" DUE TO REFUSAL

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	10/16/13			
Observation Hole #:	13			
Depth to Perc:	37-55"			
Start Presoak/Time@	1447			
End Presoak:	1502			
Time @ 9":	1508			
Time @ 6":	1514			
Time @ (9"-6")	6 MIN			
Rate Min./Inch:	2 MIN/IN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL BROGNA, PE Site Suitability: Passes ☑
Witnesses By: TRACY MAYO, RS Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 388 NORTH ST. DUXBURY
Applicant/Owner: FRANK NESS (ESTATE)
DEEP HOLE # 14 DATE: 10/30/13 WEATHER: CLOUDY, LIGHT RAIN TEMP: 40's
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: ____ Y ☐ N ☑
Vegetation: WOODS Stone Walls: ____ Y ☐ N ☑
Landform: ____

Distance From: Open Water Bodies — ft. Possible Wet/Area 100'+ ft. Drinking water Well — ft.
Drainageway — ft. Property Line 10'+ ft. Other ____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-6"	OA	—	10YR 3/3	—	—
6"-23"	B	LOAMY SAND	10YR 5/8	—	FRIABLE
23"-93"	C1	LOAMY SAND	2.5Y 6/4		FRIABLE - 15% COBBLES
93"-116"	C2	LOAMY SAND	2.5YR 3/4	@ 93"	FRIABLE - 20% COBBLES
REFUSAL LEDGE					

Parent Material (geologic): GLACIAL TILL Depth to Bedrock 116"
Depth to Groundwater: Standing Water in Hole: — Weeping from Pit Face: —
Estimated Seasonal High Groundwater: 93" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used: ☐ Depth observed standing in obs. Hole ____ ☐ Depth to soil mottles: ____ in.
☐ Depth to weeping from side of obs. Hole ____ ☐ Groundwater adjustment ____ ft.

Index Well #: ____ Reading Date: ____ Index well Level: ____ Adj. Factor: ____ Adj. Ground water level: ____

PERCOLATION TEST

Date:	10/30/13			
Observation Hole #:	14			
Depth to Perc:	33"-51"			
Start Presoak/Time@	1057			
End Presoak:	1112			
Time @ 9":	1118			
Time @ 6":	1125			
Time @ (9"-6")	7 MIN			
Rate Min./Inch:	3 MIN.			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: DAVE BROWN, PE. Site Suitability: Passes ☑
Witnesses By: TRACY MAHR, RS. Agent Failed ☐
Comments: ____ Additional Testing Needed: Y ☐ N ☐

FORM 12: TITLE 5 ON-SITE (PAGE 2 & 3 COMBINED)

Location address or lot #: 386 NORTH ST, SUDBURY
Applicant/Owner: FRANK NEGUS (ESTATE)
DEEP HOLE # 15 DATE: 10/30/13 WEATHER: LIGHT RAIN TEMP: 40'S
Location (identify on site plan): Refer to sketch attached
Land Use: RES Slope: 0-3% Surface Stones: _____ Y ☐ N ☑
Vegetation: WOODS Stone Walls: _____ Y ☐ N ☑
Landform: _____

Distance From: Open Water Bodies - ft. Possible Wet/Area 100'+ ft. Drinking water Well - ft.
Drainageway - ft. Property Line 10'+ ft. Other _____

Deep Observation Hole Log

Depth	Soil Horizon	Soil Texture	Soil Color	Soil Motting	Other: Structures, Stones, Boulders, Consistency, %Gravel
0-5"	O_A	-	10YR3/3		-
5-24"	B	LOAMY SAND	10YR5/8		FRIABLE
24-79"	C_1	LOAMY SAND	2.5Y 6/4		FRIABLE - 15% COBBLES
79"-101"	C_2	LOAMY SAND	2.5Y 3/4	@ 79"	FRIABLE - 15% COBBLES
REFUSAL LEDGE					

Parent Material (geologic): GLACIAL TILL Depth to Bedrock: 101"
Depth to Groundwater: Standing Water in Hole: - Weeping from Pit Face: -
Estimated Seasonal High Groundwater: 79" DUE TO MOTTLING

DETERMINATION FOR SEASONAL HIGH WATER TABLE
Method Used: ☐ Depth observed standing in obs. Hole _____ ☐ Depth to soil mottles: _____ in.
☐ Depth to weeping from side of obs. Hole _____ ☐ Groundwater adjustment _____ ft.

Index Well #: _____ Reading Date: _____ Index well Level: _____ Adj. Factor: _____ Adj. Ground water level: _____

PERCOLATION TEST

Date:	10/30/13			
Observation Hole #:	15			
Depth to Perc:	22"-45"			
Start Presoak/Time@	1138			
End Presoak:	1153			
Time @ 9":	1158			
Time @ 6":	1203			
Time @ (9"-6")	5 MIN			
Rate Min./Inch:	2 MIN/IN			

*Minimum of 1 Percolation test must be performed in both the primary and reserve area.

Performed By: PAUL TYAGNA, PE. Site Suitability: Passes ☑
Witnesses By: MARY MATTOS, RS. Agent Failed ☐
Comments: _____ Additional Testing Needed: Y ☐ N ☐

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

MODIFIED GENERAL USE CERTIFICATION
Pursuant to Title 5, 310 CMR 15.00

Name and Address of Applicant:

Presby Environmental, Inc.
143 Airport Road
Whitefield, NH 03598

Trade name of technology and models: **Enviro-Septic® Wastewater Treatment System** (hereinafter called the "System"). The Advanced Enviro-Septic Design & Installation Manual, System Installation Form and Inspection Checklist are part of this Certification.

Transmittal Number:	Accela - 21-CLM-000073-APP
Date of Issuance:	Revised March 19, 2019, Modified October 30, 2019, February 22, 2022

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental, Protection hereby issues this Certification for General Use to: Presby Environmental, Inc.,143 Airport Road, Whitefield, NH 03598 (hereinafter "the Company"), certifying the System described herein for General Use in the Commonwealth of Massachusetts. The sale, design, installation, and use of the System are conditioned on compliance by the Company, the Designer, the Installer and the System Owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Certification constitutes a violation of 310 CMR 15.000.

/s/ Marybeth Chubb
Marybeth Chubb, Section Chief
Wastewater Management Program
Bureau of Resource Protection

2/22/2022 .
Date

Technology Description

The System is an alternative subsurface Soil Absorption System (SAS) that replaces a conventional SAS designed in accordance with 310 CMR 15.000. The System consists of an 11 5/8-inch diameter corrugated, high-density plastic pipe with a 9.5-inch interior diameter and a standard length per unit of 10 feet. The pipe is perforated with eight holes equally distributed around its inner circumference at each corrugation. Each hole has a plastic skimmer extending inwards. The exterior of the pipe has ridges on the peak of each corrugation and is wrapped with two layers fabric materials. The inner layer is a thick layer of coarse, randomly oriented polypropylene fibers. The outer fabric layer is a thinner non-woven geotextile polypropylene. The System includes required connectors designed to connect pipe units together. The System also includes sand surrounding the pipe units, specified as concrete sand meeting the ASTM C-33 specification, also called System Sand. The System Sand must be placed with a minimum thickness of (6") six inches below, (3") three inches above and six inches to the sides of the pipe units.

Conditions of Approval

The term "System" refers to the Alternative Soil Absorption System in combination with the other components of an on-site treatment and disposal system that may be required to serve a facility in accordance with 310 CMR 15.000.

The term "Approval" refers to the technology-specific Special Conditions, the Standard Conditions for General Use Certification of Alternative Soil Absorption Systems, the General Conditions of 310 CMR 15.287, and any Attachments.

For Alternative Soil Absorption Systems that have been issued General Use Certification for the installation of Systems to serve facilities where the site meets the requirements for new construction, the Department authorizes reductions in the effective leaching area (310 CMR 15.242), subject to the *Standard Conditions that apply to all Alternative Soil Absorption Systems* with General Use Certification found here: https://www.mass.gov/doc/standard-conditions-for-alternative-soil-absorption-systems-with-general-use-certification/download
and subject to the Special Conditions below applicable to this Technology.

Special Conditions

1. The System is approved Patented Sand Filter for use as an Alternative Soil Absorption System. In addition to the Special Conditions contained in this Approval, the System shall comply with all Standard Conditions for Alternative Soil Absorption Systems, except where stated otherwise in these Special Conditions.

2. The System is approved for facilities where a conventional system with a reserve area exists or can be built on-site in full compliance with the new construction requirements of 310 CMR 15.000 and has been approved by the local approving authority.

3. This Certification shall not be used for the installation of a System to upgrade or replace an existing failed or nonconforming system, unless the facility meets the siting requirements for new construction, including a reserve area.

4. The separation distance to the estimated seasonal high groundwater elevation shall be measured from the bottom of the System sand below the Enviro-Septic Wastewater Treatment System.

5. The System shall only be installed in bed or field configuration, as described in 310 CMR 15.252. The System shall not be installed in trench configuration and no sidewall area shall be considered in the total effective leaching area provided. The effective leaching area shall be the bottom area only (length times width) of the sand bed.

6. System does not require a five foot over dig as indicated at 310 CMR 15.255(5).

7. Systems shall be installed with differential venting for aeration and inspection access at end of each run of pipe, section or serial bed and whenever the System is installed under impervious surfaces.

8. Serial distribution laterals shall be limited to no more than 500 gpd with each lateral a maximum of 100 feet, and must be laid level. Multi-level systems shall not be allowed.

9. The Advanced Enviro-Septic proprietary product (AES) will be sized at a minimum of seventy (70) linear feet per bedroom (lf/br) and will not exceed 100 feet in length.

10. System component material specifications for the pipe, plastic components, fabric and sand shall comply with the specifications identified in the initial Enviro-Septic I/A technology approval.

11. Prior approval from the Department for any change from these specifications shall be requested in writing.

12. Any changes to the approved plans must receive Local Approving Authority (LAA) approval prior to any changes. Before a Certificate of Compliance can be issued by the LAA the System Designer must include any changes to the approved plan into the as-built plans.

13. Design, installation and operation shall be in strict conformance with the Company's DEP approved plans and specifications of Enviro-Septic Wastewater Treatment System Massachusetts Design and Installation Manuals Copyright September 2019, Presby Environmental, Inc., 310 CMR 15.000 and this Approval.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Standard Conditions for Alternative Soil Absorption Systems with General Use Certification and/or Approved for Remedial Use

Revised: March 5, 2018

These Standard Conditions apply to Alternative Soil Absorption System (Alt. SAS) technologies for disposal-only as well as for technologies providing both treatment and disposal. Currently these approved alternative technologies include the following,

Alt. SAS Disposal-Only,

- **Contactor, Field Drain Contactor, and Recharger Chambers,** by Cultec, Inc.
- **Biodiffuser &ARC Chambers,** by Infiltrator Systems, Inc.
- **Infiltrator Chambers,** by Infiltrator Systems, Inc.
- **Eljen Mantis M5,** by Eljen Corp.

Alt. SAS Treatment with Disposal - Patented Sand Filters,

- **Eljen GSF Geotextile Sand Filter System,** by Eljen Corp.
- **Enviro-Septic Wastewater Treatment System,** by Presby Environmental, Inc.
- **Advanced Enviro-Septic System**, by Presby Environmental, Inc.
- **Simple-Septic Wastewater Treatment System**, by Presby Environmental, Inc.
- **Infiltrator ATL system,** by Infiltrator Systems, Inc.
- **GeoMat Leaching System,** by Geomatrix Systems, LLC.

An alternative SAS may be appropriate for new construction, increases in flow, or for the upgrade of an existing failing, failed, or nonconforming system where reducing the disturbance of the site is desired.

Alternative Disposal-Only technologies approved by the Department may be substituted for conventional SAS's allowed under Title 5. The alternative Chamber technologies, when compared to conventional Title 5 chambers, provide options from some of the Title 5 requirements such as offering plastic instead of concrete chambers and eliminating the need for stone aggregate around the chamber while allowing higher loading rates and reduced effective leaching area. Other options include Chambers installed with aggregate meeting the requirements of Title 5, however Alternative Chambers used with aggregate are not allowed higher loading rates which must remain the same as required by Title 5 for conventional chambers with aggregate. In addition to alternative Chambers,

disposal-only approved Alt. SAS technologies also include the Mantis M5 pipe and sand System design.

Alternative Treatment with Disposal technologies approved by the Department refer to alternative leaching systems that have demonstrated higher removal of organics and suspended matter prior to the percolation of wastewater into underlying unsaturated pervious soils when compared to conventional leaching systems. Higher loading rates are allowed than would be permissible with a conventional design and additional relief from other design standards is permissible for upgrades.

A System approved under these Standard Conditions consists of a septic tank conforming to the requirements of Title 5, either conventional or I/A approved, followed by the Alt. SAS which may provide for a reduced effective leaching area.

The use of an approved Alt. SAS, subject to these Standard Conditions, requires among other things:

- A Disclosure Notice in the Deed to the property for installed Systems according to the following:
  - when installing an Alt. SAS Disposal-Only System (chambers or Eljen Mantis M5) a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the General Use Certificate a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the Approval for Remedial Use a Disclosure Notice in the Deed to the property is required in accordance with 310 CMR 287(10);
- Certifications by the Designer and the Installer (310 CMR 15.021(3));
- Notification within 24 hours by the System Owner to the Local Approving Authority (LAA) of any System failure;
- When System requires pumping prior to the SAS, 24-hour emergency wastewater storage capacity above the elevation of the high level alarm;
- System Owner Acknowledgement of Responsibilities, in accordance with these standard conditions and the Technology Approval's Special Conditions.

This Approval **does not** address the use of the following alternative SAS's, which are covered under separate Title 5 I/A Program Approvals:

a) Drip Dispersal Systems

b) Bottomless Sand Filters

Definitions and References

The term "System" refers to the approved technology in combination with the other components of an on-site treatment and disposal system that may be required to serve a facility in accordance with 310 CMR 15.000.

The term "Approval" or "Certification" refers to these Standard Conditions; the Special Conditions contained in the Technology Approval, the General Conditions of 310 CMR 15.287, and any Attachments.

The phrase "new construction" always refers to construction of a new facility or any increase in actual or design flow to any existing system above the approved capacity.

The phrase "upgrade of a system" or the term "upgrade" or the term "remedial site" refers to any repair, modification, or replacement of a whole system or a component of an existing failing, failed or nonconforming system where there is no increase in the actual or design flow to the system.

The Conditions contained herein MUST be read in conjunction with any Special Conditions that are technology-specific.

I. Purpose

1. These Standard Conditions shall apply to all Alt. SAS technologies identified in a General Use Certification or a Remedial Use Approval as either a Disposal-Only technology or a Treatment with Disposal technology as listed above. In addition to the Special Conditions contained in the technology-specific Approvals, the System shall comply with all these "Standard Conditions for Alternative Soil Absorption Systems", except where stated otherwise in the Special Conditions.

2. The sale, design, installation, and use of the System shall be subject to these requirements for all systems that submit a complete Disposal System Construction Permit (DSCP) application after the effective date of these Standard Conditions. Existing systems and systems for which a complete DSCP application was submitted prior to the effective date of these requirements shall not be subject to the design and installation requirements, however, the System Owner, the Service Contractor, and the Company shall be subject to all other requirements contained herein.

3. With the other applicable permits or approvals that may be required by Title 5, the Approval authorizes the installation and use of the System in Massachusetts. All the provisions of Title 5, including the General Conditions for Alternative Systems (310 CMR 15.287), apply to the sale, design, installation, and use of the System, except those provisions that specifically have been varied by this Approval.

4. Provided that the Local Approving Authority (LAA) approves the System in conformance with the Department's Approval for the System, Department review and approval of the site-specific System design and installation is not required unless the Department determines on a case-by-case basis, pursuant to its authority at 310 CMR 15.003(2)(e), that the proposed System requires Department review and approval.

II. Design and Installation Requirements

1. Where any contradiction may exist in design standards between the Company guidance and the requirements of Title 5 or this Approval, the design shall meet the

standards of Title 5 and this Approval unless the Company guidance is more stringent.

2. In accordance with 310 CMR 15.240(6), absorption trenches should be used whenever possible. Accordingly, approved Disposal-Only and Treatment with Disposal Alt. SAS Systems shall be used in trench configuration whenever possible, unless a different configuration is allowed by the Approval(s) Special Conditions.

3. The Alternative System shall include a properly sized and constructed septic tank, designed in accordance with 310 CMR 15.223–15.229 or approved as an Alternative technology per 15.280-15.288, connected to the building sewer and followed in series by the approved Alternative Soil Absorption System. A 1,000 gallon septic tank may be allowed in accordance with the provisions of 310 CMR 15.404(3)(a).

4. The Alternative System shall be installed in a manner which does not intrude on, replace, or adversely affect the operation of any other component of the subsurface sewage disposal system.

5. The Designer shall be a Massachusetts Registered Professional Engineer or a Massachusetts Registered Sanitarian, including when designing systems for repair, provided that such Sanitarian shall not design a system with a discharge greater than 2,000 gallons per day.

6. <u>For new construction or increases in flow</u>, the System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 60 minutes per inch (MPI);
   b) A site evaluation, in compliance with 310 CMR 15.100 through 15.107, must be approved by the Approving Authority and the site must meet the siting requirements for new construction;
   c) The record drawings, approved by the LAA, must clearly indicate an area for a full-sized conventional primary SAS and a full-sized conventional reserve area that are for the sole purpose of on-site sewage disposal;
   d) Where the System has reduced the effective leaching area, as allowed by the Standard Conditions, the installation shall not disturb the site in any manner that would preclude the future installation of the conventional full-sized primary SAS without encroaching on the reserve area; and
   e) Except for the installed SAS, the System Owner shall not construct any permanent buildings or structures or disturb the site in any manner that would encroach on the area approved for a full-sized conventional primary SAS or the area approved for a full-sized conventional reserve SAS.

7. <u>For the upgrade of a system</u>, the installation of the proposed System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 90 minutes per inch (MPI);

b) Prior to approving the installation of the System, the LAA must determine there is no increase in the actual or proposed design flow;

c) Prior to Local Approval of the System, the Designer shall show on the plans the maximum available area for a conventional system (without reserve) designed in accordance with the standards of 310 CMR 15.100 through 15.255.

d) The proposed System must include the approval by the LAA for the upgrade or replacement of all other existing components, as necessary, to comply with the standards of Maximum Feasible Compliance (MFC) of 310 CMR 15.404;

e) The record drawings, approved by the LAA, must clearly indicate an area for the best feasible replacement system that could be installed in the event that the proposed Alternative Soil Absorption System fails or it is determined that it is not capable of providing equivalent environmental protection;

f) When evaluating the best feasible replacement system that could be installed in the event that the proposed Alternative Soil Absorption System fails or it is determined that it is not capable of providing equivalent environmental protection, the Designer shall consider these options in the following order:

   i. a conventional system designed in accordance with the standards of 310 CMR 15.100 through 15.255 that can be built feasibly, with the exception of providing a reserve area (15.248);

   ii. a conventional system that can only be built feasibly under a Local Upgrade Approval (LUA);

   iii. where a conventional system cannot be built feasibly under a LUA, a Bottomless Sand Filter, in conjunction with a Secondary Treatment Unit;

   iv. where a System can only be built feasibly with variances, a System that has been demonstrated to vary the design requirements of 310 CMR 15.000 to the least degree necessary and have the least effect on public health, safety, welfare and the environment (the System may be an Alternative System with variances); or

   v. a tight tank.

g) The installation of the proposed System shall not disturb the site in any manner that would preclude the future installation of the best feasible replacement system that could be installed to replace the proposed System. Components of the proposed System may be sited in an area for the future installation of the best feasible replacement system, provided that it does not render the area unusable for a potential future replacement system; and

h) Except for the installed SAS, the System Owner shall not construct any permanent buildings or structures in the area for the best feasible replacement system that could be installed to replace the proposed System and the System Owner shall not disturb the site in any other manner that would preclude the future installation of the best feasible replacement system.

8. <u>Alternative Design Standard to 310 CMR 15.242(1)(a) Effluent Loading Rates</u>

For new construction or increases in flow, the required effective leaching area may be reduced up to 40 percent when using the loading rates for gravity systems of 310 CMR 15.242(1)(a), provided:

a) no variance is granted for a reduction in depth to groundwater;

b) no variance is granted for a reduced depth of pervious material; and

c) a minimum of 400 square feet of effective leaching area shall be installed if any proposed reduction in the leaching area would result in less than 400 square feet of effective leaching area; (Facilities with small flows that would not require 400 sq.ft. of effective leaching area, when designed in accordance with Title 5, may be built with less than 400 sq. ft. provided that no reduction in effective leaching area is taken).

9. Alternative Design Standard to 310 CMR 15.242(1)(a) and 15.245(4), Effluent Loading Rates

For the upgrade of a system, the System shall be subject to the following:

g) For soils with a percolation rate of 60 minutes or less per inch, the size of the SAS may be sized with 40 percent less effective leaching area than required when using the loading rates for gravity systems of 310 CMR 15.242(1)(a);

h) For soils with a percolation rate of between 60 and 90 minutes per inch, the size of the SAS may be sized with 40 percent less effective leaching area than required when using the loading rate of 0.15 gpd/square foot as specified by 310 CMR 15.245(4);

i) Unless allowed under the Special Conditions for the Technology, no additional reduction in the effective leaching area is allowed under an LUA or a variance that would result in a reduction greater than 40% of that which would be required under 310 CMR 15.242(1)(a) and 15.245(4), respectively. Any other deviations to design standards, except the effective leaching area, may be granted under LUA or a variance; and

j) A minimum of 400 square feet of effective leaching area shall be provided if any proposed reduction in the leaching area would result in less than 400 square feet of effective leaching area. Where 400 square feet of effective leaching is not feasible, the greatest effective leaching area shall be installed provided that no more than a 40 percent reduction is taken.

10. Specific Conditions for Treatment with Disposal Alt. SAS Technologies

a) The use of aggregate as specified in 310 CMR 15.247 is not allowed with Patented Sand Filters.

b) Unless determined necessary by the Designer or Company, the System shall not be used with pressure distribution for any design flow. When installed for a facility with a design flow of 2,000 gpd or greater, approved Patented Sand Filter Systems are exempt from the requirement for pressure distribution under 310 CMR 15.231.

c) Patented Sand Filters shall not be installed in a Nitrogen Sensitive Area (NSA) to serve facilities with actual or design flows of 2,000 GPD or greater since those facilities require installation of a Recirculating Sand Filter (RSF) or equivalent technology. Patented Sand Filters may be installed as a disposal-only alternative technology when used in addition to an approved Secondary Treatment Unit (reduction of BOD/TSS). When a Patented Sand Filter is used in this type of septic system design, only the reductions permitted in the Secondary Treatment Unit's (STU) alternative technology approval, such as a reduction in SAS size, depth of naturally occurring pervious material or depth to groundwater, are allowed.

d) For upgrades only, a reduction in the depth to groundwater and/or a reduction in the pervious material may be taken in accordance with Section II, paragraph 5 of the *Standard Conditions for Secondary Treatment Units Approved for Remedial Use*. In no case, shall the reductions allowed under the Standard Conditions for Secondary Treatment Units be combined with any reduction provided by this Approval, the alternative technology's Remedial Use Approval Special Conditions or with any reduction that may be allowed under the procedures of Local Upgrade Approval or variance procedures of 310 CMR 15.401-415.

11. Specific Conditions for Disposal-Only Alt. SAS Technologies

a) In a NSA, as defined in 310 CMR 15.215, Alternative Systems serving facilities with actual or design flows of 2,000 GPD or greater must include treatment with a RSF or equivalent technology, as required by 310 CMR 15.202(1). Under this Approval, Disposal-Only Alt. SAS technologies shall not be installed in an NSA to serve facilities with actual or design flows of 2,000 GPD or greater unless installed in conjunction with a RSF or equivalent technology.

b) For new construction or upgrades, a reduction in the effective leaching area may be taken in accordance with the conditions and limitations imposed by the approval of the Secondary Treatment Unit employed. (approved Alternative Chambers may be installed with or without aggregate for the disposal of effluent from an approved Secondary Treatment Unit, see paragraph 11(e) below.) For upgrades only, a reduction in the depth to groundwater and/or a reduction in the pervious material may be taken in accordance with the conditions and limitations imposed by the Remedial Use Approval of the Secondary Treatment Unit employed. In no case, shall the reductions allowed under the Secondary Treatment Unit approval be made less stringent. In no case, shall the reductions allowed under the Secondary Treatment Unit approval be combined with any reduction provided by this Approval or combined with any reduction that may be allowed under the procedures of Local Upgrade Approval or the variance procedures of 310 CMR 15.401-415.

c) For the upgrade of a system, installations without secondary treatment are entitled to reductions in depth to groundwater or depth of naturally occurring pervious material only to the limits that may be allowed by the LAA under the procedures of Local Upgrade Approval or the variance procedures of 310 CMR 15.401-415.

d) The use of aggregate as specified in Title 5, 310 CMR 15.247 is not required.

Chambers Specific Standard Conditions,

e) The installation of approved Alternative Chambers with aggregate is allowed provided that it complies with the aggregate requirements of 310 CMR 15.247. However, when approved Alternative Chambers are installed with aggregate the reduction in effective leaching area provided by Standard Conditions II (8) and (9) is not allowed. Only when upgrading a system, approved Alternative Chambers installed with aggregate may be allowed a reduction in effective leaching area (up to 25%) under the limitations and procedures of a Local Upgrade Approval (310 CMR 15.401-405).

f) Effluent pressure distribution shall be provided for actual or design flows of 2,000 gpd or greater and shall be designed in accordance with Department guidance. The effluent loading rates provided in 310 CMR 15.242(1)(b) for pressure distribution may be utilized, but no reduction in the effective leaching area as may be provided under this Approval may be taken when using the loading rates for pressure distribution, as stated in the regulation.

12. All System control units, valve boxes, distribution piping, conveyance lines and other System appurtenances shall be designed and installed to prevent freezing.

13. When pumping is required to a distribution box or to a SAS pressure distribution tank, the System pump chambers/tanks shall be equipped with sensors and high-level alarms to protect against high water due to pump failure, pump control failure, loss of power, system freeze ups, backups, etc. Emergency storage shall be provided when pumping to discharge is employed, including but not limited to, pressure distribution. Emergency storage capacity for wastewater above the high level alarm shall be provided equal to the daily design flow of the System including an additional allowance for the volume of all drainage which may flow back into the System when pumping has ceased.

14. System control panel(s) including alarms and controls shall be mounted in a location always accessible to the operator (Service Contractor). Any System malfunction and high water alarms shall be readily visible and audible for the facility occupants and the Service Contractor and shall be connected to circuits separate from the circuits serving the operating equipment and pumps.

15. The System shall not include any relief valve or outlet for the discharge of wastewater to prevent flooding of the system, back up or break out.

16. Any System structures with exterior piping connections located within 12 inches of or lower than the Estimated Seasonal High Groundwater elevation shall have the connections made watertight with neoprene seals or equivalent.

17. In compliance with 310 CMR 15.240(13), a minimum of one (1) inspection port shall be provided within the SAS consisting of a perforated four inch pipe placed vertically down to the elevation of the SAS interface with the underlying unsaturated pervious

soils to enable monitoring for ponding. The pipe shall be capped with a screw type cap and accessible to within three inches of finish grade. (A locking cap at-grade is preferred) Facilities with multiple SAS's shall have an inspection port in each.

18. Upon submission of an application for a Disposal System Construction Permit (DSCP), the Designer shall provide to the Local Approving Authority:
    a) proof that the Designer has satisfactorily completed any required training by the Company for the design and installation of the Technology;
    b) certification of the design by the Company for any residential system with a design of 2,000 gpd or more or for any proposed non-residential system or if required by the Special Conditions for an approved Technology;
    c) certification by the Designer that the design conforms to the Approval, any Company Design Guidance, and 310 CMR 15.000; and
    d) a certification, signed by the Owner of record for the property to be served by the Technology, stating that the property Owner:
        i. has been provided a copy of the Title 5 I/A technology Approval, the Owner's Manual, and the Operation and Maintenance Manual, and the Owner agrees to comply with all terms and conditions;
        ii. for Systems installed under a Remedial Use Approval, the owner agrees to fulfill his responsibilities to provide written notification of the Approval to any new Owner, as required by 310 CMR 15.287(5);
        iii. if the design does not provide for the use of garbage grinders, the restriction is understood and accepted; and
        iv. whether or not covered by a warranty, the System Owner understands the requirement to repair, replace, modify or take any other action as required by the Department or the LAA, if the Department or the LAA determines the System to be failing to protect public health and safety and the environment, as defined in 310 CMR 15.303.

19. The System Owner and the Designer shall not submit to the LAA a DSCP application for the use of a Technology under this Approval if the Approval has been revised, reissued, suspended, or revoked by the Department prior to the date of application. The Approval continues in effect until the Department revises, reissues, suspends, or revokes the Approval.

20. The System Owner shall not authorize or allow the installation of the System other than by a locally approved Installer and, if required by the Company, a person certified or trained by the Company to install the System.

21. Prior to the commencement of construction, the System Installer must certify in writing to the Designer, the LAA, and the System Owner that (s)he is a locally approved System Installer and, if required by the Company, is certified by or has received appropriate training by the Company.

22. The Installer shall maintain on-site, at all times during construction, a copy of the approved plans, the Owner's manual, the O&M manual, and a copy of the Approval.
23. Prior to the issuance of a Certificate of Compliance the following shall be provided:

    a) the System Installer and Designer must provide certification in writing to the LAA that the System has been constructed in compliance with the terms of the Approval; and

    b) For System upgrades installed under a Remedial Use Approval the System Owner shall provide a copy of record and/or register the Deed Notice required by 310 CMR 15.287(10), to the LAA. The Deed Notice shall be completed as follows:

        i. a certified Registry copy of the Deed Notice bearing the book and page/or document number; and

        ii. if the property is unregistered land, a copy of the System Owner's deed to the property as recorded at the Registry, bearing a marginal reference on the System Owner's deed to the property.

    The Notice to be recorded shall be in the form of the Notice provided by the Department.

24. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sanitary sewer system.

    a) If it is feasible to connect a new or existing facility to the sewer, the Designer shall not propose an Alternative System to serve the facility and the facility Owner shall not install or use an Alternative System; and

    b) When a sanitary sewer connection becomes feasible after an Alternative System has been installed, the System Owner shall connect the facility served by the System to the sewer within 60 days of such feasibility and the System shall be abandoned in compliance with current Code requirements, unless a later time is allowed in writing by the Department or the LAA.

III. Operation and Maintenance

1. For Systems with design flows of 2,000 gpd or greater where the effective leaching area installed is less than 75% of that required by Title 5 (310 CMR 15.240(4)), measurement of the depth of ponding within the SAS above the interface with the underlying unsaturated pervious soils shall be performed once per year by means of the inspection port(s) and any other available access to the distribution system. Inspector must be an Approved System Inspector.

2. Whenever an Alt. SAS system's inspection port ponding depth is measured and indicates the ponding level within the SAS is above the invert of the distribution system, an additional measurement shall be made 30 days later. If the subsequent reading indicates the elevation of ponding within the SAS is above the invert of the distribution system, the System Owner shall be responsible for the submittal to the

LAA within 60 days of the follow-up inspection, a written evaluation of the System with recommendations for changes in the design, operation, and/or maintenance. The written evaluation with recommendations shall be prepared by a Designer and the submission shall include all monitoring data and inspection reports for the previous 3 years.

Recommendations shall be implemented, as approved by the LAA, in accordance with an approved schedule, provided that all corrective measures are implemented consistent with the limitations described in Paragraph IV.4.

3. For Systems less than 2,000 gpd or facilities where the effective leaching area installed meets the requirements of Title 5, the System shall not be required to be inspected at any greater frequency than would be required if the facility was served by a conventional system, unless the LAA, Company, or Designer requires more frequent inspection.

4. If at any time a septic system with an Alt. SAS is inspected by a System Inspector, the following shall be recorded, at a minimum:

   a) date, time, air temperature, and weather conditions;
   b) observations for objectionable odors;
   c) observations for signs of breakout of sanitary sewage in the vicinity of the Alternative System;
   d) depth of ponding within the SAS;
   e) identification of any apparent violations of the Approval;
   f) since the last inspection, whether the system had been pumped with date(s) and volume(s) pumped;
   g) sludge depth and scum layer thickness, if measured;
   h) when responding to alarm events, the cause of the alarm and any steps taken to address the alarm and to prevent or reduce the likelihood of future similar alarm events;
   i) field testing results when performed as part of the site visit;
   j) samples taken for laboratory analysis and results of previous samples, if any
   k) any cleaning and lubrication performed;
   l) any adjustments of control settings, as recommended or deemed necessary;
   m) any testing of pumps, switches, alarms, as recommended or deemed necessary;
   n) identification of any equipment failure or components not functioning as designed;
   o) parts replacements and reason for replacement, whether routine or for repair; and
   p) further corrective actions recommended, if any.

5. The System Owner shall maintain copies of any service records or inspection reports and all reports and notifications to the LAA for a minimum of three years.

6. Unless directed by the LAA to take other action, the System Owner shall immediately cease discharges or have wastewater hauled off-site, if at any time during the operation of the Alternative System the system is in failure as described in 310 CMR 15.303(1)(a), items 1 or 2 (sewage backing up into facilities or breaking out to the surface).

IV. Additional System Owner Requirements

1. For System upgrades installed under Remedial Use Approval, prior to signing any agreement to transfer any or all interest in the property served by the System, or any portion of the property, including any possessory interest, the System Owner shall provide written notice, as required by 310 CMR 15.287(5), of all conditions contained in the Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall include as an exhibit attached thereto and made a part of thereof a copy of the Approval for the System. The System Owner shall send a copy of such written notification(s) to the LAA within 10 days of giving such notice to the transferee(s).

2. The System Owner shall not install, modify, upgrade, or replace the System except in accordance with a valid DSCP issued by the LAA which covers the proposed work.

3. Upon determining that the System is failing to protect public health and safety and the environment, as defined in 310 CMR 15.303, the System Owner shall be responsible for the notification of the LAA within 24 hours of such determination.

4. In the case of a System that has been determined to be failing to protect public health and safety and the environment, an equipment failure, alarm event, components not functioning as designed, components not functioning in accordance with manufacturers' specifications, or violations of the Approval, the System Owner shall provide written notification within five days, describing corrective measures to the local board of health and the Company and may only propose or take corrective measures provided that:

   a) all emergency repairs, including pumping, shall be in accordance with the limitations and permitting requirements of 310 CMR 15.353;

   b) the design of any repairs or upgrades are consistent with the System Approval;

   c) the design of any repairs or upgrades requiring a DSCP shall be performed by a Designer who is a Massachusetts Registered Professional Engineer or a Massachusetts Registered Sanitarian, provided that such Sanitarian shall not design a system with a discharge greater than 2,000 gallons per day.

   d) the installation of any repairs or upgrades requiring a DSCP shall be done by an Installer with a currently valid Disposal System Installers Permit and, if training is required, the Installer shall be certified by the Company as qualified to install the System.

5. To determine whether cause exists for modifying, revoking, or suspending the Approval or to determine whether the conditions of the Approval have been met, the

System Owner shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.

6. The Approval shall be binding on the System Owner and on its agents, contractors, successors, and assigns, including but not limited to the Designer, Installer, and Service Contractor. Violation of the terms and conditions of the Approval by any of the foregoing persons or entities, respectively, shall constitute violation of the Approval by the System Owner unless the Department determines otherwise.

V. Company Requirements

1. The Approval shall only apply to the model unit(s) with the same model designation(s) specified in the System Approval and meet the same specifications, operating requirements, and plans, as provided by the Company or its authorized agent at the time of the application. Any proposed modifications of the unit(s), installation requirements, or operating requirements shall be subject to the review of the Department for inclusion under a modification of the Approval. The Designer shall be responsible for the selection of the appropriate model unit(s) as applicable. The Company shall be responsible for verification of the appropriate model unit(s) as part of any review of proposed installations that may be required by Paragraph V.3 of these Standard Conditions or the Special Conditions in the Approval.

2. Prior to submission of an application for a DSCP, the Company or its authorized agent shall provide to the Designer and the System Owner:

   a) All design and installation specifications and requirements;

   b) An owner's manual and, if alarms are provided, including response procedures;

   c) A copy of the Company's warranty; and

   d) If training or certification is required by the Company, lists of qualified Designers, Installers, and Service Contractors.

3. Prior to the submission of an application for a DSCP, for all nonresidential Systems and any System with a design flow of 2,000 gpd or greater, the Company shall submit to the Designer and the System Owner, a certification by the Company or its authorized agent that the design conforms to the Approval and all Company requirements and that the proposed use of the System is consistent with the Technology's capabilities. The authorized agent of the Company responsible for the design review shall have received technical training in the Company's products.

4. If the Company requires trained or certified Designers, Installers, or Service Contractors, the Company or its authorized agent shall make available programs of training and continuing education, as necessary. The Company or its authorized agent shall maintain, annually update, and make available by February 15th of each year, lists of trained or certified Designers, Installers, and Service Contractors. If training or certification is required, the Company shall not sell the Technology to an Installer unless the Installer is trained or certified to install the System by the Company. Similarly, if training is required, the Company shall ensure distributors

and resellers of the Technology shall not sell the Technology to an Installer unless the Installer is trained or certified to install the System by the Company.

5. As part of any training programs for Designers, Installers, or Service Contractors, the Company or its authorized agent shall provide each trainee with a copy of this Approval with the design, installation, O&M, and owner's manuals that were submitted as part of the Approval.

6. The Company shall provide, in printed or electronic format, the System design, installation, O&M, and Owner's manuals, and any updates associated with this System Approval, to the System Owners, Designers, Installers, Service Contractors, vendors, resellers, and distributors of the System. Prior to publication or distribution in Massachusetts, the Company shall submit to the Department for review a copy of any proposed changes to the manual(s) with reasons for each change, at least 30 days prior to issuance. The Company shall request Department approval for any substantive changes which may require a modification of the Approval.

7. Prior to its sale of any System that may be used in Massachusetts, the Company shall provide the purchaser with a copy of this Approval with the System design, installation, O&M, and Owner's manuals. In any contract for distribution or sale of the System, the Company shall require the distributor or seller to provide the purchaser of a System for use in Massachusetts with copies of these documents, prior to any sale of the System.

8. To determine whether cause exists for modifying, revoking, or suspending the Approval or to determine whether the conditions of the Approval have been met, the Company shall furnish the Department any information that the Department requests regarding the Technology within 21 days of the date of receipt of that request.

9. Within 60 days of issuance by the Department of these Conditions and any other revisions to the Approval, the Company shall provide written notification of changes to the Approval to all distributors and resellers of the System.

10. The Company shall provide written notification to the Department's Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval is issued. Said notification shall include the name and address of the proposed owner containing a specific date of transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.

11. The Company shall maintain copies of:

    a) the Approval;

    b) the installation manual specifically detailing procedures for installation of its System;

c) an owner's manual and, if alarms are required, including alarm response procedures;

d) a copy of the Company's warranty; and

e) if training or certification is required, lists of qualified Designers and Installers.

12. The Company shall maintain the following additional information for 'Treatment with Disposal' Systems installed in Massachusetts, and make it available to the Department within 30 days of a request by the Department:

a) the address of each facility where the System was installed, the Owner's name and mailing address (if different), the type of use (e.g. residential, commercial, institutional, etc.), the design flow, the model installed; and

b) the installation date, start-up date, current operational status.

13. The Approval shall be binding on the Company and its officers, employees, agents, contractors, successors, and assigns, including but not limited to dealers, distributors, and resellers. Violation of the terms and conditions of the Approval by any of the foregoing persons or entities, respectively, shall constitute violation of the Approval by the Company unless the Department determines otherwise.

VI. General Requirements

1. Any System for which a complete Disposal System Construction Permit ("DSCP") Application is submitted while the Approval is in effect, may be permitted, installed, and used in accordance with the Approval, unless and until:

a) the Department issues modifications or amendments to the Approval which specifically affect the installation or use of a System installed under the Approval for the System; or

b) the Department, the local approval authority, or a court requires the System to be modified or removed or requires discharges to the System to cease.

2. All notices and documents required to be submitted to the Department by the Approval shall be submitted to:

Director
Wastewater Management Program
Department of Environmental Protection
One Winter Street - 5th floor
Boston, Massachusetts 02108

3. The Department may suspend, modify or revoke the Approval for cause, including, but not limited to, non-compliance with the terms of the Approval, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its

rights to take any enforcement action authorized by law with respect to the Approval and/or the System against the Company, a System Owner, a Designer, an Installer, and/or Service Contractor.