



State of Vermont
Department of Environmental Conservation

Agency of Natural Resources
Drinking Water and Groundwater Protection Division

WASTEWATER SYSTEM AND POTABLE WATER SUPPLY PERMIT

LAWS/REGULATIONS INVOLVED

10 V.S.A. Chapter 64, Potable Water Supply and Wastewater System Permit
Wastewater System and Potable Water Supply Rules, Effective April 12, 2019

Permittee(s): Lisa Stone
18532 36th Ave W Unit D
Lynnwood WA 98037

Permit Number: WW-7-5234

This permit affects the following property in Greensboro, Vermont:

Lot	Parcel	SPAN	Acres	Book(s)/Page(s)#
Existing	217-0094	264-083-10932	1.10	Book:30 Page(s):4-6, Book:3A Page(s):4-5

This application, consisting of replacing the failed septic system for an existing 3-bedroom single family residence. The existing home is to be demolished and re-built with no increase in bedrooms. New home will be reconnected to the year-round community water supply served by Greensboro Fire District, located at 94 Lazy Lane, in Greensboro, Vermont, is hereby approved under the requirements of the regulations named above subject to the following conditions. Any person aggrieved by this permit may appeal to the Environmental Court within 30 days of the date of issuance of this permit in accordance with 10 V.S.A. Chapter 220 and the Vermont Rules of Environmental Court Proceedings.

1. GENERAL

- 1.1 The permittee is responsible to record this permit in the Greensboro Land Records within thirty days of issuance of this permit and prior to the conveyance of any lot subject to the jurisdiction of this permit.
- 1.2 The permittee is responsible to record the design and installation certifications and other documents that are required to be filed under these Rules or under a permit condition in the Greensboro Land Records.
- 1.3 The owner of a lot with an Innovative/Alternative treatment system shall have a valid maintenance contract in force at all times with a vendor-trained and authorized licensed designer or service provider to conduct the annual inspection of the System. The minimum length of the contract shall be for two years.
- 1.4 Each assign or successor in interest shall be shown a copy of the Wastewater System and Potable Water Supply Permit and the stamped plan(s) prior to the conveyance of a lot.
- 1.5 By acceptance of this permit, the permittee agrees to allow representatives of the State of Vermont access to the property covered by the permit, at reasonable times, for the purpose of ascertaining compliance with the Vermont environmental and health statutes and regulations, and permit conditions.
- 1.6 This permit does not relieve the landowner from obtaining all other approvals and permits other State Agencies or Departments, or local officials prior to construction.

2. CONSTRUCTION

- 2.1 Construction shall be completed as shown on the plans and/or documents prepared by Patrick Larsen, with the stamped plans listed as follows:

Title	Sheet #	Plan Date	Revision
Site Plan & Construction Details	1 of 1	12/18/2019	12/30/2019

- 2.2 The landowner shall complete construction of the wastewater system approved by this permit no later than **October 30, 2020**. The landowner may request one extension of this deadline, provided the landowner makes the request in writing prior to the specified date, and shows good cause why construction cannot be completed by the stated date.
- 2.3 This permit authorizes the landowner to construct a new wastewater system required to abate a health hazard created by the failure of the existing wastewater system serving the structure/residence. The landowner is required to continue measures to prevent wastewater from surfacing on top of the ground, entering surface waters of the State, or backing up into the existing residence until such time as the approved wastewater system is constructed, activated, and all the conditions of this permit are satisfied



- 2.4 Construction of wastewater systems or potable water supplies, or buildings or structures (as defined by the Wastewater System and Potable Water Supply Rules), or campgrounds, not depicted on the stamped plans, or identified in this permit, is not allowed without prior approval by the Drinking Water and Groundwater Protection Division.
- 2.5 No buildings, roads, water pipes, sewer services, earthwork, re-grading, excavation, or other construction that might interfere with the operation of the wastewater system or potable water supply are allowed on or near the site-specific wastewater system, wastewater replacement area, or potable water supply depicted on the stamped plans. Adherence to all isolation distances that are set forth in the Wastewater System and Potable Water Supply Rules is required.

3. INSPECTIONS

- 3.1 No permit issued by the Secretary shall be valid for a substantially completed potable water supply and wastewater system until the Secretary receives a signed and dated certification from a qualified Vermont Licensed Designer (or where allowed, the installer) that states:

"I hereby certify that, in the exercise of my reasonable professional judgment, the installation-related information submitted is true and correct and the potable water supply and wastewater system were installed in accordance with the permitted design and all permit conditions, were inspected, were properly tested, and have successfully met those performance tests"

or which satisfies the requirements of §1-311 of the referenced rules.

- 3.2 A Class 1, Class B, or Class BW Designer or vendor approved service provider shall conduct an inspection of the Innovative/Alternative treatment system six months following installation of the treatment system. The inspection report shall be completed on a form prepared by the Secretary and the form provided to the landowner who shall submit the form to the Division within 60 days of the inspection is conducted.
- 3.3 A Class 1, Class B, or Class BW Designer or vendor approved service provider shall conduct an annual inspection of the Innovative/Alternative treatment system during the months of May or June of each year following installation of the treatment system. The inspection report shall be completed on a form prepared by the Secretary and the landowner shall submit the form to the Division by September 1 of the year the inspection is conducted.
- 3.4 An annual inspection of the bottomless sand filter (BSF) shall be performed by a qualified Licensed Designer. A written report of the annual inspection shall be submitted to the Division within 30 days of the inspection. At a minimum, the following criteria should be addressed in the inspection report:
 - a. Observation of any debris or vegetative growth on top of the sand filter surface.
 - b. Observation of any mechanical or electrical malfunctions.
 - c. Observation of any neglect or improper use.
 - d. Observation of the flushing of the laterals.
 - e. Observation of any ponding on top of the BSF, rotting of the timber frame or soil slumping around the BSF.

4. DESIGN FLOW

- 4.1 Lot use and design flows (gpd) shall correspond to the following.

Lot	Building	Building Use / Design Flow Basis	Water	Wastewater
Existing	Dwelling	3-bedroom single family residence (rebuilt)	420	420

5. WASTEWATER SYSTEM

- 5.1 A designer shall flag, prior to construction or site work on the lot, the perimeter of the approved leachfield, bottomless sand filter or mound with the flags maintained until construction of the component commences and the perimeter of any approved replacement area(s) with the flags maintained until construction of the building or structure is complete.
- 5.2 The wastewater system includes the use of an Innovative/Alternative component. Each prospective owner of a lot that utilizes an Innovative/Alternative component shall be shown a copy of the **Innovative/Alternative System Approval letter #2002-02-R7 for the Ecoflo® Biofilter System** prior to conveyance of the lot. The Innovative/Alternative treatment system shall function in accordance with the vendor requirement. The Drinking Water and Groundwater Protection Division shall be immediately notified if the treatment system is not functioning according to the vendor requirements or the effluent quality does not comply with BOD₅ to 30 mg/L or less and total suspended solids (TSS) to 30 mg/L or less.
- 5.3 The project is approved (with variances) for wastewater disposal by construction and utilization of the site-specific **Innovative/Alternative System** wastewater system and the bottomless sand filter (BSF) depicted on the stamped plans. The Drinking Water and Groundwater Protection Division shall allow no other method, or location of wastewater disposal without prior review and approval.

- 5.4 The Drinking Water and Groundwater Protection Division may require sampling of effluent from the Innovative/Alternative treatment system to confirm the filtrate effluent is being treated to reduce the BOD₅ to 30 mg/L or less and total suspended solids (TSS) to 30 mg/L or less.
- 5.5 Variances have been granted from the Technical Standards in accordance with the Wastewater System and Potable Water Supply Rules, Section 1-802 for the replacement wastewater system for the purpose of eliminating a health hazard. Certain design aspects of the approved replacement wastewater system may not adhere to the minimum standards required by the Wastewater System and Potable Water Supply Rules. The design flows for this building may not be increased until a fully complying wastewater system design prepared by a qualified Vermont Licensed Designer is submitted for review and approved by the Drinking Water and Groundwater Protection Division.
- 5.6 Should a wastewater system fail and not qualify as a minor repair or for an exemption, the landowner shall engage a qualified Licensed Designer to evaluate the cause of the failure and submit an application to the Drinking Water and Groundwater Protection Division prior to correcting the failure.
- 5.7 This permit does not relieve the permittee of the obligations of Title 10, Chapter 48, Subchapter 4, for the protection of groundwater.

6. POTABLE WATER SUPPLY

- 6.1 This project is approved for connection to the water supply system owned by the **Greensboro Fire District** as depicted on the plan(s) stamped by the Drinking Water and Groundwater Protection Division. The project is approved for **420 gallons** of water per day.
- 6.2 Should a potable water supply fail and not qualify as a minor repair or for an exemption, the landowner shall engage a qualified Licensed Designer to evaluate the cause of the failure and submit an application to the Drinking Water and Groundwater Protection Division prior to correcting the failure.

Emily Boedecker, Commissioner
Department of Environmental Conservation

By Richard A. Wilson
Richard A. Wilson
Environmental Analyst VI
St Johnsbury Regional Office
Drinking Water and Groundwater Protection Division

Dated December 30, 2019

cc: Patrick Larsen
Greensboro Planning Commission
Innovative/Alternative Manufacturer – Premier Tech Environment

REV. NO.	DATE	DESCRIPTION	REV. BY
1	12/30/19	ADDED MODEL NUMBER AND MEDIA TYPE TO BIO-FILTER DETAIL	PLL

SITE PLAN & CONSTRUCTION DETAILS
ELIZABETH & CHRIS STEEL
 94 LAZY LANE
 GREENSBORO, VERMONT

LARSEN APPLIED EARTH SCIENCE, LLC
 P.O. BOX 378
 HARDWICK, VERMONT 05843
 (802) 793-8236

SHEETS: 1 OF 1
 SCALE: 1"=30'
 DES. BY: PLL
 DRAWN BY: PLL
 VT DESIGNER: 504
 DATE: 12/18/19
 PROJ. NO. 190781

GENERAL NOTES

- This is not a boundary survey. Should questions arise regarding exact locations of lot lines, a Vermont licensed surveyor should be consulted. Property lines on these plans based on town parcel maps and preliminary survey by Russ Brown.
- Prior to construction please contact the consultant to schedule a construction stake-out of the proposed wastewater and/or water supply features designed on these plans.
- Prior to burial of components designed herein please contact the consultant to schedule a construction inspection of the proposed wastewater and/or water supply features designed on these plans.

WASTEWATER DISPOSAL SYSTEM RECOMMENDED MAINTENANCE

THE SEPTIC TANK SHOULD BE PUMP AT REGULAR INTERVALS NO GREATER THAN 5 YEARS.

THE ECOCFO BIO-FILTER PRE-TREATMENT SYSTEM SHALL ADHERE TO ANNUAL INSPECTIONS AS DESCRIBED IN THE STATE OF VERMONT INNOVATIVE/ALTERNATIVE SYSTEM APPROVAL.

THE BOTTOMLESS SAND FILTER SHALL RECEIVE FLUSHING AND/OR BOTTLE BRUSH TREATMENT ONCE PER YEAR.

THE LAND OWNER IS RESPONSIBLE FOR SCHEDULING RECOMMENDED MAINTENANCE.

BOTTOMLESS SAND FILTER SIZE CALCULATIONS

DESIGN FLOW: 3 BEDROOM DWELLING = 420 GPD
 SOIL: VFSL, FRIABLE, SUBANGULAR BLOCKY ESH#R 24"

USE ECO-FLO STB-500BR H1 COCO FILTER PRE-TREATMENT

LOADING RATE = 2.0 OSFD (PRE-TREATMENT)
 AREA REQUIRED = 420/2 = 210 SQFT
 USE 8' X 30' (240 SQFT)

DOSE: 28 ORIFICES X 0.25 GALLONS/ORIFICE = 7 GALLONS PER DOSE MAX
 NETWORK VOLUME ~8.5 GALLONS, THEREFORE SET DOSE VOLUME TO 15 GALLONS/DOSE = 420 GPD / 15 GALLONS PER DOSE = 28 DOSES PER DAY
 1440 MINUTES / 28 DOSES = 50 MINUTE DOSE INTERVAL

USE 15 GALLON DOSE EVERY 50 MINUTES

CONSTRUCTION NOTES

- Prior to excavation, contact the consultant for a stake-out of the proposed wastewater disposal system. It will be the contractor's responsibility to contact Dig-Safe prior to the start of any excavation. A designer shall review the mound wastewater disposal through the critical stages of construction. Please contact inspector at least three days prior to construction. Upon completion of construction, the designer shall submit a report in writing to the Secretary including the certification required in §1-308 of the VERMONT RULES. Upon completion of staking of the mound area and prior to the placing of the fill material, the designer shall inspect the site preparation. Upon completion of the installation of the distribution piping, the network shall be tested with clean water to ensure that distribution is complete and meets the requirements in §1-313 (a).
- Install septic tank in location shown, per detail this sheet.
- Install solid 4" x 4" x 40 gpc from septic tank to the pump station tank. Slope should not be less than 1/4" per foot. If pipe is shallower than 4.5', use 4" rigid insulation over pipe before burial. Pipe will be installed under all road crossings.
- Install ECOCFO per detail and calculations on this sheet in location shown on this sheet.
- Install 1.5" diameter force main from ECOCFO outlet to manifold as shown on plan. Force main should maintain burial depth of 5'. If force main is shallower than 5', use 4" rigid insulation over main before burial.
- To prevent construction, construction equipment shall not be moved across the proposed surface of the effluent disposal area. However, after placement of a minimum of six (6) inches of sand fill over the proposed area, construction equipment may be driven over the protected surface to expedite construction. Construction and/or piling shall not be initiated when the soil moisture content is high. If a sample of soil obtained from approximately nine (9) inches below the surface can be easily rolled into a wire, the soil moisture content is too high for construction purposes.
- Above ground vegetation shall be closely cut and removed from the fill material. The area shall then be plowed to a depth of seven (7) to eight (8) inches, parallel to the land contour with the plow throwing the soil uplope to provide a proper interface between the fill and natural soils. Tree stumps should be cut flush with the surface of the ground and roots should not be pulled. Once planting is completed, the area should be fenced to prevent vehicles and equipment from entering the plowed area, unless the fill material is going to be in place within 24 hours of the plowing. If the site cannot be plowed, a backhoe bucket filled with chisel teeth may be used to "lift" the site by creating furrows that are parallel to ground contour.
- The area upgradient of the mound wastewater disposal system shall be graded to provide diversion of surface run-off waters.
- Construction should be initiated immediately after preparation of the soil interface by placing a minimum of 30" mound sand fill 1.5" distribution pipe should be placed on 8" of crushed stone and buried with 2"-4" of crushed stone. Use two 42" long laterals, 1.5" diameter pressure schedule 40 pvc pipe, 40' 3/16" diameter holes in lateral every 3' apart, 15 holes/lateral total. Laterals to be placed with holes facing up and holes to be covered with orifice shields. One hole at end of each lateral to be facing down for drainage. Ends of laterals to have cleanout devices (see detail).
- After construction of the distribution system, but prior to covering the distribution system, a designer shall direct the testing of the distribution system. After successful testing of the distribution system, filter fabric shall be installed and the system completed. The entire mound wastewater disposal system is to be covered with topsoil native to the site, or of similar characteristics, to support vegetation found in the area. The installer shall crown the entire mound wastewater disposal system with a cover of soil less permeable than the mound fill, covering with 12" on the sides of the mound. Mound soil from the site is normally suitable for cover material, though the top 2" - 4" of this cover must be topsoil. The entire mound shall be seeded or sodded to ensure stability of the installation. This grass cover shall be maintained and should be mowed on a regular basis.

NOTE: A CURRENT MOUND SAND SEIVE ANALYSIS WILL BE REQUIRED FOR THE INSTALLATION TO BE CERTIFIED.

LATERAL AND PUMP CALCULATIONS

Use two 28" long laterals, 1" diameter pressure schedule 40 pvc pipe, drill 1/8" diameter holes in lateral every 2' apart, 14 holes/lateral, 28 holes total.

Two orifices in each lateral shall be drilled pointing up. All other orifices shall be drilled pointing down. Up-pointing orifices to be placed approximately 1/3 and 2/3 along the length of each lateral.

All orifices to be covered with orifice shields.

Lateral discharge rate with lateral pressure = 2.3 gal 0.28 gpm/hole x 14 holes per lateral = 4.1 gpm x 2 laterals = 8.2 gpm

System Head = 2.0 x 2.3 = 4.6
 Elev. difference = (manifold elev.) - (pump elev.) = 10'
 Friction loss (1.5" forcemain) = 3.72/100' pipe x 100' = 3.72'

Total Dynamic Head = 4.6 + 3.72 = 8.32'

Network loss (1 gal) = 2.5'
 Total Friction Loss = 3.7 + 2.5 = 6.2'
 Total Dynamic Head = 4.3 + 10 + 6.2 = 20.5'

Use pump capable of 8.2 gpm at 21' head.

SOILS DATA 11/2/19
 EXCAVATOR TEST PITS WITH BOOMER MERCIER AND PATRICK LARSEN. LIZ STEEL ALSO PRESENT.

TP-1
 0-11" SL, HISTORICAL FILL
 11-21" VFSL, BLACK, MOTTLED, BLOCKY
 21-38" GRSL, 10YR 4/2, FRIABLE, MOTTLED, SBK NO LEDGE, SEEPS AT 24", MOTTLED THROUGHOUT

TP-2 AND 3
 0-12" L, BLACK, BLOCKY, ROOTS
 12-38" GRVFSL, 10YR 4/2, FRIABLE, MOTTLED, SBK NO LEDGE, SEEPS AT 20"

NOTE: WETLANDS DELINEATED BY KRISTEN ROSE OF ROSE ENVIRONMENTAL AND SITE VISIT CONDUCTED BY SHANNON MORRISON, VT WETLAND ECOLOGIST

PROPOSED VARIANCES
 <50' LEACHFIELD TO SURFACE WATER
 <25' LEACHFIELD TO SWALE
 NATIVE SOILS TO BE REPLACED BY SPEC SAND

BOTTOMLESS SAND FILTER INSTALLATION NOTES

REMOVE SOIL UNDER BOTTOMLESS SAND FILTER FOOTPRINT TO A DEPTH OF 12" AND REPLACE WITH SAND MEDIA. SCAFFRY 12"-18" OF NATIVE SOIL MIX WITH 4" OF SAND MEDIA.

SAND MEDIA SHALL BE PACKED IN 8" LIFTS AND WETTED SLIGHTLY DURING INSTALLATION TO PROMOTE EVEN SETTLING.

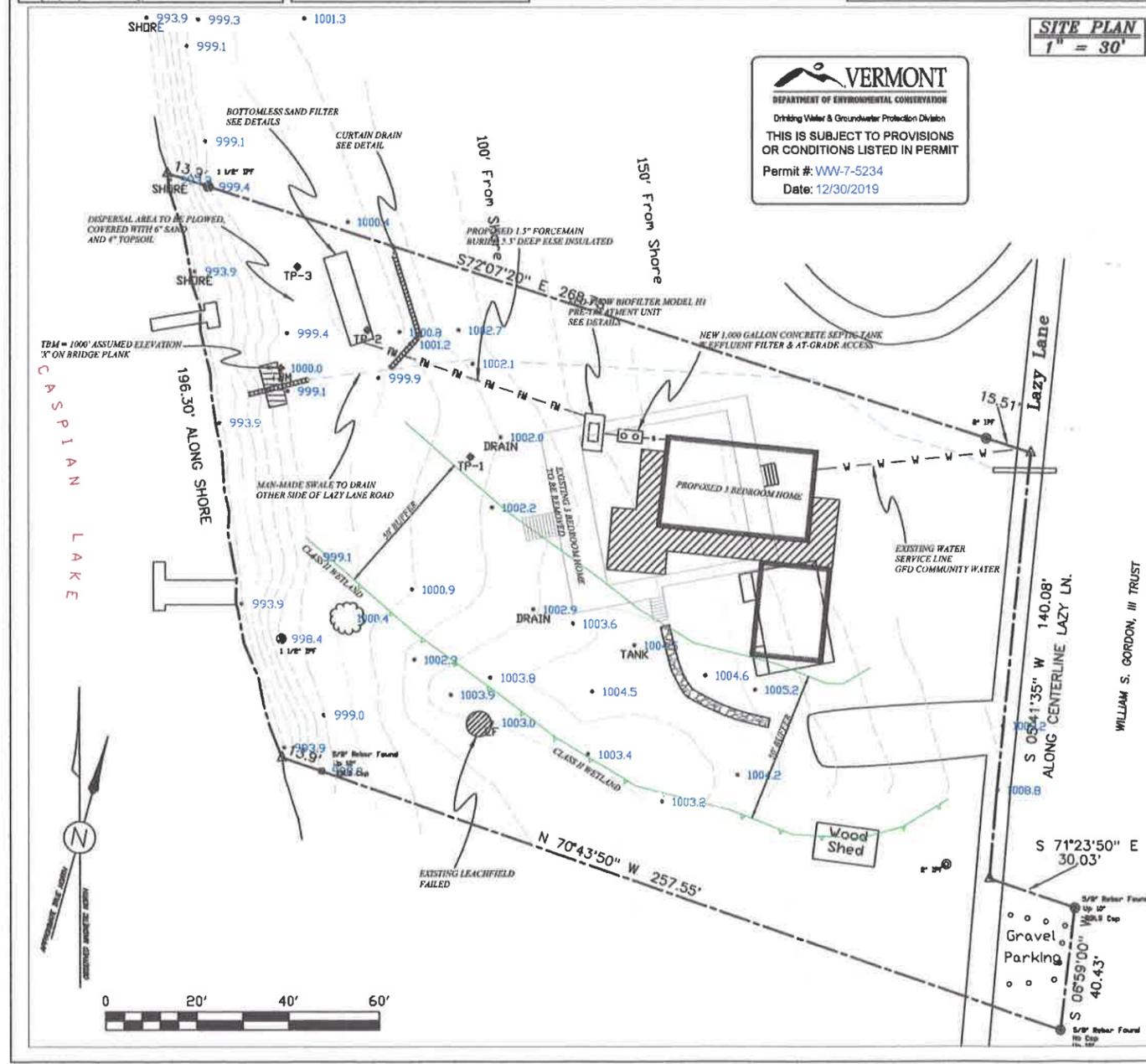
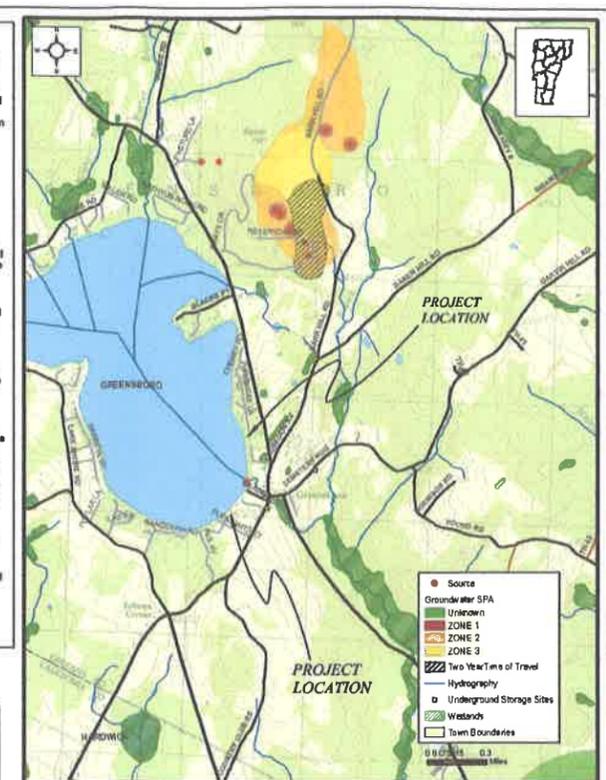
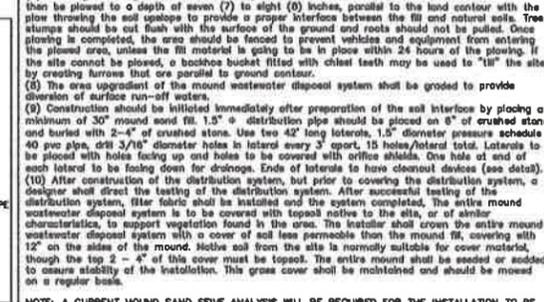
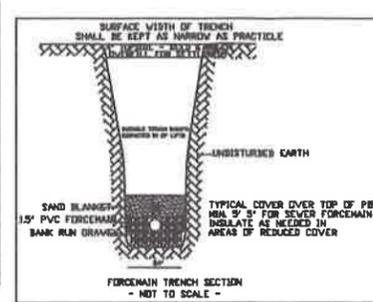
AS FILTER IS FILLED WITH SAND, THE EDGES OF THE FILTER SHOULD BE WALKED DOWN TO MAKE SURE SAND IS TIGHT ALONG PERIMETER AND THAT NO VOIDS EXIST. USE CLEAN SHOES SO NO FINES CONTAMINATE SAND MEDIA.

DO NOT STRETCH LINER DURING FILLING PROCESS.

INSTALL PEA STONE BEDDING AND DISTRIBUTION NETWORK PER DETAILS.

THE MANIFOLD AND LATERALS SHOULD BE LEFT UNCOVERED FOR TESTING THE DISTRIBUTION NETWORK.

AFTER TESTING, LATERALS SHALL BE OILED IN PLACE AND STONE COVER SHALL BE PLACED PER DETAILS.



VERMONT
 DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 Drinking Water & Groundwater Protection Division
 THIS IS SUBJECT TO PROVISIONS OR CONDITIONS LISTED IN PERMIT
 Permit #: WW-7-5234
 Date: 12/30/2019

