Drinking Water & Groundwater Protection Division - Permit Application

Wastewater System & Potable Water Supply

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

For Office Use Only:

Application#	PIN#	Date Complete Application Received

Authority:
10 V.S.A. Chapter 64, the Environmental Protection Rules, Chapter 1, Wastewater System & Potable Water Supply Rules, and Chapter 21, Water Supply Rules, Appendix A. Part 11 - Small Scale Water Systems.

General Information:
The organization and/or content of this form may not be altered, however, the form is designed to expand to allow additional information to be entered. Changes in the organization and/or content of the form may result in an invalid application or permit.

In most cases a licensed designer will be required for your project and to help complete this application form. There are also line-by-line instructions available to assist with completing this form.

NOTE: ***We strongly suggest referring to the application instructions while completing this application form.***

Part I Applicant (Landowner) & Project Contact Information

Section A - Applicant Details (if Landowner is an Individual or Individuals)

1 Last Name	2 First Name (and Middle Initial if appropriate)
Sargent	Frederic O.

3 Mailing Address Line 1	4 Mailing Address Line 2
5717 Renzo Lane	

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Sarasota	Florida	United States	34243

9 Email Address	10 Telephone
	941-351-8636

Remove This Applicant

1 Last Name	2 First Name (and Middle Initial if appropriate)
Sargent	Shirley J.

3 Mailing Address Line 1	4 Mailing Address Line 2
5717 Renzo Lane	

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Sarasota	Florida	United States	34243

9 Email Address	10 Telephone
	941-351-8636

Remove This Applicant

Add Another Applicant

RECEIVED
AUG 22 2014
CHARLOTTE
PLANNING & ZONING

Section B - Applicant Details (if Landowner is other than an Individual or Individuals, e.g. Corporations, Homeowner's Associations, etc.)

1 Registered Legal Entity or Organization Name	2 Telephone

3 Mailing Address Line 1	4 Mailing Address Line 2

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
		United States	

Certifying Official
The Certifying Official must be a person who has signatory authority for the legal entity or organization that is the Applicant.

9 Certifying Official Last Name	10 Certifying Official First Name (and MI if appropriate)

11 Certifying Official Title

12 Certifying Official Email Address	13 Telephone

Remove This Applicant

Add Another Applicant

Section C - Primary Contact Information (if other than Applicant)

1 Last Name	2 First Name (and Middle Initial if appropriate)

3 Mailing Address Line 1	4 Mailing Address Line 2

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
		United States	

9 Email Address	10 Telephone

Section D - Building/Business Owner Information

1 Last Name	2 First Name (and Middle Initial if appropriate)

3 Mailing Address Line 1	4 Mailing Address Line 2

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
		United States	

9 Email Address	10 Telephone

Part II Certifying Designer(s) Information

1 Designer Last Name	2 Designer First Name (and Middle Initial if appropriate)
Barnard	Jason S.

3 Designer License#	4 Company Name
430	Jason Barnard Consulting, LLC

5 Mailing Address Line 1	6 Mailing Address Line 2
4400 VT Route 17	

7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Starksboro	Vermont	United States	05487

11 Email Address	12 Telephone
jbsitetech@hotmail.com	802-453-2597

13 Designer Role(s) (check all that apply)

- ☒ Water Supply Designer
- ☒ Wastewater Disposal System Designer

Remove This Designer

Add Another Designer

Part III Property Location Information

Section A - Property Location

1 Please provide the property Town and the property address or a brief description of the location.

(a) Town or City	(b) Street or Road Location
Charlotte	210 Fields Farm Road

Section B - Center of Property GPS Coordinates

1 Enter the approximate center of property coordinates using GPS set for NAD83 or as derived from a map (map must be based on NAD83).

(a) Latitude
(in decimal degrees to five decimal places, ex. 44.38181°)

N 44.29393 °

(b) Longitude
(in decimal degrees to five decimal places, ex. -72.31392 °)

W (-) 73.29222 °

Part IV Project Information

Section A - General Project Information & Questions

1 Project Name (if applicable)

2 Total Acreage of Property: 0.7

3 Business Name (if applicable)

4 Detailed Project Description

Frederic O. and Shirely J. Sargent own a 0.7+/- acre developed residential property located at 210 Fields Farm Road in Charlotte. The property is improved with a 2-bedroom seasonal dwelling that is served by an on-site in-ground wastewater disposal system and is provided water by a surface water system (i.e. Lake Champlain). In order to convert the existing 2-bedroom structure from seasonal to year-round, a replacement mound system and drilled well are proposed for the subject property. The replacement system is a performance-based mound that will be preceded by a State of Vermont approved advanced treatment system.

5 (a) Were all existing buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007? ..... (●) Yes ( ) No

(b) Were all existing improved and unimproved lots in existence before January 1, 2007? ..... (●) Yes ( ) No

6 Does this application include subdividing the property? ..... ( ) Yes (●) No

7 Has anyone from the Drinking Water & Groundwater Protection Division's Regional Office been to the property? ..... (●) Yes ( ) No

If Yes, enter the staff person's name and the date of the visit.

(a) Name of Staff Person: Spencer Harris

(b) Date of Visit (m/d/yyyy): 11/18/2013

8 Will any construction occur within 50 feet of a wetland boundary, mapped or designated? ..... ( ) Yes (●) No

If Yes, contact the Wetlands Program of the Watershed Management Division at (802) 338-4835.

9 Will more than one acre be disturbed during the entire course of construction, including all lots and phases? ..... ( ) Yes (●) No

If Yes, contact the Stormwater Program of the Watershed Management Division at (802) 241-4320.

10 Will there be any stream crossings by roads, utilities, or other construction? ..... ◯ Yes ◉ No

If Yes, contact the River Corridor Mgmt. Program of the Watershed Management Division at:

Central & Northwest Vermont ..... (802) 879-5631
Southern Vermont ..... (802) 786-5906
Northeastern Vermont ..... (802) 751-0129

11 Is the project located in a special flood hazard area as designated on the flood insurance maps prepared for a municipality by the Federal Emergency Management Agency? ..... ◯ Yes ◉ No

If Yes, show the special flood hazard area limits on the site plan.

12 Act 250: Has the Applicant (Landowner) subdivided any other lots of any size within a five mile radius of this subdivision, or within the environmental district within the last five years ? ..... ◯ Yes ◉ No

If Yes, enter the town(s) and the associated number of lots in the table below:

	(a) Town	(b) Number of Lots
X		

Add Another Town/Lot

13 Is there any prior Act 250 jurisdiction on the tract of land?..... ◯ Yes ◉ No

If Yes, enter the Act 250 permit number:

(a) Act 250 Permit Number

Section B - Project Deed Reference

1 Please provide the Town, Parcel ID, Book, and Page reference for the current landowner's deed(s) to this property:

	(a) Town	(b) Parcel ID	(c) Book	(d) Page(s)
X	Charlotte	M38 B50 L11	31	233-234

Add Another Deed Reference

Section C - Project Plan Reference

1 Please provide the following information for all water supply and wastewater disposal system plans being submitted.

	(a) Sheet#	(b) Title	(c) Plan Date	(d) Plan Revision Date
X	1	Site Plan and Drilled Well Detail	8/8/2014	
X	2	Replacement Wastewater System Details and Notes	8/8/2014	

Add Another Plan Reference

Section D - Existing Project Lot/Building Details

Please provide the existing project details. This section is used to describe what is existing for the project. For example, if you are subdividing an undeveloped 21-acre parcel, you would list the existing parcel. If you are revising the boundary lines of two commercial lots in an industrial park, and constructing an addition to an existing building you would list the existing lot numbers, existing acres, existing buildings, existing uses, construction date(s), prior permits, and answer the compliance questions.

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
1	0.7	Residential

4 Provide the following information for each building on the lot:

	(a) Building ID	(b) Existing Use	(c) Date Construction of Building Substantially Complete	(d) Prior Permits	(e) In compliance with with existing permits?
X	Lot 1 House	Residential	Prior to 2007	None Found	◯ Yes ◉ No

Add Another Building

Remove This Lot

Add Another Lot

Section E - Proposed Project Lot/BuildingDetails

This section is used to describe what you are proposing to do in this project. For example, if you were going to create 4 lots for construction of single family residences, you would list each lot, proposed acreage, proposed buildings, and proposed use.

1 Lot#	2 Lot Size (acres)	3 Proposed Use of the Lot
Lot 1	0.7	2-Bedroom Single-Family Residence

4 Is the lot being created as part of a subdivision? ..... ◯ Yes ◉ No

5 Are you requesting that the Blood, Marriage, or Civil Union special fee be applied to this lot? ..... ◯ Yes ◉ No

6 If the lot is exempt, please indicate the specific exemption from the Wastewater System and Potable Water Supply Rules? .....

7 Provide the following information for each building on the lot:

	(a) Building ID	(b) If building is exempt, indicate exemption	(c) Construction or increased flow?	(d) Proposed Use
X	Lot 1 Residence		☐	2-Bedroom Single-Family Residence

Add Another Building

Remove This Lot

Add Another Lot

Part V Water Supply Information

Section A - Water Supply Screening Questions

1 Are you proposing a new water supply or water service line or changes to a permitted but not constructed water supply or water service line for this project? ..... ◉ Yes ◯ No

2 Are you proposing changes to an existing water supply or water service for this project (including changes to location, design flows, or operational change)? ..... ◯ Yes ◉ No

3 Is there an existing connection to a water supply or water service line for this project? ..... ◉ Yes ◯ No

Complete Part V if you answered Yes to any of the above questions. A project with no existing or proposed water supply may skip to Part VI.

Section B - General Water Supply Questions

1 Does this project involve a failed water supply? Water System was not sampled. ..... ◯ Yes ◉ No

2 Will any of the proposed water sources serve 25 or more people or have 15 or more service connections? ..... ◯ Yes ◉ No

If Yes, the applicant must contact the Drinking Water & Groundwater Protection Division at (802) 241-3400 for source, construction and an operating permit.

3 Are any of the existing or proposed water sources located within a special flood hazard area? ..... ◯ Yes ◉ No

4 Are any of the existing or proposed water sources located within a floodway? ..... ◯ Yes ◉ No

5 Are any of the proposed water sources located within 1 mile of a hazardous waste site as designated by the Waste Management Division and identified on the Agency mapping website? Six(6) hazardous waste sites were noted within 1 mile of the Sargent property. However, this is a replacement well that is a significant improvement over the Lane water system. ◉ Yes ○ No

If Yes, please submit additional information on the site. The Waste Management Division can be reached at (802) 241-3888.

6 Does this project require an approval letter from the Drinking Water & Groundwater Protection Division for the construction of a public water system, municipal water line extension over 500 feet, or hydrants or sprinkler systems? ○ Yes ◉ No

If Yes, please submit a copy of the approval letter from the Drinking Water & Groundwater Protection Division.

7 Does the proposed or existing water supply(ies) use a water treatment device to obtain compliance with the quality requirements in the Water Supply Rule? ○ Yes ◉ No

If Yes, please submit additional information regarding the constituent(s) that exceeds the standards and plans, details, and specifications of the treatment device.

8 Is any portion of the proposed water supply located in or near a Water Source Protection Area as designated by the Drinking Water & Groundwater Protection Division? ○ Yes ◉ No

If in areas of known interference issues, contact the Drinking Water & Groundwater Protection Division at (802) 241-3400.

Section C - Individual Water Supply Details

Please provide the following information for each of the existing and proposed water supply(ies) serving a building or structure, or campground on the property.

1 Water Supply Name/Identifier	2 Water Supply Owner (if not Applicant)
Replacement Well	
3 Water Source Type	**4 Type of Change to Supply**
Non-Public Drilled Bedrock Well	Replacement of Failed System

5 Lots/Buildings Served by this Water Supply System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	Design Flows (Gallons Per Day) (d) Existing	(e) Change	(f) Total	(g) Rule or Meter Based Flows
X	Lot 1	Lot 1 House	Replacement of Failed System	280	0	280	Rule-based
				6 280	7 0	8 280	

Add Another Lot/Building Served by this Supply

9 Is this water supply located off-lot? ○ Yes ◉ No

10 Is this water supply shared? ○ Yes ◉ No

If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.

11 Is a variance being requested for this water supply? ○ Yes ◉ No

If Yes, please submit additional details related to the variance request.

Remove This Water Supply

Add Another Water Supply

Section D - Water Supply Design Flows Summary Table

1 If the project includes more than one water supply, please list each water supply system and provide the total water supply design flows for the project. **IMPORTANT**: Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

	(a) Water Supply Name/Identifier	Design Flows (Gallons Per Day) (b) Existing	(c) Change	(d) Total
X	Replacement Drilled Well	280	0	280
		2 280	3 0	4 280

Add Another Water Supply

Part VI Wastewater Disposal System Information

Section A - Wastewater Disposal System Screening Questions

1 Are you proposing a new or replacement wastewater disposal system, a new wastewater service line, or changes to a permitted but not constructed wastewater disposal system or wastewater service line for this project? ..... (●) Yes ( ) No

2 Are you proposing changes to an existing wastewater disposal system, replacement wastewater disposal system, replacement area, or wastewater service line for this project (including changes to location, design flows, or operational change)? ..... ( ) Yes (●) No

3 Is there an existing connection to a wastewater disposal system or wastewater service line for this project? ..... (●) Yes ( ) No

Complete Part VI if you answered Yes to any of the above questions.
A project with no existing or proposed wastewater disposal systems may skip to Part VII.

Section B - General Wastewater Disposal System Questions

1 Does this project involve a failed wastewater disposal system? ..... ( ) Yes (●) No

2 Do any of the systems require a curtain or dewatering drain as part of the design? ..... ( ) Yes (●) No

3 Is a hydrogeologic study required for this project? ..... (●) Yes ( ) No

4 For projects using soil-based wastewater systems having a total design flow that exceeds 1,000 gpd, is this project located in a Class A Watershed? ..... ( ) Yes ( ) No (●) NA

If Yes, indicate the Class A Watershed in which the system(s) is located:

(a) Class A Watershed Name

5 Are there any existing or proposed floor drains as part of this project? ..... ( ) Yes (●) No

If Yes, indicate where the floor drains will discharge:

(a) Floor Drain Discharge Point

6 If the project utilizes an Innovative/Alternative System or Product, has the applicant received a copy of the Drinking Water & Groundwater Protection Division's approval letter? ..... (●) Yes ( ) No ( ) NA

7 Is any portion of the proposed wastewater disposal system located in or near a Water Source Protection Area as designated by the Drinking Water & Groundwater Protection Division? ..... ( ) Yes (●) No

If Yes, contact the Drinking Water & Groundwater Protection Division at (802) 241-3400.

Section C - Individual Wastewater Disposal System Details

Please provide the following information for each of the existing and proposed wastewater disposal systems serving a building or structure, or campground on the property.

1 Wastewater Disposal System Name/Identifier	2 Wastewater Disposal System Owner (if not Applicant)
Replacement Mound System	
3 Wastewater Disposal System Type	**4 Type of Change to System**
Mound	Replacement System Design Approval

5 Lots/Buildings Served by this Wastewater Disposal System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	Design Flows (Gallons Per Day) (d) Existing	(e) Change	(f) Infiltration	(g) Total	(h) Rule or Meter Based Flows
X	1	Lot 1 House	Connection to New System	280	0	0	280	Rule-based
			6	280	0	0	280	

Add Another Lot/Building Served by this System

10 Is this wastewater disposal system located off-lot? ..... ( ) Yes (●) No

11 Is this wastewater disposal system shared? ..... ( ) Yes (●) No

If the wastewater disposal system is located off-lot or shared, submit a copy of the agreement to provide an easement prior to initiation of construction.

12 Is a variance being requested for this wastewater disposal system? ..... ◯ Yes ◉ No

If Yes, please submit additional details related to the variance request.

13 If this wastewater disposal system type is a connection to an Indirect Discharge System, please provide the Indirect Discharge System ID number.

Indirect Discharge System ID Number

14 If this wastewater disposal system type is a connection to a municipal system, please select the town.

Town

15 If this wastewater disposal system is a soil-based system, please select the design approach used.

Design Approach Used

Performance Based

16 For soil-based systems, please check all that apply (Note: Store and dose does not apply to standard pump/pump chamber systems).

☐ Storage and Dose ☒ Filtrate ☐ Constructed Wetlands

17 If this is an Innovative/Alternative soil-based system, please select the system use type.

Innovative/Alternative System Use Type

General

18 If this is an Innovative/Alternative soil-based system, please select the Innovative/Alternative system or product.

Innovative/Alternative System or Product

Advantex

Remove This Wastewater System

Add Another Wastewater System

Section D - Wastewater Disposal Systems Design Flows Summary Table

1 If the project includes more than one wastewater disposal system, please list each system on this page and provide the total wastewater disposal design flows for the project. **IMPORTANT**: Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

		Design Flows (Gallons Per Day)			
	(a) Wastewater Disposal System Name/Identifier	(b) Existing	(c) Change	(d) Infiltration	(e) Total
X	Replacement Mound System	280	0	0	280
	Add Another Wastewater System	2	3	4	5
		280	0	0	280

Part VII Application Fees

1 Fee Amount $500.00

2 Fee Calculation Details

Based on the Town of Charlotte permit application fee schedule effective February 11, 2013, the application fee is $500.00.

Part VIII Designer Certification & Copyright License

Section A - Certifying Designer 1 Certification & Copyright License

"i hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."

1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section A, Line 13.

- ☒ Water Supply Designer
- ☒ Wastewater Disposal System Designer

1 Designer 1 Name	2 Designer 1 Signature	3 Signature Date
Jason S. Barnard	J. Barnard	8-8-14

Section B - Certifying Designer 2 Certification & Copyright License

"i hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."

1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section B, Line 13.

- ☐ Water Supply Designer
- ☐ Wastewater Disposal System Designer

1 Designer 2 Name	2 Designer 2 Signature	3 Signature Date

Part IX Applicant(s) Signature & Acknowledgements

In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Drinking Water & Groundwater Protection Division, it may be necessary to visit the property. As this would involve a Department employee entering private property, we request your approval to do so.

1 If we do visit your property, do you have any special instructions?

"As landowner of the property for which I am requesting a permit from the Department of Environmental Conservation, I understand that by signing this application I am granting permission for the Department employees to enter the property, during normal working hours, to insure compliance of the property with the applicable rules of the Department.

I also understand that I am not allowed to commence any site work or construction on this project without written approval from the Department of Environmental Conservation.

If my project utilizes an Innovative/Alternative System or Product, I have received a copy of the Drinking Water & Groundwater Protection Division's approval letter and agree to abide by the conditions of the approval.

I also certify that to the best of my knowledge and belief the information submitted above is true, accurate and complete."

	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
X	Frederic O. Sargent	Frederic O. Sargent	Aug 16, 2014
X	Shirley J. Sargent	Shirley J. Sargent	Aug 16, 2014

Add Applicant Signature Block

ANR Form 5: Certification Statement for Wastewater System and Potable Water Supply Permits when there is no Required Notification of Overshadowed Property Owner(s)

A person submitting an application to the Secretary for a Wastewater System and Potable Water Supply Permit shall use this statement whenever overshadowing notification of affected landowners is not required (see guidance and instructions for examples).

Note: When the property subject to the permit application is owned by more than one person, only one of the landowners must sign this certification statement even though all landowners must sign the permit application itself.

I hereby certify that "overshadowing" notification is not required either because there is an exemption to the notification requirement or there are no landowners whose property may be affected by the proposed water and wastewater systems.

Signature Frederic O Sargent, Shirley J Sargent

Name (Printed) Frederic O. Sargent and Shirley J. Sargent

Property Address or Property Tax ID # 210 Fields Farm Road, Charlotte, Vermont

Date of this certification Aug. 16, 2014

(To Comply with Act 145 and Act 117 - 8-24-12 Last Revised 9-11-12)

Attachment A

Vermont Department of Environmental Conservation (VDEC)

Shoreland Permit Program

Fact Sheet for Wastewater System and Potable Water Supply Designers and Installers

June 25, 2014

Vermont Department of Environmental Conservation (DEC)

Shoreland Permit Program

Fact Sheet for Wastewater System and Potable Water Supply Designers and Installers

June 25, 2014

This fact sheet summarizes the requirements of the Shoreland Protection Act (10 V.S.A. Chapter 49A, the "Act"), which regulates clearing and construction of impervious surfaces on lake shoreland parcels and describes how those requirements interact with the requirements of the Wastewater System and Potable Water Supply Rules (WW Rules). The Act takes effect on July 1, 2014.

The Act requires Shoreland Permits for development activities proposed to occur within 250 feet of the shoreline (mean water level) on Vermont lakes and ponds greater than 10 acres in size unless there is a permit exemption.

The installation and maintenance of wastewater systems and potable water supplies are exempt under the Act. However, if a project includes a wastewater system or potable water supply and the construction of a building or structure, then a Shoreland Permit or Registration will likely be required.

IMPORTANT: Landowners need to be aware that the area cleared for the installation and maintenance of a wastewater system or potable water supply will count towards the overall total "cleared area" on the "parcel" under the Act and therefore may affect their ability in the future to clear or construct impervious surfaces (including the construction of buildings or structures) within 250 feet of the shoreline.

Other Key Information:

- "Cleared area" means an area where existing vegetative cover, soil, tree canopy, or duff is permanently removed or altered. (Note, vegetation management conducted according to the Vegetation Protection Standards in Section 1447 of the Act does not count towards a parcel's cleared area.)

- "Impervious surface" means those manmade surfaces, including paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

- If a landowner is proposing to create impervious surface or cleared areas in addition to that necessary for a wastewater or water supply system within 250 feet of the shoreline, the landowner will need a Shoreland Permit or Registration prior to development (unless a different exemption applies). The Act lists a number of actions that are exempt from these requirements. **Landowners are strongly encouraged to consult with the Shorelands Program before they apply for Wastewater System and Potable Water Supply Permits (WW permits) and other permits to**

avoid delays and potential confusion.

- If a landowner needs both a Shoreland Permit or Registration and a WW Permit, the landowner should consult with the Shoreland Program prior to conducting any soil investigation that includes test pits and then **apply for both permits at the same time**. If both permits are needed, the landowner may request that the Drinking Water and Groundwater Protection Division (DWGPD) not issue the WW permit until the Shoreland Permit Program issues its permit or receives a valid registration in order to ensure both permits are consistent. Otherwise, the DWGPD may issue the WW permit independent of the Shoreland Program issuing a permit or receiving a valid registration.

- At the time a designer submits an application for a WW Permit for a project within 250 feet of the shoreline, the DWGPD will notify the Shoreland Program of the application.

- **Landowners are strongly encouraged to be good lake stewards and to site wastewater and water supply systems in accordance with the standards in the Shoreland Protection Act.** That means siting systems at least **100 feet back** from the shoreline and siting them **in areas that are already cleared** if possible.

- Siting new systems in existing cleared areas is highly encouraged so long as the location complies with the WW Rules. As noted above, clearing for the installation or maintenance of a wastewater system or potable water supply will count towards the total cleared area on a parcel. This includes clearing for test pits or other exploratory work unless the clearing is restored to meet the vegetative cover requirements of the Act in areas where the system is not constructed. Cleared areas for test pits or other exploratory work that is not part of the installed or maintained location of the wastewater system or potable water supply that is allowed to naturally re-vegetate and is subsequently managed by the landowner per the requirements of the Act shall not be counted towards a parcel's cleared area.

- A "lot" as defined by the WW Rules may be only a subset of a "parcel" as defined by the Act. If a landowner owns land contiguous to the "lot" boundaries as those boundaries are defined for the purposes of the WW Rules, that contiguous land may be counted as part of the landowner's "parcel" for the purposes of the Act. It's important to note that the Act considers all impervious surface and cleared areas that exist and that are proposed on the entire "parcel" located within 250 feet of the shoreline.

- Before subdividing property, **landowners should be aware that a parcel created after July 1, 2014 that is not capable of meeting the standards in Section 1444 of the Act is not developable. Note that Section 1444 of the Act requires that new cleared areas and impervious surfaces be no closer than 100 feet to the shoreline**. If a parcel is created after July 1, 2014 and proposed development cannot meet the requirements of Section 1444, then activities

on the parcel will be limited to creating cleared area or impervious surface that meets the requirements for a registration or exemption.

- One key provision of the Act is the transition provision:

  The first part of the transition provision covers projects that have obtained all applicable local, state, and federal permits before July 1, 2014. The Act allows those permitted projects to be completed at any point in the future without obtaining a Shoreland Permit. Please note that future activities that would require new permits or permit amendments may trigger jurisdiction under the Shoreland Program. The second part of the transition provision covers complete applications for all applicable local, state, and federal permits. The Act allows projects to commence substantial construction (see bullet point below) of a cleared area or impervious to occur within two years of the date that all applicable permits become final provided:

  1. all required applications are filed and are administratively complete before July 1, 2014; and
  2. there are no permit amendments or new activities that would trigger new permit requirements.

- The Shoreland Permit Program interprets "commence substantial construction" to mean that: (1) if a project requires foundation work, that work is at least partially completed, (2) if a project requires clearing, the clearing has been completed, and (3) if neither (1) nor (2) are applicable, all necessary grading for the project has been completed.

- Projects subject to the requirements of Act 250 are exempt from needing Shoreland Permits and Registrations.

Frequently Asked Questions and Answers

Q1 A landowner has a seasonal camp and wants to convert the camp to a year round residence. The conversion needs a WW Permit. There is no new impervious surface or cleared area other than for a replacement wastewater system or water supply at the time of the application for the WW Permit. Is a Shoreland Permit needed prior to issuing the WW Permit?

A1 No, a Shoreland Permit is not required because the only physical change to the lot is the installation of a supply or system. Note, if there are changes made to the camp at the time of the conversion that expand the footprint, a Shoreland Permit or Registration will be required.

Q2 A landowner has a Shoreland Permit and a WW Permit for a residence and wants to subdivide the parcel into a lot with the residence and an undeveloped lot. Does the Shoreland Permit need to be amended prior to obtaining the WW Permit?

A2 Yes, a new or amended Shoreland Permit will be required. A landowner with an existing Shoreland Permit will need to review their existing permit conditions to determine if further subdivision will be allowable based upon the percentage of existing impervious or cleared areas located on the parcel and that are subject to the Shoreland Permit coverage. In addition, the landowner may be creating two new parcels that may be non-conforming under the Shoreland Act and therefore may not be able to obtain a Shoreland Permit for new impervious surfaces or cleared areas after July 1, 2014.

Q3 A landowner is installing a new septic tank and pump station that have access risers that terminate above ground elevation. The tank and station may or may not require a WW Permit. Are the tops of these components new impervious surfaces?

A3 Yes. Any surface for which precipitation runs off rather than infiltrates is considered an impervious surface, more specifically defined in the Act, which may include risers or other infrastructure. Impervious surfaces associated with a wastewater system or water supply are not subject to a permit or registration under the Act. However, landowners need to be aware that the impervious area associated with a wastewater system and water supply will count towards the overall total "impervious surface" on the "parcel" under the Act and therefore may affect their ability in the future to construct impervious surfaces (including the construction of buildings or structures) within 250 feet of the shoreline.

Q4 A landowner has an existing residence that is being replaced with a new residence after July 1, 2014. The new residence is not on the footprint of the existing residence but is within 50 feet of the existing residence therefore exempt from needing a WW Permit. Is a Shoreland Permit required for the new residence?

A4 Yes, this is new impervious surface and therefore needs a Shoreland Permit.

Q5 A landowner is installing a new septic tank and pump station or water storage tank that will require clearing within 250 feet of shoreline after July 1, 2014. The tank and station may or may not require a WW Permit. Is this clearing counted towards the overall cleared area requiring either a Shoreland Permit or Registration?

A5 Yes, the cleared area counts toward the overall cleared area on the parcel under the Act.

Q6 A landowner owns a parcel that does not have frontage on a lake but the property line is 75 feet from a lake. The landowner is proposing to build an addition to his house and to create a small lawn. Is a Shoreland Permit or Registration needed for impervious surfaces or cleared area that is proposed to occur within 250 feet of the lake?

A6 Yes, the Shoreland Bill applies to any activity that occurs within 250 feet of a lake that is 10 acres or larger whether or not the parcel actually borders the lake.

Specific information on the Shoreland Protection Act can be found on DEC's Shoreland Permit Program website:

http://www.vtwaterquality.org/permits/htm/pm_shoreland.htm.

Additional information can be obtained by contacting the program directly at:

ANR.WSMDShoreland@state.vt.us; or Dan Homeier at (802) 490-6196

Lakes that are 10 acres or larger can be found at:

http://www.watershedmanagement.vt.gov/lakes/docs/shoreland/lp_VT%20Lakes%20Greater%20than%2010%20Acres.pdf

Revised June 25, 2014

TEST PIT LOG

Client: Frederic O. and Shirely J. Sargent Date: November 18, 2013 Location: 210 Fields Farm Road, Charlotte, Vermont

Project Description: Replacement Wastewater Disposal System Design and Permitting

Logged By: Jason Barnard, Licensed Designer #430-B Topographic Setting: Sloping Lawn and Wooded Area

Current/Historic Land Use: Seasonal Dwelling Slope: 5-8% Vegetation: Grass

Weather Conditions: 50^0 Mostly Sunny Method of Excavation: Rubber Tired Backhoe

Test Pit #	Depth (inches)	Dominant Color	Soil Texture	Soil Structure	Consistency	Mottles	Comments
01	0-6"	Brown	Very fine sandy loam (topsoil)	Weak sub-angular blocky	Friable	No	Fairly well drained
	6-11"	Brown	Very fine sandy clay loam	Sub-angular blocky	Friable	Prominent, common and distinct at 10"	Fairly well drained
	11-38"	Brown	Clay	Angular to platy	Firm	Prominent, common and distinct	Poorly drained, no groundwater or ledge to 38"
02	0-6"	Brown	Very fine sandy loam (topsoil)	Weak sub-angular blocky	Friable	No	Fairly well drained
	6-12"	Brown	Clay loam	Sub-angular blocky	Friable	Prominent, common and distinct at 10"	Fairly well drained
	12-36"	Brown	Clay	Angular to platy	Firm	Prominent, common and distinct	Poorly drained, no groundwater or ledge to 36"

Table 1

Frederic O. and Shirley J. Sargent
210 Fields Farm Road,
Charlotte, Vermont
Percolation Tests of July 9, 2014
Replacement Wastewater System

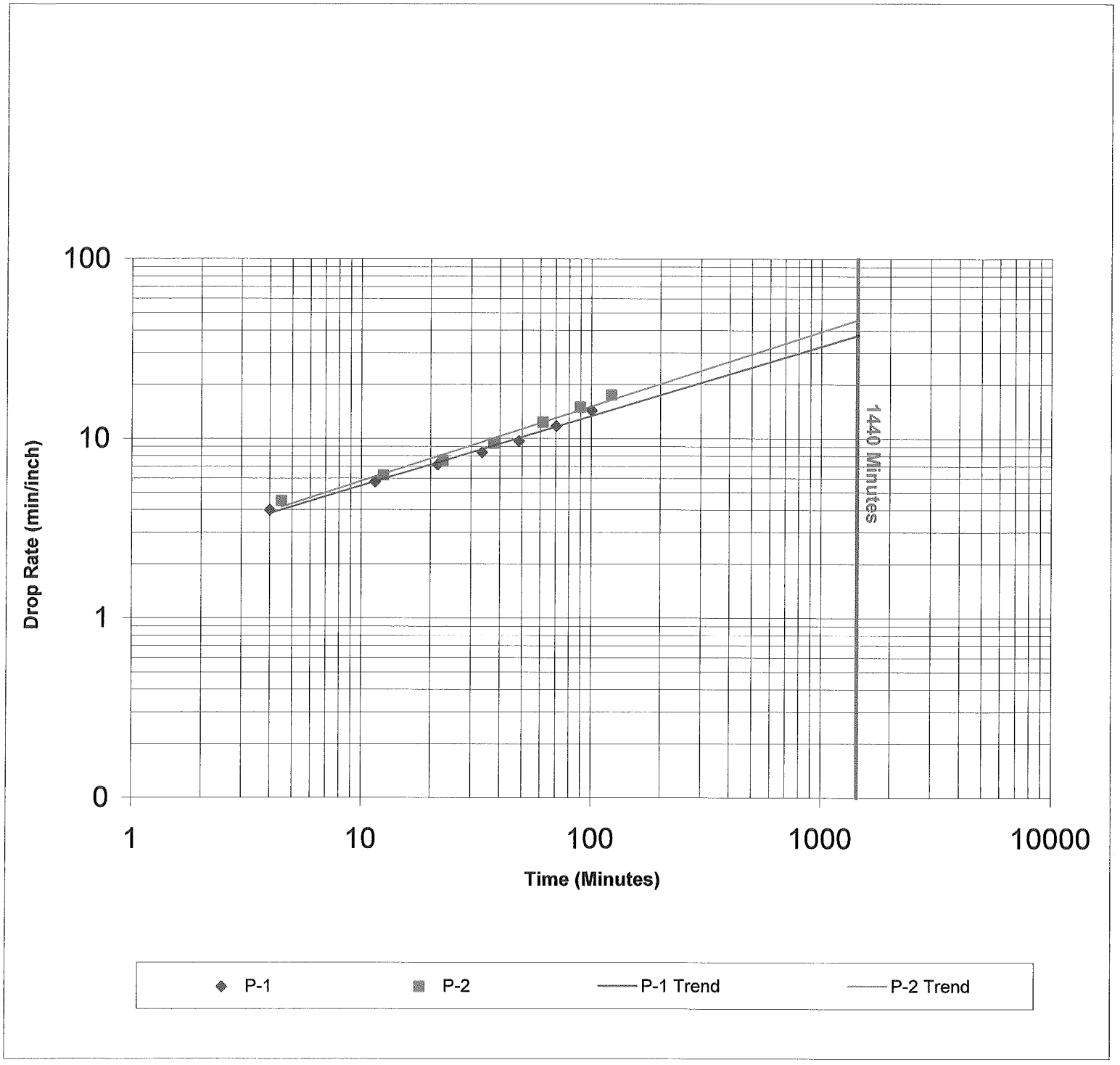
P-01	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	4.00	4.00	1	4.00
	7.50	11.50	2	5.75
	10.00	21.50	3	7.17
	12.00	33.50	4	8.38
	15.00	48.50	5	9.70
	22.00	70.50	6	11.75
	30.00	100.50	7	14.36
	---	**1440.00**	---	**37.53**

P-02	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	4.50	4.50	1	4.50
	8.00	12.50	2	6.25
	10.15	22.65	3	7.55
	15.00	37.65	4	9.41
	24.00	61.65	5	12.33
	28.00	89.65	6	14.94
	33.00	122.65	7	17.52
	---	**1440.00**	---	**45.85**

NOTES:
1. Percolation tests performed at 6 to 16 inches below ground surface.

Frederic O. and Shirley J. Sargent
210 Fields Farm Road,
Charlotte, Vermont
Percolation Tests of July 9, 2014
Replacement Wastewater System

Chart 1



Frederic O. and Shirley J. Sargent
Replacement Wastewater Disposal System
210 Fields Farm Road,
Charlotte, Vermont

Replacement Mound System
Desktop Effluent Mounding Analyses

Replacement Mound:

- Soils present directly beneath and down slope of the replacement performance-based mound system consist of very fine sandy loam topsoil over top of clay loam soil that extends to between 11" and 12" below ground surface. Beneath the clay loam soil unit is clay that extends to at least 36" below ground surface. Since the majority of the mounding will occur in the upper top soil horizon, the very fine sandy loam soil was used in the effluent mounding analysis.

- Depth to the seasonal high water table (SHWT) is 10" (0.83') below ground surface (conservative), based on prominent, common and distinct redoximorphic features (soil mottles) in test pits TP-01, TP-02 and TP-03.

- The average ground surface slope is 11% in the vicinity of the proposed replacement wastewater disposal mound system area.

The following equation is used from the ANR "Simplified Procedure for Prescriptive Desktop Mounding Analysis", dated January 30, 2003:

$$LLR = (f)(h)$$

where: LLR = linear loading rate, gpd/ft.

h = soil thickness available for groundwater mounding in feet.

f = the LLR factor from Table 1 of the January 30, 2003 ANR document, which is based on soil texture and slope.

from Table 1:

Very fine sandy loam soil with a slope of 11%, therefore $f = 18.7$

SHWT = 0.83' (10") – 0.5' (6") = 0.33' (4") = h

Using the formula above, the linear loading rate and minimum mound size is determined as follows:

- LLR= (0.5)(18.7) = 6.17 gpd/linear foot.

- 280 gpd/6.17 gpd/linear feet = 45.38 feet minimum mound length.

- Since the replacement mound will be preceded by an advanced treatment system, the replacement mound system loading rate can be doubled to 2.0 gpd/ft^2. As such, a minimum of 280 gpd/2.0 gpd/ft^2 = 140 ft^2 of infiltration area is required.

- 192 ft^2 of infiltration area is supplied by a 4 foot by 48 foot absorption trench.

- The actual linear loading rate (ALLR) is: 280 gpd/48 ft = 5.83 gpd/linear foot.

- The actual effluent mounding (AEM) is determined by dividing the actual linear loading rate (ALLR) by the linear loading rate factor (*f*) = AEM = (*ALLR/f*) = (5.83/18.7) = 0.31' or 3.76".

- Then, the amount of unsaturated soil ("freeboard") between the top of the induced groundwater mound and the ground surface is determined by subtracting the AEM from the SHWT = 0.83' – 0.31' = 0.52' or 6".

Conclusions

Based on the November 18, 2013 test pit evaluations and the hydrogeologic effluent mounding analysis presented above, the following conclusion is offered:

- The replacement performance-based mound system, if constructed with a four (4) foot wide by forty eight (48) foot long absorption trench with a minimum of 1.5 feet of mound sand beneath the absorption trench and preceded by an advanced treatment system will maintain the effluent plume at least 6 inches below existing ground surface at all times of the year. The proposed replacement mound system will provide a minimum of 24 inches (2 feet) of unsaturated soil (i.e. 0.5 feet of freeboard + 1.5 feet of mound sand = 2 feet) between the top of the induced groundwater mound and the bottom of the absorption trench. Further, with 1.5 feet of mound sand beneath the trench and at least 3 feet (36 inches) to bedrock in the test pits excavated in the vicinity of the replacement mound system area, there is greater than 4 feet (48 inches) of vertical separation between the bottom of the mound system's absorption trench and any underlying bedrock that may be present.

MOUND WASTEWATER DISPOSAL SYSTEM BASIS OF DESIGN

Frederic O. and Shirely J. Sargent
Replacement Wastewater Disposal System
210 Fields Farm Road, Charlotte, Vermont
August 8, 2014
Prepared By: Jason Barnard Licensed Designer #430-B

Replacement Mound Wastewater Disposal System

I. WASTEWATER FLOWS AND MOUND SYSTEM SIZING

A. WASTEWATER FLOWS (Q)

2	Bedrooms	140	gpd/bedroom=	280	gpd
			Total Flows =	**280**	gpd

B. REQUIRED SEPTIC TANK

Required Septic Tank Capacity = **1,000 gallons** for a **2-bedroom** single-family residence.
The septic tank shall contain a Biotube Model #FTS0444-36V, FTW0444-36V or FT-0822-14B effluent filter or equal. The filter access shall be completed flush with grade.

C. PERCOLATION RATE (PR)

Percolation rates were less than 60 min/inch. Therefore, a basal area application rate of 0.74 gallons per day (gpd) per square foot (sf) is used.

D. MOUND SYSTEM APPLICATION RATE (AR)

AR = Application rate for sizing the mound system leachfield area (LA)
Ra maximum = 1.0 gpd/sf for Mounds
Selected Ra = **1.5** gpd/sf
Since an advanced treatment system is included, a loading rate of 1.5 gpd/sf is proposed.

E. REQUIRED LEACHFIELD AREA (RLA)

RLA = Q / AR

RLA =	280	/	1.5
RLA =	**187** sf		

F. PROPOSED LEACHFIELD AREA (PLA)

PLA = LENGTH (L) x WIDTH (W) x NUMBER OF TRENCHES or BEDS (N)

L =	48	ft
W =	4	ft
N =	1	Absorption Trench

PLA= **192** sf
PLA > RLA therefore PLA is acceptable

G. MOUND SYSTEM BASAL AREA (BA)

G1. BASAL AREA APPLICATION RATE (BAAR)

BAAR = Application rate for sizing basal area (BA)
BAAR = 0.74 gpd/sf for PR<60 min/inch
BAAR = 0.24 gpd/sf for 60 min/inch < PR < 120 min/inch
Selected BAAR = **0.74** gpd/sf

G2. REQUIRED BASAL AREA (RBA)

RBA = Q / BAAR

RBA =	280	/	0.74
RBA =	**378** sf		

G3. PROPOSED BASAL AREA (BA)

PBA = Trench Length (L) x Distance from uphill side of the trench to the downhill mound toe (MT).

L =	48	ft
MT =	15	ft

PBA = **720** sf
PBA > RBA, therefore the PBA is acceptable

MOUND WASTEWATER DISPOSAL SYSTEM BASIS OF DESIGN

Frederic O. and Shirely J. Sargent
Replacement Wastewater Disposal System
210 Fields Farm Road, Charlotte, Vermont
August 8, 2014
Prepared By: Jason Barnard Licensed Designer #430-B

Replacement Mound Wastewater Disposal System

II. MOUND SYSTEM PRESSURE DISTRIBUTION DETAILS

A. PROPOSED MOUND SYSTEM DISTRIBUTION SYSTEM

SEE THE ATTACHED ORENCO SYSTEMS, INC. PUMP SELECT SPREAD SHEET FOR THE PROPOSED MOUND SYSTEM PRESSURE DISTRIBUTION DETAILS.

B. TOTAL NUMBER OF ORIFICES IN THE DISTRIBUTION SYSTEM

Number of Orifices = **12** orifices

C. LEACHFIELD AREA (LA) PER ORIFICE

LA/Orifice = LA / Total Number of Orifices
LA/Orifice = **16.0** sf
LA/Orifice is less than 25 sf per Orifice, therefore the proposed number of orifices is in accordance with the current State of Vermont, EPRs.

III. PROPOSED PUMP STATION DESIGN

A. REQUIRED PUMP STATION

The required pump station capacity for a 2-bedoom single-family residence is included in the Advantex RT Mode 1B dvanced treatment system.

B. REQUIRED MOUND SYSTEM DOSE

Required Dose Volume = **30** Gallons Per Hour (Time Dosed)

D. PUMP STATION STORAGE

Based on the manufacturer's information, the Advantex RTB advanced treatment system provides greater than 420 gallons of storage, which satisfies the one day's storage requirement.

E. PROPOSED EFFLUENT PUMP

Orenco	Model Number	PF300511	1/2 hp	115 volt	1	phase

F. PROPOSED EFFLUENT PUMP OPERATING POINT

See Attached Effluent Pump Curve

Pump Selection for a Pressurized System - Multiple Family Residence Project

Frederic and Shirley Sargent, 210 Fields Farm Rd, Charlotte / Replacement Mound System Pressure Distribution Details

Parameters

Discharge Assembly Size	1.00	inches
Transport Length	120	feet
Transport Pipe Class	40	
Transport Line Size	1.50	inches
Distributing Valve Model	None	
Max Elevation Lift	16	feet
Manifold Length	4	feet
Manifold Pipe Class	40	
Manifold Pipe Size	1.50	inches
Number of Laterals per Cell	1	
Lateral Length	44	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.50	inches
Orifice Size	1/4	inches
Orifice Spacing	4	feet
Residual Head	6	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Minimum Flow Rate per Orifice	1.89	gpm
Number of Orifices per Zone	12	
Total Flow Rate per Zone	23.0	gpm
Number of Laterals per Zone	1	
% Flow Differential 1st/Last Orifice	3.9	%
Transport Velocity	3.6	fps

Frictional Head Losses

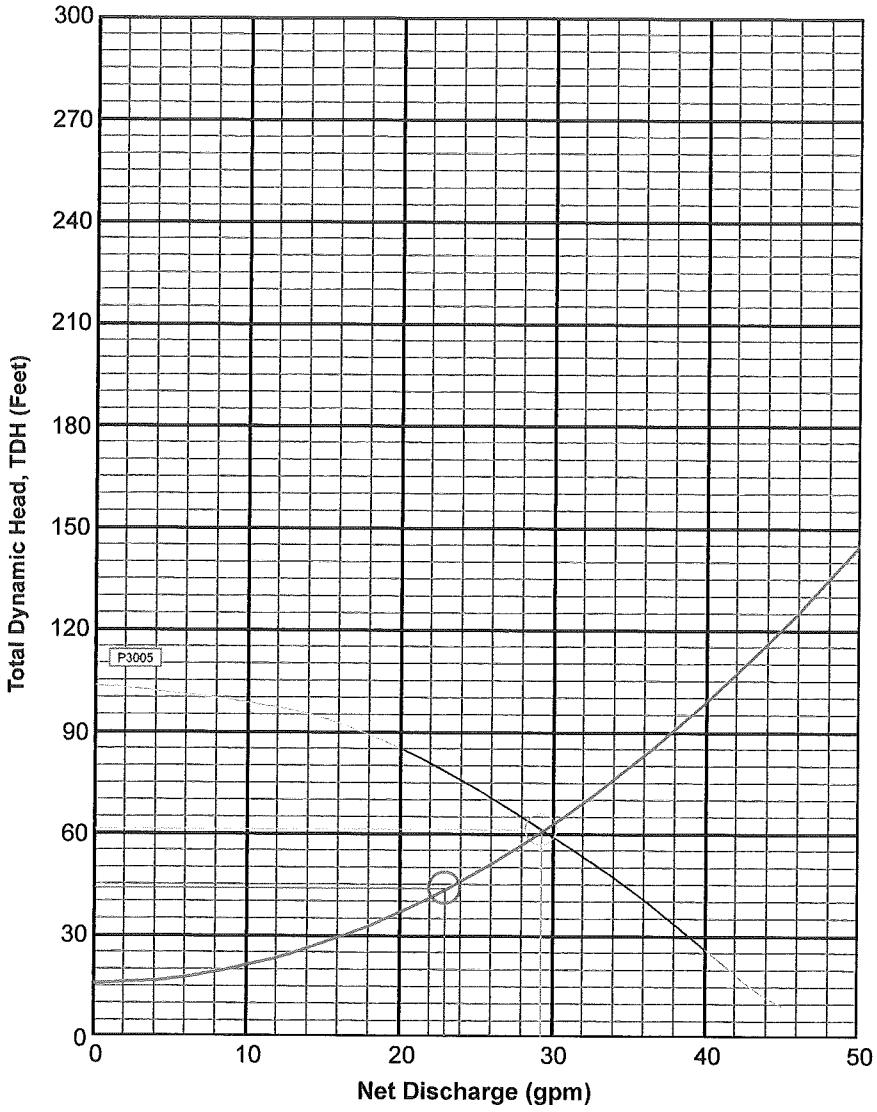
Loss through Discharge	17.5	feet
Loss in Transport	3.8	feet
Loss through Valve	0.0	feet
Loss in Manifold	0.0	feet
Loss in Laterals	0.6	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line	12.7	gals
Vol of Manifold	0.4	gals
Vol of Laterals per Zone	4.7	gals
Total Volume	17.8	gals

Minimum Pump Requirements

Design Flow Rate	23.0	gpm
Total Dynamic Head	43.9	feet



PumpData

Legend

System Curve:

Pump Curve:

Pump Optimal Range:

Operating Point:

Design Point:

Orenco Systems®
Incorporated

Changing the Way the World Does Wastewater®

VERMONT

Vermont Department of Environmental Conservation
Drinking Water and Groundwater Protection Division
One National Life Drive - Main 2
Montpelier, VT 05620-3521
www.septic.vt.gov

[phone] 802-585-4911
[in-state] 800-823-6500
[fax] 802-828-1541

Agency of Natural Resources

Innovative/Alternative (I/A) System Approval For General Use

AdvanTex® and AX-Max™ Wastewater Treatment System Series

Original Approval Date: September 15, 2001
Approval Number: 2001-01-R7
Revision Date: March 20, 2014
Expiration Date: October 7, 2015

Vendor Information

Orenco Systems, Inc.
814 Airway Avenue
Sutherlin, OR 97479

General Phone: (541) 459-4449
Fax: (541) 459-2884
Website: www.orenco.com

Contact

Nick Noble, Government Relations Manager
Phone: (877) 371-3172
Email: nnoble@orenco.com

Technology Name

AdvanTex® Models AX20, AX20-RT, AX-25-RT (All Mode 1) and AX-100; and AX-Max™ Models AX-MAX075-14, AX-MAX100-14, AX-MAX125-21, AX-MAX-150-21, AX-MAX175-28, AX-MAX200-28, AX-MAX225-35, AX-MAX250-35, AX-MAX275-42, and AX-MAX300-42

Technology Type

Textile Based Recirculating Media Filter

I. Authority

A. In accordance with the Environmental Protection Rules, Chapter 1, Wastewater System and Potable Water Supply Rules, Effective September 29, 2007, Subchapter 10, Approval of Innovative/Alternative Systems and Products § 1-1001: Innovative/Alternative Systems and Products: General Use, the Secretary (Secretary) of the Agency of Natural Resources (Agency),Department of Environmental Conservation, Drinking Water and Groundwater Protection Division (Division) has determined that the technologies listed in this approval may be used as part of a soil based disposal system permitted under the Vermont Wastewater System and Potable Water Supply Rules (Rules), provided the conditions of this approval are met.

II. General

A. This approval contains specific requirements related to the design, installation, operation and maintenance of these technologies. The landowner where this technology is specified must agree to specific requirements for ongoing operation and maintenance of this system. The landowner should carefully read this approval letter, particularly the requirements for proper operation and maintenance.

B. The manufacturer (Vendor) of the technologies also have specific requirements for design review, training, installation oversight, annual reporting, and supporting the operation, maintenance and repairs needed to keep the system in working condition. This approval contains an expiration date and requires the vendor to submit an application for renewal of this approval.

C. The technologies listed in this approval are used to pre-treat the wastewater prior to discharge to a soil based disposal system.

III. Approval Conditions

A. The technologies listed in this approval may be used as part of a soil based disposal system permitted under the Rules provided the conditions of this approval are met. Failure by the vendor to comply with this approval is grounds for the Agency to revoke or not renew the approval.

B. This approval shall expire on the date stated above. Applications for renewal of this approval shall be submitted 45 days before the expiration date. The renewal request shall include a description of any changes to the equipment, technical specifications and drawings, installation requirements, operation and maintenance requirements, and homeowner's manuals. If new models are introduced or changes are made to the technology, the vendor shall submit detailed descriptions of any modifications to existing approved models as part of the renewal application.

C. Each Innovative/Alternative treatment unit shall be installed and operated as approved by the Agency and as required by the vendor's design, operation and maintenance manuals, and as listed on the vendor's website.

D. Treatment unit sizing shall be in accord with the vendor's technical requirements approved by the Agency. Sizing of each unit shall be based on the calculated design flow per §1-808 of the Rules.

E. The treatment unit may be used for both new and replacement wastewater systems.

F. If the Rules are revised during the term of this approval, this approval shall be revised as needed to conform to the revisions.

G. Site-specific permission for the use of this product is required in the form of a Wastewater System and Potable Water Supply Permit (WW Permit) when a project is subject to the Rules.

H. This approval is not a representation or guarantee of the effectiveness, efficiency, or operation of the treatment unit.

I. This general use approval is based on treatment of domestic wastewater of low and moderate waste strength as specified in §1-915(a)(1)(C) and (D) of the Rules except as specified in Section III(k) below.

J. This approval is based on information submitted by the vendor indicating that the specified treatment units will routinely provide effluent with no more than 30 mg/L of BOD_5 and no more than 30 mg/L of TSS. Effluent from the treatment unit shall discharge to a soil based disposal system that conforms to the requirements of §1-916 of the Rules.

K. Wastewater system designs for wastewater that exceeds moderate strength may use the approved treatment units on a project by project basis if permitted by the Secretary. The designer shall obtain agreement by the vendor for the proposed use and sizing of these units. These treatment units may require more frequent maintenance as recommended by the vendor. The project-specific permit application and design shall clearly state the treatment performance goals for the treatment units. The designer shall submit information to the Secretary as to whether the unit will achieve 30 mg/L BOD_5 and TSS, or will otherwise reduce the wastewater strength to low or moderate levels. There may be instances where the treatment units are intended to reduce the wastewater strength to low or moderate standards and disperse into a fully sized soil based disposal system.

IV. Responsible Parties, Requirements and Conditions

A. Landowner

1. The landowner must comply with all conditions of their WW Permit in addition to the conditions of this approval.

2. The landowner is responsible for the treatment unit to be inspected by a Licensed Designer as part of the installation inspection and certification of the soil based disposal system.

3. The landowner shall have a valid maintenance contract with a vendor-trained and authorized licensed designer or service provider in force at all times. The contract shall include a requirement for annual inspections. Commercial and community soil based wastewater disposal systems may require more frequent maintenance as recommended by the vendor. The minimum length of any contract shall be for a period of two years.

4. A copy of the initial contract and notification of each succeeding contract shall be submitted to the appropriate Regional Office of the Division and to the vendor.

5. A copy of all inspection and maintenance reports shall be submitted to the appropriate Regional Office of the Division within 60 days of the inspection. The landowner may authorize the licensed designer or the service provider to submit the contracts, notifications and reports on their behalf.

6. The landowner shall keep the system in good operating condition and report any problems to the service provider who, in turn, shall note any problems and repairs on their inspection report.

7. The landowner shall provide a copy of this approval, the WW Permit, and the operating instructions, provided by the vendor, to any person who is a prospective purchaser of a property prior to the sale of the property.

8. Within 30 days of the transfer of the property, the new landowner shall inform the appropriate Regional Office of the Division and the vendor of the change in ownership, including the WW Permit number, lot number or street address, and their name and mailing address.

9. The WW Permit that authorizes the use of this product may be revoked if the treatment unit fails to function properly or if the landowner fails to maintain a valid contract for the required maintenance and inspections of the treatment unit. In the event the WW Permit is revoked, the use of the building will need to be discontinued unless another wastewater treatment system is installed in accordance with a WW Permit issued by the Secretary.

B. Vendor

1. The vendor shall provide the Central Office of the Division (Attention Innovative/Alternative Program Manager) with the names of the Vermont distributor(s) within 60 days of this approval and within 30 days of termination and/or hiring a new firm or sole proprietorship during the term of this approval.

2. The vendor shall provide training for and maintain a list of trained designers and installers.

3. The vendor shall provide training and maintain a list of trained service providers authorized to work on the treatment units.

4. Prior to selling equipment, the vendor shall provide information to the Division regarding who is authorized to sell equipment in Vermont.

5. The vendor shall have an inventory of replacement parts available locally or available for delivery within 24 hours.

6. Prior to the start-up of the wastewater system, detailed operating instructions shall be provided in writing by the vendor to the landowner.

7. The vendor shall submit an annual report electronically to the Central Office of the Division (Attention Innovative/Alternative Program Manager) by April 1st of each year containing the following information for the 12 month period ending December 31st of the previous year:

a) Permitted systems installed in Vermont during the previous calendar year, including:

i. Assigned WW Permit number;

ii. Name of current landowner(s);

iii. Physical and mailing addresses;

iv. Name of Licensed Designer providing the installation certification;

v. Date installed;

vi. Name of the installer; and

vii. Name of the authorized service provider.

b) A summary of all known system problems, damages and/or failures, including:

i. Description of issues;

ii. Potential/known causes of problems;

iii. System operability;

iv. Recommended repair/remediation;

v. System effectiveness; and

vi. Changes in technology specifications

c) A list of names of licensed designers and installers trained by the vendor and/or the vendor's representative.

d) The names and contact information for trained and authorized service providers.

C. Licensed Designer

1. Design Preparation

a) The design of a wastewater system shall include the specific model of the treatment unit approved in this document.

b) The designer shall consult with the vendor for proper sizing of the treatment unit.

c) The designer must assess the structural needs of the treatment unit for the specific application site and include the construction requirements on the design plans.

d) The designer must determine the type of backfill required and any necessary placement specifications.

e) The designer must assess the ventilation path for the particular application and make any necessary provisions to assure proper air flow and control of odor emissions.

f) The designer must provide access to each compartment of the unit (access to grade) as well as to the control panel, any pumps, sampling ports, and any other access needed to perform routine maintenance activities.

g) The designer must address flotation issues if the seasonal high groundwater table will be above the bottom of any of the tanks. Treatment units shall be equipped with anti-flotation devices unless there is a demonstration that flotation is not a problem on a particular site or that an alternative method of stabilization is approved by the Agency.

2. Installation Inspection

a) The treatment unit shall be installed under the guidance of a representative of the vendor.

b) The treatment unit shall be inspected by a licensed designer prior to installing the treatment unit, immediately upon installation of the tanks and before backfilling, and after backfilling and grading is complete. The inspection shall include checking for an adequate structural foundation to support the unit, for levelness of the tanks, for anti-buoyancy, for potential damage during installation, and for proper assembly. The inspection shall include all piping and associated tankage for proper installation before backfilling.

c) The treatment unit and associated tankage shall be tested by the licensed designer for watertightness unless written certification is provided by the vendor at the time of installation. The test includes filling the unit or tanks with water to a point that is above all below grade openings and holding it at a constant level for 24 hours; there shall be no measurable leakage. During the test, the entire unit and the tanks shall be inspected for visible leaks. Should the unit or tanks fail the test, they may be repaired and retested. The testing and repairs shall be conducted under the direction and in the presence of the inspecting designer.

d) The licensed designer shall submit an installation certification letter to the WW permit holder, the vendor, and the appropriate Regional Office of the Division within 30 days of the installation, using the language of §1-308 of the Rules, that the wastewater system was correctly installed as well as providing the results of watertightness testing. The certification letter shall identify any repairs that were completed during the installation and testing of the unit or tanks. This letter shall also be provided to the vendor.

e) The licensed designer may be required to conduct on-going inspections of the system beyond the routine maintenance provided by the service provider. See the WW permit for any special inspection and monitoring conditions.

D. Service Provider

1. Maintenance and inspections shall be performed in accordance with the manufacturer's operation and maintenance manual submitted as part of the Innovative/Alternative System application package, and as provided in trainings by the vendor.

a) Qualified Service Providers

i. Maintenance and inspections of the Innovative/Alternative treatment unit must be performed by a licensed designer or service provider trained and authorized by the vendor.

ii. Problems found with any portions of the wastewater system (including the system being failed as defined by the Rules) must be reported immediately to the landowner.

b) Maintenance and Inspection

i. The start-up, six month, and ongoing maintenance and inspections shall be performed by the authorized service provider.

ii. More frequent inspections may be required when recommended by the vendor or on a case-by-case basis by the Secretary.

iii. All reports must be submitted to the landowner in a timely manner so that they can provide the report to the appropriate Regional Office of the Division as well as the vendor within 60 days of completing a maintenance or inspection.

c) Maintenance and Inspection Reports

Maintenance and inspection reports shall include:

i. I/A Maintenance and Inspection Report Coversheet;

ii. Current landowner's name, physical and mailing address;

iii. Permit number and lot number(s) if applicable;

iv. Date of inspection;

v. I/A technology and model;

vi. Validation that the system is operational and meets vendor requirements;

vii. Comments or outstanding corrective actions and recommended due dates;

viii. Any site/system modification;

ix. Results of all effluent testing; and

x. Service Provider/Licensed Designer name, signature and date signed.

Effective Date: March 20, 2014

By: Ernest Christianson
Ernest Christianson
Regional Office Program Manager

MOUND CONSTRUCTION INSTRUCTIONS

Mound construction procedures are just as important as the mound design. Good design with poor construction will result in the mound operating poorly and may result in failure. Proper equipment is essential. Small track type excavators work best. Wheel type tractors are too difficult to maneuver in the fill. The following is a step by step procedure for mound construction which has been tried and proven. Other techniques could be used as long as the basic principles of mound design, operation, and construction are not violated.

1. Submit a *representative* sample (enough to fill a 5 gallon bucket) of mound sand from the intended source for testing according to ASTM D 422 (Knight Consulting Engineers and Vermont Testing can perform this test). Submit a copy of the results to the designer.

2. Stake out the mound on this site so that the trenches or bed run perpendicular to the direction of the slope. Reference stakes are recommended in case corner stakes are disturbed.

3. Stake out corners of the bed and determine the bottom elevation of the bed.

4. Determine where the force main from the pump chamber connects to the distribution system in the mound.

5. Trench and lay the force main from the pump chamber to the mound. Lay the pipe 5.5' below the ground surface for frost protection. Where there is less than 5.5' of cover, insulate with 2" of rigid polystyrene insulation 4' wide (2' either side of pipe, placed in two 1" layers with staggered joints). Alternatively, where there is less than 5.5' of soil cover, the force main can be sloped *uniformly* back to the pumping chamber so that it drains after each dosing. Cut and cap the pipe one foot beneath the ground surface. Backfill and compact soil around the pipe to prevent back seepage of effluent along pipe. This step must be done before plowing to avoid compacting and disturbance of surface.

6. Install the curtain drain (if shown on plans).

7. Check the moisture content of the soil at 7 – 8 inches deep. If it is too wet, smearing and compaction will result, thus reducing the infiltration capacity of the soil. Soil moisture can be determined by rolling a soil sample between the hands. If it rolls into a ribbon, the site is too wet to prepare. If it crumbles, soil preparation can proceed.

8. Cut trees to ground level, remove excess vegetation by mowing. Prepare the site by using a moldboard plow to create 8 – 10 inch deep furrows perpendicular to the slope. Furrows must be thrown up hill. Chisel plowing may be used if a

moldboard plow is not available. Rototilling must not be done on heavy soils but can be used on non-structural soil such as sands. Alternatively, plowing can be done by using an excavator bucket to pull the soil into furrows parallel with the ground contours (the resulting surface must look as though it had been plowed with a moldboard plow, as outlined above). Immediate construction after plowing is necessary. Avoid rutting of plowed area with vehicular traffic. Inspection required at this point.

9. Extend the effluent pipe to several feet above the ground surface.

10. Place the approved fill material around the edge of the plowed area. Keep wheels of truck off plowed areas. Minimize the traffic on the downslope side of the mound. Work from the end and upslope side.

11. Move the fill material into place using a small track type tractor with a blade. Always keep a minimum of 6 inches of sand beneath tracks to prevent compaction of the natural soil.

12. Place the fill material to the required depth which is the top of the trenches or bed. Shape sides to the desired slope. Inspection required at this point.

13. With the blade of the tractor form the bed or trenches. Hand level the bottom of the bed. Make sure bottom is at the same elevation and level.

14. Place the coarse aggregate in the trenches or bed. It should be ¾ to 1 ½ inch, washed, durable aggregate (i.e. **not** limestone or marble). Level aggregate to the design depth.

15. Place the distribution system on the aggregate. Connect the manifold to the force main from the pump chamber or siphon chamber. Slope manifold slightly toward distribution laterals. Lay laterals level, removing rises and dips. Place orifices upwards until pressure testing is complete. Inspection required at this point (to observe discharge rate and pressure testing).

16. Rotate orifices downward and properly cement all components. Place 2 inches of aggregate over the distribution pipe.

17. Place a synthetic non-woven filter fabric (Mirafi 140N or equivalent) over the entire stone bed. Overlap joints by 12" minimum. Place an 8'x8' mat of rigid polystyrene insulation, 2 inches thick, centered over force main riser. Place insulation in two layers (1" each) and stagger the joint pattern.

18. Place soil on top of the bed or trench to a depth of 1 foot in center and 6 inches at outer edge of bed or trenches. This may be a subsoil or topsoil.

19. Place 6 inches of good quality topsoil over the entire mound surface. This will raise the elevation at the center of the mound to a minimum of 1.5 feet and the outside edges of bed or trenches 1 foot. Inspection required at this point.

20. Landscape the mound by planting grass, using the best vegetation adaptable to the area. A mixture of 90% birdsfoot trefoil and 10% timothy may be desirable if the mound is not manicured. If manicuring is desired, a combination of 60% bluegrass, 30% creeping red fescue and 10% annual rye grass may be the desired vegetative cover. Shrubs can be planted around the base and up the sideslopes. They should be somewhat moisture tolerant since the toe of the mound may be somewhat moist during various times of the year. Keep all trees and shrubs away from the top of the mound, as root systems can destroy the distribution network.

21. Mound maintenance involves pumping the septic tank and pump chamber every 1 to 3 years to avoid carryover of solids into the mound. A good water conservation plan within the house assures that the mound will not be overloaded. Avoid excess traffic on the mound area. Winter traffic on mound should be avoided to minimize the frost penetration. Inspect pump chamber and septic tank each year to determine the level of sludge accumulation.