

October 15, 2014

Ms. Jeannine McCrumb, Septic Officer  
Mr. Spencer Harris, Septic Consultant  
Town of Charlotte  
P.O. Box 119  
Charlotte, VT 05445

RE: Larson Property, 1007 Lake Road, Charlotte, VT-Lot 1/Lot 2 Subdivision of an Improved Property Permit Application

Dear Jeannine & Spencer:

Thomas and Kristine Larson are proposing to create a rural subdivision for their son and daughter in law Kristopher Davin and Sarah Larson. The proposed Lot 1/Lot 2 subdivision is generally shown on attached Orthophoto 1 and consists of Lot 1, the +/- 77.33 acre improved property and Lot 2, a +/- 2.67 acre property to be developed with a 4 bedroom (8 person occupancy) single family dwelling. Because a rural subdivision will be created, the balance of the 5 acre property size minimum (i.e. +/- 2.33 acres) will be common land associated with Lot 1. Proposed Lot 2 and its Site Development Plan are shown on Figure 1. You will note that a 4 bedroom/8 person occupancy residence is being proposed. This is being done proactively because there is a possibility down the road that the Larson's will consider an in-law apartment with kitchen facilities. In this regard, it is better and cheaper to construct a mound capable of handling this possible flow now as opposed to trying to add onto the mound later. It's also understood that if the in-law apartment is ever proposed, the design of the well will have to be reconsidered, so as to prove water quality, as well as an instantaneous peak demand of 10 gpm for the two dwelling units.

The site and soil conditions for Lot 2 were evaluated on August 18, 2014 with Ray Dean in attendance. The soils in the proposed mound disposal area are fine sandy loams over clay loam with redoximorphic features (mottles) identified at 22". On August 28, 2014, the topographic site plan was shot to define site topography and slopes, and a single percolation test and 2 hand augers were conducted to complete the site and soil evaluation in and downslope of the proposed mound disposal area. Based on the soil profile descriptions, a site specific effluent mounding analysis was conducted. The soil profile descriptions, the percolation test result and the effluent mounding analysis are attached. Based upon the attached mounding analysis, a 0.75' effluent mound was calculated which indicates the need of a minimum 1.92' of approved mound sand beneath the application area.

The attached pressure distribution and mound dimension details were used to design and show the details of the performance based mound system shown on Figure 2. As the hydraulic analysis indicates the system requires a pump capable of pumping 28.71 gpm vs

25.01' of total dynamic head. A pump specification for a Hydromatic SHEF 50 effluent pump that meets these specifications is attached.

A residential water system is proposed that will be supplied water from a drilled bedrock well. The well location is shown which meets all the isolation requirements. The water system is the typical residential system with 30/50 psi pressure switch and residential hydropneumatic tank that is shown on Figure 3. At this point, the well and water system will be a single use residential system. The proper permitting will be carried out with a shared system when the need arises.

Act 145 is the notification requirement which applies when well or septic isolation zones pass onto adjoining properties. The well isolation area extends onto land of Thomas Larson and family. The septic isolation area is contained on the Lot 1/Lot 2 property. Because the land is owned by the Thomas Larson Family, no notification is required. A signed ANR Form 5 is attached to indicate such.

Relative to the improved Lot 1, the single family dwelling is located at least 500 feet from the Lot 2 subdivision and has a functioning in-ground system. The dwelling is supplied water from a drilled bedrock well. Relative to a replacement wastewater system, Lot 1 is +80 acres in size with available well drained (moundable) soils. In this regard, no specific replacement disposal area for Lot 1 at this time.

I believe the Larson's application package is complete with a signed application and ANR Form 5, a \$500.00 application fee payable to the Town of Charlotte, 2 signed copies of Figures 1, 2 and 3, 1 signed 11" x 17" copy of Figure 1, 2 and 3, one copy of this letter and the attachments and 1 CD of the complete application. The Larson's and I look forward to your favorable review and issuance of the requested permit.

If you have any questions, please give me a call.

Very truly yours,  
**Lincoln Applied Geology, Inc.**



Stephen Revell, CPG  
Licensed Designer #178B  
Senior Hydrogeologist



SR/ih

Enclosure

CC: Thomas & Kristine Larson  
Kristopher Davin & Sarah Larson

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# Drinking Water & Groundwater Protection Division - Permit Application Wastewater System & Potable Water Supply



**For Office Use Only:**

|                      |                      |                                    |
|----------------------|----------------------|------------------------------------|
| Application#         | PIN#                 | Date Complete Application Received |
| <input type="text"/> | <input type="text"/> | <input type="text"/>               |

**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<br>Larson                      |                        | 2 First Name (and Middle Initial if appropriate)<br>Thomas & Kristine |                            |
| 3 Mailing Address Line 1<br>1007 Lake Road |                        | 4 Mailing Address Line 2  |                            |
| 5 Town/City<br>Charlotte                   | 6 State/Province<br>VT | 7 Country<br>United States  | 8 Zip/Postal Code<br>05445 |
| 9 Email Address                            |                        |   | 10 Telephone               |

Remove This Applicant

Add Another Applicant

### 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<br>United States | 8 Zip/Postal Code |

**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) |                   |
| Larson  |                  | Kristopher Davin & Sarah                         |                   |
| 3 Mailing Address Line 1  |                  | 4 Mailing Address Line 2                         |                   |
| 8 School Street   |                  |  |                   |
| 5 Town/City   | 6 State/Province | 7 Country  | 8 Zip/Postal Code |
| Vergennes   | VT               | United States                                    | 05491             |
| 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) |                    |
| Revell   |                               | Stephen   |                    |
| 3 Designer License#  | 4 Company Name                |   |                    |
| 178  | Lincoln Applied Geology, Inc. |   |                    |
| 5 Mailing Address Line 1   |                               | 6 Mailing Address Line 2                                  |                    |
| 163 Revell Drive   |                               |   |                    |
| 7 Town/City  | 8 State/Province              | 9 Country   | 10 Zip/Postal Code |
| Lincoln  | VT                            | United States   | 05443              |
| 11 Email Address   |                               |   | 12 Telephone       |
| srevell@lagvt.com  |                               |   | 453-4384           |
| 13 Designer Role(s) (check all that apply)   |                               |   |                    |
| <input checked="" type="checkbox"/> Water Supply Designer<br><input checked="" type="checkbox"/> Wastewater Disposal System Designer |                               |   |                    |
| <input type="button" value="Remove This Designer"/>  |                               |   |                    |
| <input type="button" value="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   | 1007 Lake Road              |

| <b>Section B - Center of Property GPS Coordinates</b>   |   |
|---|---|
| 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<br>(in decimal degrees to five decimal places, ex. 44.38181°)  | (b) Longitude<br>(in decimal degrees to five decimal places, ex. -72.31392 °) |
| N <input style="width: 100px;" type="text" value="44.33455"/> °   | W (-) <input style="width: 100px;" type="text" value="73.27818"/> °           |

**Part IV Project Information**

**Section A - General Project Information & Questions**

|   |  |
|---|--|
| 1 Project Name (if applicable)<br><input style="width: 95%;" type="text" value="Larson Lot 2 Subdivision"/> | 2 Total Acreage of Property<br><input style="width: 95%;" type="text" value="80"/> |
|---|--|

3 Business Name (if applicable)

4 Detailed Project Description  
Subdivision of an 80.0 acre property improved with a single family residence with water and wastewater systems, resulting in Lot 1, the 77.33 acre improved Lot 1 and Lot 2, a +/- 2.67 acre property to be developed with a 4 bedroom 8 person occupancy residence served by on-site water/wastewater systems.

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<br><input style="width: 95%;" type="text" value="Ray Dean"/> | (b) Date of Visit (m/d/yyyy)<br><input style="width: 95%;" type="text" value="8/18/2014"/> |
|---|--|

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                       |
|---|--|--|
| <b>X</b>  | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| <input type="button" value="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 | 0009-1007     | 39       | 197         |

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 | Figure 1   | Site Development Plan     | 10/24/2014    |                        |
| X | Figure 2   | Wastewater System Details | 10/24/2014    |                        |
| X | Figure 3   | Water System Details      | 10/24/2014    |                        |

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      | 80                 | Single Family Residence   |

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 existing permits?                      |
|---|-----------------|------------------|--|-------------------|---|
| X | 1               | Residential      | 01-01-1980   | Local             | <input checked="" type="radio"/> Yes <input type="radio"/> No |

Add Another Building

Remove This Lot

Add Another Lot

**Section E - Proposed Project Lot/Building Details**

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 |
|--------|--------------------|---------------------------|
| 1      | 77.33              | 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   | 1                  |   | <input type="checkbox"/>            | No Change          |
| <b>Add Another Building</b>   |                    |   |                                     |                    |
| <b>Remove This Lot</b>  |                    |   |                                     |                    |
| 1 Lot#  | 2 Lot Size (acres) | 3 Proposed Use of the Lot                     |                                     |                    |
| 2   | 2.67               | Single Family Residence                       |                                     |                    |
| 4 Is the lot being created as part of a subdivision? ..... <input checked="" type="radio"/> Yes <input type="radio"/> No  |                    |   |                                     |                    |
| 5 Are you requesting that the Blood, Marriage, or Civil Union special fee be applied to this lot? ..... <input type="radio"/> Yes <input checked="" type="radio"/> 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   | 1                  |   | <input checked="" type="checkbox"/> | 4 bedroom/8 person |
| <b>Add Another Building</b>   |                    |   |                                     |                    |
| <b>Remove This Lot</b>  |                    |   |                                     |                    |
| <b>Add Another Lot</b>  |                    |   |                                     |                    |

| <b>Part V Water Supply Information</b>   |   |
|--|---|
| <b>Section A - Water Supply Screening Questions</b>  |   |
| 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? .....  | <input checked="" type="radio"/> Yes <input type="radio"/> 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)? .....  | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| 3 Is there an existing connection to a water supply or water service line for this project? .....  | <input checked="" type="radio"/> Yes <input type="radio"/> No |
| <i>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.</i>                     |   |
| <b>Section B - General Water Supply Questions</b>  |   |
| 1 Does this project involve a failed water supply? .....   | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| 2 Will any of the proposed water sources serve 25 or more people or have 15 or more service connections? .....   | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| <i>If Yes, the applicant must contact the Drinking Water &amp; Groundwater Protection Division at (802) 241-3400 for source, construction and an operating permit.</i> |   |
| 3 Are any of the existing or proposed water sources located within a special flood hazard area? .....  | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| 4 Are any of the existing or proposed water sources located within a floodway? .....   | <input type="radio"/> Yes <input checked="" type="radio"/> 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?  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<br>Lot 1 Supply         | 2 Water Supply Owner (if not Applicant) |
| 3 Water Source Type<br>Non-Public Drilled Bedrock Well | 4 Type of Change to Supply<br>No Change |

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) |            |           | (g) Rule or Meter Based Flows |
|--|-----------------|---|--------------------------------|------------|-----------|-------------------------------|
|  |                 |   | (d) Existing                   | (e) Change | (f) Total |                               |
| X 1  | 1               | No Change                                   | 490                            | 0          | 490       | Rule-based                    |
| Add Another Lot/Building Served by this Supply |                 |   | 6                              | 7          | 8         |                               |
|  |                 |   | 490                            | 0          | 490       |                               |

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**

|  |  |
|--|--|
| 1 Water Supply Name/Identifier<br>Lot 2 Well           | 2 Water Supply Owner (if not Applicant)  |
| 3 Water Source Type<br>Non-Public Drilled Bedrock Well | 4 Type of Change to Supply<br>New 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) |            |           | (g) Rule or Meter Based Flows |
|----------|-----------------|---|--------------------------------|------------|-----------|-------------------------------|
|          |                 |   | (d) Existing                   | (e) Change | (f) Total |                               |
| X 2      | 1               | Connection to New System                    | 0                              | 560        | 560       | Rule-based                    |

Add Another Lot/Building Served by this Supply

|   |     |     |
|---|-----|-----|
| 6 | 7   | 8   |
| 0 | 560 | 560 |

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.

|                                  |              | Design Flows (Gallons Per Day) |           |  |
|----------------------------------|--------------|--------------------------------|-----------|--|
| (a) Water Supply Name/Identifier | (b) Existing | (c) Change                     | (d) Total |  |
| X Lot 1 Well                     | 490          | 0                              | 490       |  |
| X Lot 2 Well                     | 560          |                                | 560       |  |

Add Another Water Supply

|       |   |       |
|-------|---|-------|
| 2     | 3 | 4     |
| 1,050 | 0 | 1,050 |

**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<br>Lot 1 In-ground | 2 Wastewater Disposal System Owner (if not Applicant)<br> |
| 3 Wastewater Disposal System Type<br>In-ground                  | 4 Type of Change to System<br>No Change                   |

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) |            |                  |           | (h) Rule or Meter Based Flows |
|--|-----------------|---|--------------------------------|------------|------------------|-----------|-------------------------------|
|  |                 |   | (d) Existing                   | (e) Change | (f) Infiltration | (g) Total |                               |
| X 1  | 1               | No Change                                   | 490                            | 0          | 0                | 490       | Rule-based                    |
| Add Another Lot/Building Served by this System |                 |   | 6 490                          | 7 0        | 8 0              | 9 490     |                               |

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

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

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

Innovative/Alternative System or Product

**Remove This Wastewater System**

1 Wastewater Disposal System Name/Identifier

Lot 2 Mound

2 Wastewater Disposal System Owner (if not Applicant)

3 Wastewater Disposal System Type

Mound

4 Type of Change to System

New System

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) |            |                  | (g) Total | (h) Rule or Meter Based Flows |
|---|----------|-----------------|---|--------------------------------|------------|------------------|-----------|-------------------------------|
|   |          |                 |   | (d) Existing                   | (e) Change | (f) Infiltration |           |                               |
| X   | 2        | 1               | Connection to New System                    | 0                              | 560        | 0                | 560       | Rule-based                    |
| <b>Add Another Lot/Building Served by this System</b> |          |                 |   | 6                              | 7          | 8                | 9         |                               |
|   |          |                 |   | 0                              | 560        | 0                | 560       |                               |

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

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

Innovative/Alternative System or Product

**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 Lot 1 In-ground                              | 490          | 0                              | 0                | 490       |   |
| X Lot 2 Mound                                  | 0            | 560                            | 0                | 560       |   |
| <b>Add Another Wastewater System</b>           |              | 2                              | 3                | 4         | 5 |
|  | 490          | 560                            | 0                | 1,050     |   |

**Part VII Application Fees**

1 Fee Amount

2 Fee Calculation Details

Single Family Dwelling Unit = \$500.00

**Part VIII Designer Certification & Copyright License**

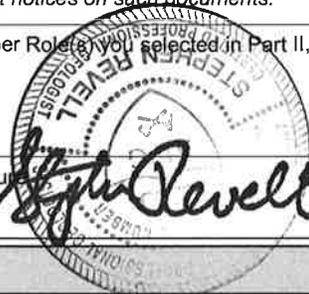
**Section A - Certifying Designer 1 Certification & Copyright License**

"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<br>Stephen Revell | 2 Designer 1 Signature<br><i>Stephen Revell</i> | 3 Signature Date<br>10/24/2014 |
|-------------------------------------|---|--------------------------------|

**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."

|                                     |   |                       |                  |
|-------------------------------------|---|-----------------------|------------------|
| <input checked="" type="checkbox"/> | 2 Print Applicant Name<br>Kristine Larson | 3 Applicant Signature | 4 Signature Date |
| <input checked="" type="checkbox"/> | 2 Print Applicant Name<br>Thomas Larson   | 3 Applicant Signature | 4 Signature Date |

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 \_\_\_\_\_

Name (Printed) **Thomas Larson** \_\_\_\_\_

Property Address or Property Tax ID # **1007 Lake Road** \_\_\_\_\_

Date of this certification \_\_\_\_\_

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

**Proposed Larson Subdivision  
Lake Road, Charlotte, VT  
Soil Profile Descriptions  
8/18/2014  
By Stephen Revell, CPG  
Licensed Designer #178B  
Senior Hydrogeologist**

**Test Pit #1 (TP-1)**

- 0-12" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 12-30" Yellow-brown to red-brown fine sandy loam, loose to friable, redox at 22"
- 30-40" Brown clay loam, firm, weak blocky, perching boundary, redox

**Test Pit #2 (TP-2)**

- 0-6" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 6-18" Yellow-brown to red-brown fine sandy loam, loose to friable, redox
- 18-36" Brown clay loam, firm, weak blocky, perching boundary, redox at 18"

**Test Pit #3 (TP-3)**

- 0-8" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 8-24" Yellow-brown to red-brown fine sandy loam, loose to friable, redox at 18"
- 24-42" Brown clay loam, firm, weak blocky, perching boundary, redox



#### **Test Pit #4 (TP-4)**

- 0-12" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 12-30" Yellow-brown to red-brown fine sandy loam, loose to friable, redox at 23"
- 30-40" Brown clay loam, firm, weak blocky, perching boundary, redox

#### **Test Pit #5 (TP-5)**

- 0-12" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 12-30" Yellow-brown to red-brown fine sandy loam, loose to friable, redox at 22"
- 30-42" Brown clay loam, firm, weak blocky, perching boundary, redox

#### **Test Pit #6 (TP-6)**

- 0-8" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 8-20" Yellow-brown to red-brown fine sandy loam, loose to friable, redox
- 20-36" Brown clay loam, firm, weak blocky, perching boundary, redox at 20"

#### **Hand Auger #1 (HA-1)**

- 0-10" Brown fine sandy loam, loose, strong fine blocky structure, well drained
- 10-28" Yellow-brown to red-brown fine sandy loam, loose to friable, redox at 20-22"
- 28-36" Brown clay loam, firm, weak blocky, perching boundary, redox



**Larson Property**  
**1007 Lake Road**  
**Charlotte, Vermont**  
**Percolation Test Results**  
**All tests were performed on August 28, 2014 at a depth of 22"**

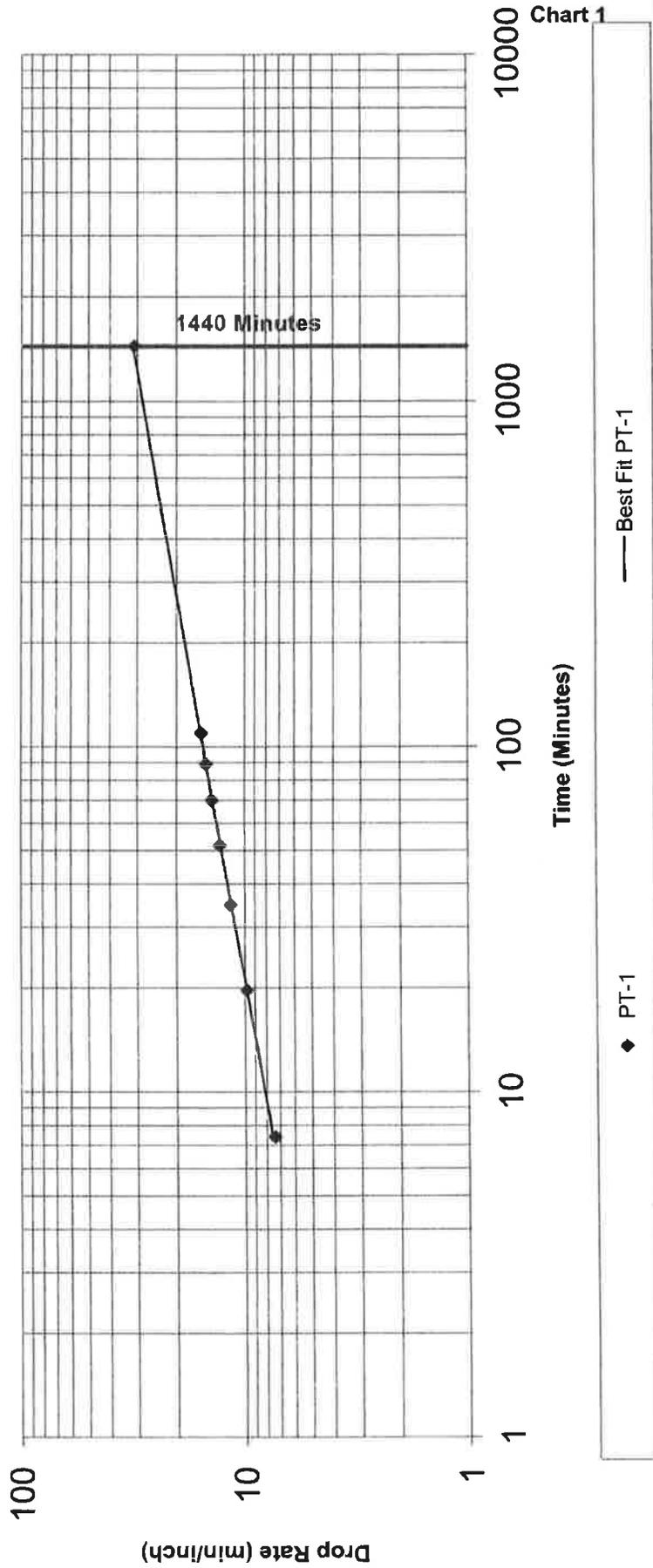
| PT-1 | Drop Time (min) | Total Drop Time (min) | Total Drop (inches) | Drop Rate (min/inch) |
|------|-----------------|-----------------------|---------------------|----------------------|
|      | 7.4             | 7.4                   | 1                   | 7.4                  |
|      | 12.3            | 19.7                  | 2                   | 9.8                  |
|      | 15.1            | 34.7                  | 3                   | 11.6                 |
|      | 16.9            | 51.6                  | 4                   | 12.9                 |
|      | 18.2            | 69.8                  | 5                   | 14.0                 |
|      | 19.3            | 89.1                  | 6                   | 14.8                 |
|      | 20.2            | 109.3                 | 7                   | 15.6                 |
|      | ---             | <b>1440.0</b>         | ---                 | <b>31.1</b>          |

\*NOTE:  
 Drop time includes fill time for  
 each of the seven runs.

Larson Property  
1007 Lake Road  
Charlotte, Vermont

Percolation Test Results

All tests were performed on August 28, 2014 at a depth of 22"



**Site Specific Effluent Mounding Analysis**  
**Larson Property**  
**Lake Road, Charlotte, VT.**

In order to support the proposed performance based mound-type disposal system design and show that the soils can accommodate the design flow rate associated with a year-round four-bedroom (8 person occupancy) residence, a site specific hydrogeologic analysis using Darcy's Law was conducted. The following formula was used to determine the ability of the soil to accept the proposed amount of wastewater and determine its impact on the shallow seasonal ground water system.

Using the equation:

$$Q = k \cdot i \cdot h \cdot l$$

Where: Q= Volume= 560 gallons/ day = 74.7 ft<sup>3</sup>/ day;  
k= Hydraulic Conductivity = 20 ft./ day (approved k value for silt loam with strong blocky structure);  
i= Gradient = 5% = 0.05 ft./ ft.;  
h= effluent mound height in feet;  
l= 100' mound length.

When solving this equation for h, an effluent mound of 0.75' was calculated. Since evidence of a seasonal high ground water system was identified at 22" or 1.83', with an induced mound of 0.75', 1.08' feet of unsaturated soil will remain. To maintain the required 3' separation to the induced mound, 3' - 1.08' or 1.92' of state approved mound sand is required beneath the application area.

F:\CLIENTS\2014\14101\Site Specific Effluent Mounding Analysis.doc



PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Larson 4 BDRM Mound  
 DATE: 10/9/2014 PERFORMED BY: S. Revell LAG Project #: 14101

|   |              |                     |
|---|--------------|---------------------|
| Design Flow Rate  | 560          | GPD                 |
| Width of Distribution Stone Bed/Trench                  | 5.6          | FEET                |
| Length of Distribution Stone Bed/Trench                 | 100          | FEET                |
| Thickness of Sand Beneath Distribution Stone Bed/Trench | 1.92         | FEET                |
| Thickness of Stone Beneath Laterals                     | 6            | INCHES              |
| Soil Cover Thickness at Edge of Level Area              | 12           | INCHES              |
| Front Slope of Finished Mound                           | 33           | PERCENT             |
| Side and Rear Slope of Finished Mound                   | 33           | PERCENT             |
| Percolation Rate  | 30           | MPI                 |
| Natural Ground Slope                                    | 5            | PERCENT             |
|   |              |                     |
| Thickness of Sand on Upper Side of Level Area           | 2.62         | FEET                |
| Thickness of Sand on Lower Side of Level Area           | 3.00         | FEET                |
| Width of Level Area                                     | 7.6          | FEET                |
| Length of Level Area                                    | 102          | FEET                |
| Area of Distribution Stone Bed/Trench                   | 560          | SQUARE FT           |
| Volume of Stone Required                                | 13           | CUBIC YARDS         |
| Proposed Basal Area                                     | 1931         | SQUARE FEET         |
| Volume of Mound Sand Required                           | 280.3        | CUBIC YARDS         |
|   |              |                     |
| Number of Laterals                                      | 4            |                     |
| Length of Each Lateral                                  | 47.5         | FEET                |
| Number of Orifices in the Manifold                      | 0            |                     |
| Number of Orifices in Each Lateral                      | 10           |                     |
| Distance Between Manifold and First Orifice             | 2.5          | FEET                |
| Distance Between Orifices (on center)                   | 5            | FEET                |
| Distribution Area per Orifice                           | 14.00        | SQ. FT.             |
|   |              |                     |
| Design Pressure Head                                    | 3            | FEET                |
| Diameter of Orifices (enter as fraction)                | 0.188        | INCHES              |
| Elevation From Pump Intake to Laterals (0 if siphon)    | 10           | FEET                |
| Diameter of Force Main                                  | 1.5          | INCHES              |
| Length of Force Main                                    | 165          | FEET                |
| Length of Manifold to Lateral                           | 1.25         | FEET                |
| Diameter of Manifold Pipe                               | 1.5          | INCH                |
| Diameter of Lateral Pipe                                | 1.5          | INCH                |
|   |              |                     |
| Friction Loss in Force Main                             | 11.69        | FEET                |
| Friction Loss in Manifold                               | 0.02         | FEET                |
| Friction Loss in Section 1                              | 0.01         | FEET                |
| Friction Loss in Entire Lateral                         | 0.07         | FEET                |
| Discharge Rate at First Orifice                         | 0.72         | GPM                 |
| Discharge Rate at Last Orifice                          | 0.71         | GPM                 |
| Percent Difference in Flow Rate First to Last Orifice   | 1.06         | PERCENT             |
|   |              |                     |
| Total Dynamic Head Loss                                 | 25.013       | FEET                |
| Total Distribution System Flow                          | 28.71        | GPM                 |
| Volume of Distribution System                           | 17.44        | GALLONS             |
| Pump Capacity   | 28.71 GPM vs | 25.013 FEET OF HEAD |
| Volume per Dose   | 140          | GALLONS             |
| On/Off Float Swing (1,000 gal. Tank)                    | 4.7          | INCHES              |

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Larson 4 BDRM Mound  
 DATE: 10/9/2014 PERFORMED BY: S. Revell LAG Project #: 14101

DIMENSIONS OF MOUND SYSTEM

Dimensions of Mound Sand

|  |  |
|--|--|
| 6.9 feet from level area to uphill sand toe    | 9.8 ft corner of level area to upper toe corner  |
| 7.6 ft wide level area                         | 7.9 ft to side toe from upper edge of level area |
| 5.6 ft wide stone bed/trench                   |  |
| 100 ft long stone bed/trench                   | 9.1 ft to side toe from lower edge of level area |
| 102 ft long level area                         |  |
| 10.7 feet from level area to downhill sand toe | 15.2 ft corner of level area to lower toe corner |

Dimensions of Final Cover

|   |   |
|---|---|
| 9.5 feet from level area to uphill toe    | 13.5 ft corner of level area to upper fill toe    |
|   | 11.0 ft to side toe from upper edge of level area |
| 7.6 ft wide level area                    |   |
| 102 ft long level area                    | 12.1 ft to side toe from lower edge of level area |
|   | 20.2 ft corner of level area to lower fill toe    |
| 14.3 feet from level area to downhill toe |   |

PLOW AREA LAYOUT MEASUREMENTS

|   |           |
|---|-----------|
| Center of Bed/Trench to Downslope Toe         | 67.7 feet |
| End of Level Area @ Midpoint to Downslope Toe | 23.0 feet |
| Center of Bed/Trench to Upslope Toe           | 62.0 feet |
| End of Level Area @ Midpoint to Upslope Toe   | 16.4 feet |

# HYDROMATIC®

## SHEF50/100

### Submersible High Head Effluent Pumps

Applications:

- Septic Tank Effluent
- High Head Sump
- Dewatering



#### SHEF100 Features:

- 1 HP
- 208-230 voltage (1Ø)  
208-230/460, 575 voltage (3Ø)
- 2" Discharge
- 3/4" solids handling
- Capacities to 87 GPM
- Heads to 90 Feet
- Automatic or Manual Models

#### SHEF50 Features:

- 1/2 HP
- 115/208-230 dual voltage (1Ø)  
208-230/460, 575 voltage (3Ø)
- 2" Discharge
- 3/4" solids handling
- Capacities to 63 GPM
- Heads to 63 Feet
- Automatic or Manual Models



 **HYDROMATIC®**  
Pentair Pump Group

SHEF100 Shown

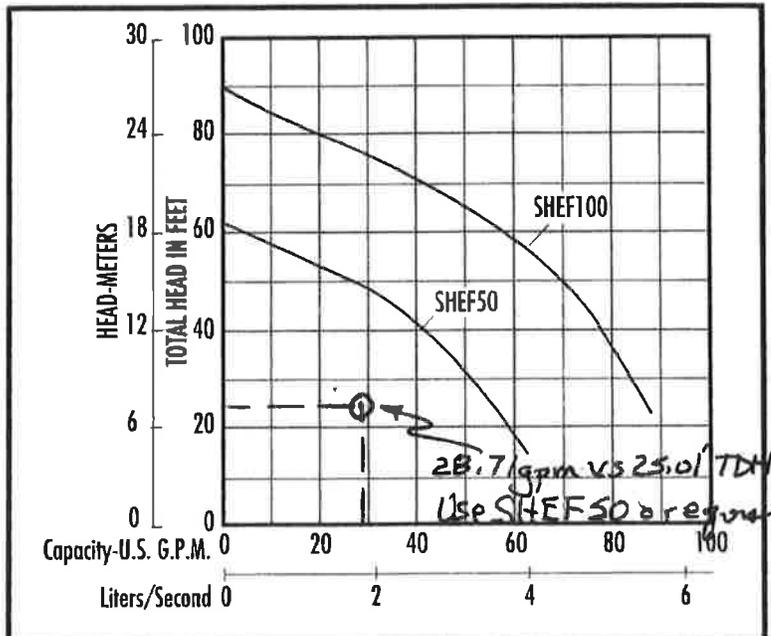
# SHEF50/100 Submersible Effluent Pumps

## Details

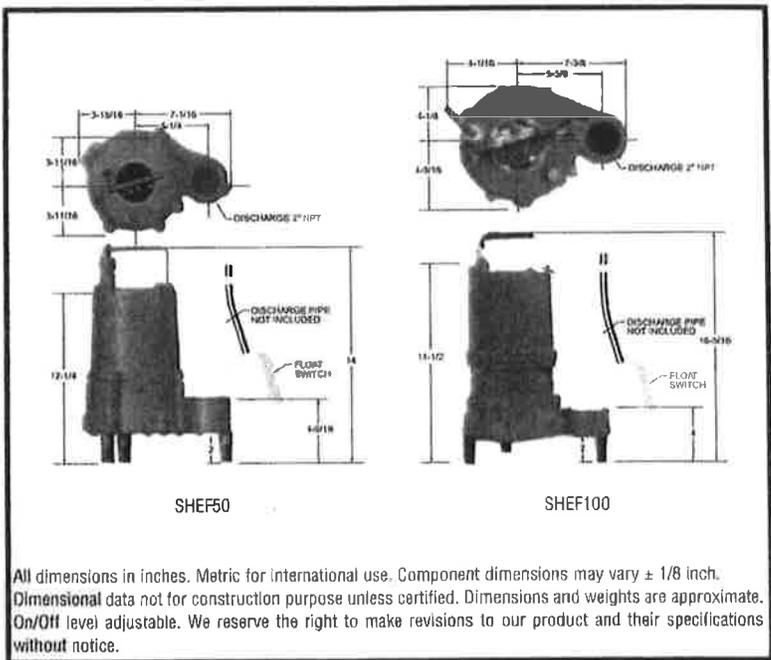
### Pump Characteristics

| Pump/Motor Unit     | Submersible   |         |               |     |     |
|---------------------|---|---------|---------------|-----|-----|
| Manual Models (50)  | M1  | M2      | M3            | M4  | M5  |
| Automatic Models    | A1  | A2      | -             | -   | -   |
| Horsepower          | 1/2   |         |               |     |     |
| Full Load Amps      | 15.0  | 7.6/7.1 | 3.2/3.1       | 1.6 | 1.2 |
| Motor Type          | Capacitor Start   |         |               |     |     |
| R.P.M.              | 3450  |         |               |     |     |
| Phase Ø             | 1 Ø   |         | 3 Ø           |     |     |
| Voltage             | 115   | 208-230 | 208-230       | 460 | 575 |
| Manual Models (100) |   | M2      | M3            | M4  | M5  |
| Automatic Models    |   | A2      | -             | -   | -   |
| Horsepower          | 1   |         |               |     |     |
| Full Load Amps      | 13.6/12.1   | 6.0/5.8 | 2.8           | 1.9 |     |
| Motor Type          | Capacitor Start   |         |               |     | 3 Ø |
| R.P.M.              | 3450  |         |               |     |     |
| Phase Ø             | 1 Ø   |         | 3 Ø           |     |     |
| Voltage             | 208-230   | 208-230 | 460           | 575 |     |
| Hertz               | 60  |         |               |     |     |
| Temperature         | 140°F Max Fluid Temp.   |         |               |     |     |
| NEMA Design         | L   |         | B             |     |     |
| Insulation          | Class B   |         |               |     |     |
| Discharge Size      | 2" NPT std.   |         |               |     |     |
| Solids Handling     | 3/4"  |         |               |     |     |
| Unit Weight         | 58 lbs. (50)  |         | 65 lbs. (100) |     |     |
| Power Cord          | 115V, 14/3, SJTW-A; 230V, 1ø, 16/3 SWT-A; 3ø, 16/4, STW-A, All cords 20' std. with 30' opt. |         |               |     |     |

### Performance Data



### Dimensional Data



### Materials of Construction

|                       |  |
|-----------------------|--|
| Handle                | Stainless Steel  |
| Lubricating Oil       | Dielectric Oil   |
| Motor Housing         | Cast Iron  |
| Pump Casing           | Cast Iron  |
| Shaft                 | Stainless Steel  |
| Mechanical Shaft Seal | Seal Faces: Carbon/Ceramic<br>Seal Body: Brass<br>Spring: Stainless Steel<br>Bellows: Buna-N |
| Impeller              | Engineered Thermoplastic   |
| Upper Bearing         | Single Row Ball Bearing  |
| Lower Bearing         | Single Row Ball Bearing  |
| Bottom Plate          | Single Row Ball Bearing  |
| Fasteners             | Stainless Steel  |
| Legs                  | Engineered Thermoplastic   |

All dimensions in inches. Metric for international use. Component dimensions may vary  $\pm 1/8$  inch. Dimensional data not for construction purpose unless certified. Dimensions and weights are approximate. On/Off level adjustable. We reserve the right to make revisions to our product and their specifications without notice.



**HYDROMATIC**<sup>®</sup>  
Pentair Pump Group

USA

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