



April 26, 2011



Town of Charlotte
Mr. Thomas Mansfield, Septic Officer
Mr. Spencer Harris, Septic Consultant
PO Box 119
Charlotte, VT 05445

RE: Ben and Kristine Dykema, 10.72 acre Property 950 Town Line Road
Charlotte, VT – Submittal of Water/Wastewater Permit Submittal

Dear Tom and Spencer:

Ben and Kristine Dykema currently own an undeveloped \pm 10.72 acre property located on the north side of a private access road off of Town Line Road in Charlotte. The location of the property and it's overall property dimensions are shown on Plan Sheet 1. From the Town's records, the 911 address of the property is 950 Town Line Road. The property is a separate lot defined on the tax map as 08-01-47.1 but I was unable to find a specific parcel number other than 00038-0700 which has been assigned to all other properties owned by Dykema including the 1.1 acre property that was previously permitted. You will note on the attached permit application I've defined the parcel number as 00038-0950 to reflect it's 911 designation. If I'm wrong and if possible please define the parcel with a number that specifically references the parcel in question.

As Plan Sheet 1 indicates, the Dykema's are proposing to prepare the subject property for development with a three (3) bedroom single family residence (SFR) served by on-site water and wastewater systems. The proposed location of these systems are shown on Plan Sheet 1 and the system details are presented on Plan Sheets 2 and 3. The description of each of these systems is presented below in greater detail.

The site and soil characteristics associated with the subject property were evaluated with test pits on November 24, 2009 and with two percolation tests conducted on January 26, 2010. The soil profile descriptions and the percolation test results are presented in Attachment A. The soil profile descriptions, defined by myself and documented with Spencer Harris on January 25, 2010, indicate the presence of well drained loam to silt loam with the potential to site a performance based mound-type disposal system. Evidence of seasonal high ground water in the form of mottling was typically encountered 12-14" below grade. It is important to note that the presence of ground water and/or ledge was not encountered during that November 24, 2009 evaluation in any of the test pits. Because the pits were left open for an extended period of time before Spencer's visit, ground water 12 to 14" below grade was noted on

January 25, 2010 which formally defined seasonal water table (i.e. basis of design) conditions no deeper than 12" below grade.

The proposed wastewater disposal system design is presented on Plan Sheets 1 and 2. Based on a percolation rate of 30 minutes per inch, an application rate of 1.0 gpd/ft² and a basal application rate of 0.74 gpd/ft² were used to generate a 5' by 84' (420 ft²) performance based mound-type wastewater disposal system. The depth to ground water (12"), the proposed mound length of 84', an average slope or gradient of 8% and a hydraulic conductivity of 20 feet/day for loam to silt loam with strongly developed fine blocky structure were used to conduct an effluent mounding analysis. The analysis is presented in Attachment A which indicates that 0.42 feet of effluent mounding will occur out of 1.0' of available unsaturated soil. When related to the required 3' separation between the bottom of the application area and the induced effluent mound, the minimum required thickness of State approved sand is determined to be 2.42'. The 5'X84' application area, the 2.42' of required sand and the location of the pump station next to the proposed 3 bedroom residence were used to generate the pressure distribution and mound dimension details and the required pump specifications which are presented in Attachment B. All proposed wastewater system details are presented on Plan Sheet 2.

The proposed drilled bedrock water supply well, shown on Plan Sheet 1, will be used to supply the potable needs of the proposed three bedroom SFR. The proposed water system will consist of a submersible pump set in the drilled well, a 1" diameter polyethylene plastic pipe (minimum 160 psi) from the pump to the pitless adapter in the well casing and from the pitless adapter to the hydropneumatic pressure tank in the SFR. In the SFR, the water system will consist of a 1" brass check valve, hose bib, a hydropneumatic pressure tank with a pressure switch (30 psi cut-in and 50 psi cut-out), pressure gauge, pressure relief valve, brass ball valve, and copper distribution piping. The electrical wiring will extend from the pump to the pressure switch and the electric service panel in the building. The drilled well and water supply system details are provided on Plan Sheet 2.

As Plan Sheet 1 indicates, the proposed well site is located south of the 60' x 60' building envelope. The proposed well site maintains all applicable isolation distances and the protective well shield does not encroach upon the proposed wastewater disposal system. It is important to note that no existing wastewater disposal systems are located within the delineated well isolation shield.

Regarding the Act 145 notification requirements, only the Petdia II, LLC property is minimally affected by "overshadowing" related to both the proposed well isolation shield and mound disposal area isolation zone. The other adjacent property owners do not require Act 145 notification as their properties are unaffected by the proposed development. In this regard, please find Attachment C, with the signed Act 145 certification statement, the list of impacted properties and the required notification letter addressed to Mr. Liam L. Murphy who is the registered agent for Petdia II, LLC.

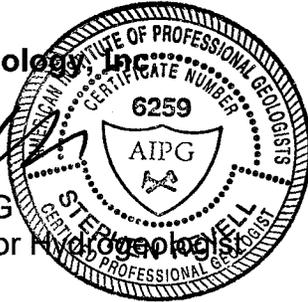
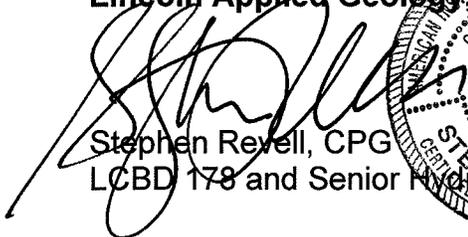


Lincoln Applied Geology, Inc.
Environmental Consultants

I believe, this application package is complete with a signed permit application and Act 145 certification statement, a \$500.00 permit fee (per Town of Charlotte), 2 copies of Plan Sheets 1, 2 and 3, an 11' X 17" copy of each Plan Sheet, one copy of this letter and all Attachments, and a CD containing an electronic copy of the entire application package. The Dykemas and I look forward to your favorable review and issuance of the requested permit. If you have any questions, please feel free to contact me at (802) 453-4384.

Very Truly Yours,

Lincoln Applied Geology, Inc.



Stephen Revell, CPG
LCBD 178 and Senior Hydrogeologist

EE/SR/SK:kg

Enclosures

CC: Ben and Kristine Dykema
David Miskell

F:\CLIENTS\2009\09088\10 Acre Lot\Town Summary LTR.doc



Lincoln Applied Geology, Inc.
Environmental Consultants

Wastewater Management 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		2 First Name (and Middle Initial if appropriate)	
Dykema		Ben A. & Kristine L.	
3 Mailing Address Line 1		4 Mailing Address Line 2	
461 Town Line Road			
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
North Ferrisburg	VT	United States	05473
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

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
<input type="text"/>			<input type="text"/>
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
	VT	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. A copy of the document authorizing this person to act as a signatory authority must be attached to this application.

9 Certifying Official Last Name		10 Certifying Official First Name (and MI if appropriate)	
<input type="text"/>		<input type="text"/>	
11 Certifying Official Title			
<input type="text"/>			
12 Certifying Official Email Address			13 Telephone
<input type="text"/>			<input type="text"/>

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)	
<input type="text"/>		<input type="text"/>	
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

Section D - Building/Business Owner Information			
1 Last Name		2 First Name (and Middle Initial if appropriate)	
<input type="text"/>		<input type="text"/>	
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

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		
00178	Lincoln Applied Geology		
5 Mailing Address Line 1		6 Mailing Address Line 2	
163 Revell Drive		<input type="text"/>	
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Lincoln	Vermont	United States	05443
11 Email Address			12 Telephone
srevell@lagvt.com			(802) 453-4384
13 Designer Role(s) (check all that apply)			
<input checked="" type="checkbox"/> Water Supply Designer			
<input checked="" type="checkbox"/> Wastewater Disposal System Designer			
Remove This Designer			
Add Another Designer			

Part III Property Location Information		
Section A - Property Parcel ID#(s) and Location(s)		
1 Please provide the property location information including Town or City Parcel ID#, Town/City, and Street or Road location in the table below:		
	(a) Town/City Parcel ID#	(b) Town or City
X	00038-0950	Charlotte
		(c) Street or Road Location
		950 Town Line Road
Add Another Property		

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 <i>(in decimal degrees to five decimal places, ex. 44.38181°)</i>	(b) Longitude <i>(in decimal degrees to five decimal places, ex. -72.31392 °)</i>
N <input style="width: 80px;" type="text" value="44.26073"/> °	W (-) <input style="width: 80px;" type="text" value="73.25423"/> °

Part IV Project Information

Section A - General Project Information & Questions

1 Project Name (if applicable) <input style="width: 95%;" type="text" value="Dykema Property"/>	2 Total Acreage of Property <input style="width: 95%;" type="text" value="10.72"/>
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3 Business Name (if applicable)

4 Detailed Project Description

5 Were all buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007 and all 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 Wastewater Management 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 <input style="width: 95%;" type="text" value="Spencer Harris"/>	(b) Date of Visit <input style="width: 95%;" type="text" value="01-25-2010"/>
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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 Water Quality Division at (802) 241-3770.

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 Water Quality 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 Water Quality 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
<input checked="" type="checkbox"/> <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, Book, and Page reference for the current landowner's deed(s) to this property in the table below:

	(a) Town	(b) Book	(c) Page(s)
X	Charlotte	176	227-229

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	Proposed Site Development Plan	04-25-2011	
X	2	Proposed Wastewater System Details	04-25-2011	
X	3	Proposed Water System Details	04-25-2011	

Add Another Plan Reference

Section D - Existing Project Lot/BuildingDetails

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	10.72	Undeveloped

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 NA	Undeveloped	NA	NA	<input checked="" type="radio"/> Yes <input type="radio"/> 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
1	10.72	3 BR SFR

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 checked="" type="checkbox"/>	3 BR SFR

Add Another Building

Remove This Lot

Part V Water Supply Information																																				
Section A - Water Supply Screening Questions																																				
1 Are you proposing a new water supply for this project?	<input checked="" type="radio"/> Yes <input type="radio"/> No																																			
2 Are you proposing changes to an existing water supply for this project?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
3 Is there a connection to an existing water supply for the project?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
<i>If you answered No to all three of the above questions, skip to Part VI. Otherwise, proceed with Part V.</i>																																				
Section B - General Water Supply Questions																																				
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 Water Supply Division at (802) 241-3400 for source, construction and operating</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?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
<i>If Yes, please submit additional information on the site. The Waste Management Division can be reached at (802) 241-3888.</i>																																				
6 Does this project require an approval letter from the Water Supply Division for the construction of a public water system, municipal water line extension over 500 feet, or hydrants or sprinkler systems?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
<i>If Yes, please submit a copy of the approval letter from the Water Supply Division.</i>																																				
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?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
<i>If Yes, please submit additional information regarding the constituent(s) that exceeds the standards and plans, details, and specifications of the treatment device.</i>																																				
8 Is any portion of the proposed water supply located in or near a Water Source Protection Area as designated by the Water Supply Division?	<input type="radio"/> Yes <input checked="" type="radio"/> No																																			
<i>If in areas of known interference issues, please contact the Water Supply Division at (802) 241-3400.</i>																																				
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 <input type="text" value="Lot 1 - Proposed Well"/>	2 Water Supply Owner (if not Applicant) <input type="text"/>																																			
3 Water Source Type <input type="text" value="Non-Public Drilled Bedrock Well"/>	4 Type of Change to Supply <input type="text" value="New Connection or Increased Flow"/>																																			
5 Lots/Buildings Served by this Water Supply System																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 5%;"></th> <th colspan="2" rowspan="2" style="width: 30%;">(a) Lot# (b) Building ID</th> <th rowspan="2" style="width: 25%;">(c) Type of Change to the Building's Supply</th> <th colspan="3" style="width: 20%;">Design Flows (Gallons Per Day)</th> <th rowspan="2" style="width: 17%;">(g) Rule or Meter Based Flows</th> </tr> <tr> <th style="width: 10%;">(d) Existing</th> <th style="width: 10%;">(e) Increase</th> <th style="width: 10%;">(f) Total</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">Connection to New System</td> <td style="text-align: center;">0</td> <td style="text-align: center;">420</td> <td style="text-align: center;">420</td> <td style="text-align: center;">Rule-based</td> </tr> <tr> <td colspan="4" style="text-align: center;">Add Another Lot/Building Served by this Supply</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">0</td> <td style="text-align: center;">420</td> <td style="text-align: center;">420</td> <td></td> </tr> </tbody> </table>			(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) Increase	(f) Total	X	1	1	Connection to New System	0	420	420	Rule-based	Add Another Lot/Building Served by this Supply				6	7	8						0	420	420	
	(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) Increase	(f) Total																															
X	1	1	Connection to New System	0	420	420	Rule-based																													
Add Another Lot/Building Served by this Supply				6	7	8																														
				0	420	420																														
9 Is this water supply located off-lot?		<input type="radio"/> Yes <input checked="" type="radio"/> No																																		
10 Is this water supply shared?		<input type="radio"/> Yes <input checked="" type="radio"/> No																																		
<i>If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.</i>																																				

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) Increase	(d) Total
X Lot 1 - Proposed Well	0	420	420
Add Another Water Supply	2	3	4
	0	420	420

Part VI Wastewater Disposal System Information

Section A - Wastewater Disposal System Screening Questions

- 1 Are you proposing a new wastewater disposal system or replacement area for this project? Yes No
- 2 Are you proposing changes to an existing wastewater disposal system for this project? Yes No
- 3 Is there a connection to an existing wastewater disposal system for the project? Yes No
- If you answered **No** to all three of the above questions, skip to Part VII. Otherwise, proceed with Part VI.

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 If the project has a soil-based wastewater disposal system with design flows that exceed 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 Wastewater Management 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 Water Supply Division? Yes No
- If Yes, contact the Water Supply 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)				
Lot 1 - Proposed Disposal System									
3 Wastewater Disposal System Type					4 Type of Change to System				
Mound					New System				
5 Lots/Buildings Served by this Wastewater Disposal System									
			Design Flows (Gallons Per Day)						
(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	(d) Existing	(e) Increase	(f) Infiltration	(g) Total	(h) Rule or Meter Based Flows		
X 1	1	Connection to New System	0	420		420	Rule-based		
Add Another Lot/Building Served by this System			6	7	8	9			
			0	420		420			
10 Is this wastewater disposal system located off-lot? <input type="radio"/> Yes <input checked="" type="radio"/> No									
11 Is this wastewater disposal system shared? <input type="radio"/> Yes <input checked="" type="radio"/> No									
<i>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.</i>									
12 Is a variance being requested for this wastewater disposal system? <input type="radio"/> Yes <input checked="" type="radio"/> No									
<i>If Yes, please submit additional details related to the variance request.</i>									
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									
<input style="width: 200px; height: 20px;" type="text"/>									
14 If this wastewater disposal system type is a connection to a municipal system, please select the town.									
Town									
<input style="width: 200px; height: 20px;" type="text"/>									
15 If this wastewater disposal system is a soil-based system, please select the design approach used.									
Design Approach Used									
<input style="width: 200px; height: 20px;" type="text" value="Performance Based"/>									
16 For soil-based systems, please check all that apply.									
<input type="checkbox"/> Storage and Dose <input type="checkbox"/> Filtrate									
17 If this is an Innovative/Alternative soil-based system, please select the system use type.									
Innovative/Alternative System Use Type									
<input style="width: 200px; height: 20px;" type="text"/>									
18 If this is an Innovative/Alternative soil-based system, please select the Innovative/Alternative system or product.									
Innovative/Alternative System or Product									
<input style="width: 750px; height: 20px;" type="text"/>									
<input type="button" value="Remove This Wastewater System"/>									
<input type="button" value="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) Increase	(d) Infiltration	(e) Total	
X Lot 1 - Proposed WW System	0	420	0	420	
Add Another Wastewater System	2	3	4	5	
	0	420	0	420	

Part VII Application Fees

1 Fee Amount \$500.00

2 Fee Calculation Details

New Single Family Dwelling Unit Fee per Town of Charlotte = \$500.00

Part VIII Designer Certification & Copyright License

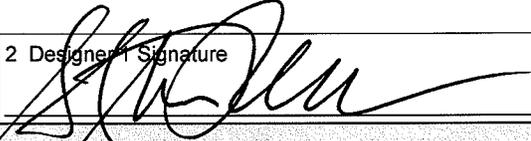
Section A - Certifying Designer 1 Certification & Copyright License

"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 Stephen Revell	2 Designer 1 Signature 	3 Signature Date 4/25/11
-------------------------------------	--	-----------------------------

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 <input style="width: 95%;" type="text"/>	2 Designer 2 Signature <input style="width: 95%;" type="text"/>	3 Signature Date <input style="width: 95%;" type="text"/>
---	--	--

Part IX Applicant(s) Signature & Acknowledgements

In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Wastewater Management 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?

Set up appointment with designer

"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 Wastewater Management 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 Ben A. Dykema	3 Applicant Signature	4 Signature Date
<input checked="" type="checkbox"/>	2 Print Applicant Name Kristine L. Dykema	3 Applicant Signature	4 Signature Date

Add Applicant Signature Block

Attachment A

Soil Profile Descriptions, Percolation Test Results and

Site Specific Effluent Mounding Analysis

Dykema Property
950 Town Line Road, Charlotte
Soil Profile Descriptions
November 24, 2009 and January 25, 2010
By Stephen Revell Licensed Class B Designer 178
and Senior Hydrogeologist

Test Pit #16 (TP-16)

- 0-12" Brown silt loam, loose to friable, strong fine blocky structure, well drained
- 12-22" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 22-40" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth

Test Pit #17 (TP-17)

- 0-13" Brown loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 13-24" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 24-38" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth

Test Pit #18 (TP-18)

- 0-12" Brown loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 12-22" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles at 14"
- 22-42" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth



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Test Pit #19 (TP-19)

- 0-14" Brown loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 14-24" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 24-40" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth

Test Pit #20 (TP-20)

- 0-12" Brown silt loam, loose to friable, strong fine blocky structure, well drained
- 12-20" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 20-38" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth

Test Pit #21 (TP-21)

- 0-13" Brown loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 13-22" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 22-42" Brown-gray clay, firm, weak platy structure, distinct, common mottles, no water or ledge to depth

Test Pit #22 (TP-22)

- 0-12" Brown loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 12-24" Tan to red-brown silt loam to clay loam, friable, moderate blocky structure, faint, common mottles
- 24-40" Brown-gray clay, firm, weak blocky structure, distinct, common mottles, no water or ledge to depth

F:\CLIENTS\2009\09088\Dykema Property Soil Profile Descriptions.docx



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**Dykema Property
Undeveloped +/-10.72 Acre Parcel
Town Line Road, Charlotte, VT
Percolation Test Results**

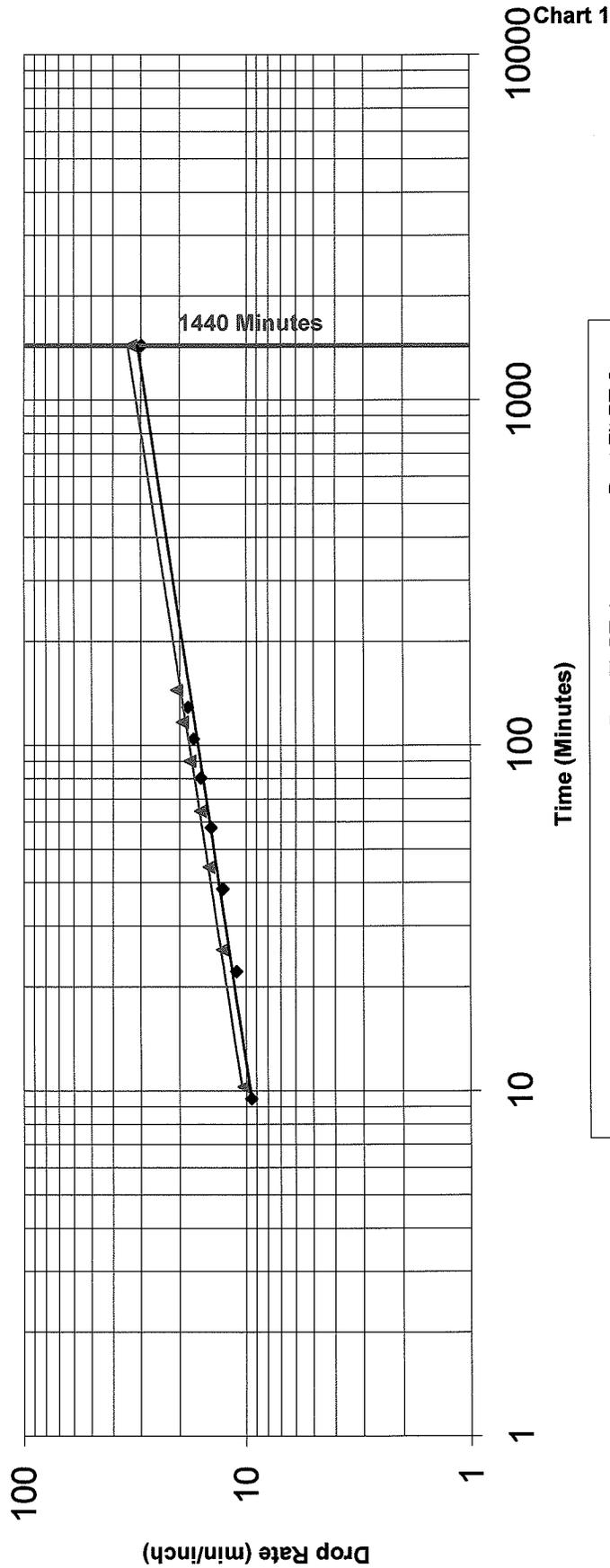
All tests were performed on January 26, 2010 at a depth of 12"

PT-1	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	9.5	9.5	1	9.5
	12.7	22.2	2	11.1
	16.3	38.4	3	12.8
	19.4	57.8	4	14.4
	22.7	80.5	5	16.1
	23.8	104.3	6	17.4
	24.7	129.0	7	18.4
	---	1440.0	---	30.0

PT-2	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	10.3	10.3	1	10.3
	15.4	25.7	2	12.8
	18.8	44.4	3	14.8
	20.2	64.6	4	16.2
	25.5	90.2	5	18.0
	26.8	116.9	6	19.5
	27.8	144.7	7	20.7
	---	1440.0	---	33.3

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

Dykema Property
Undeveloped +/-10.72 Acre Parcel
Town Line Road, Charlotte, VT
Percolation Test Results
All tests were performed on January 26, 2010 at a depth of 12"



Site Specific Effluent Mounding Analysis
Dykema Property
Undeveloped +/-10.72 Acre Parcel
950 Town Line Road
Charlotte, Vermont 05445

In order to support the proposed performance based mound system design and show that the soils can accommodate the design flow rate associated with a year-round three-bedroom residence; LAG conducted a site specific hydrogeologic effluent mounding analysis using Darcy's Law. The following formula was used to determine the ability of the soil to accept the proposed amount of wastewater and its potential impact on the shallow ground water system, in addition to calculating the required height of mound sand.

Using the equation:

Q = k · i · h · l Where: Q = Volume = 420 gallons/ day = 56.1 ft.³/ day;
k = Hydraulic Conductivity = 20 ft./ day (for loam and silt loam with strongly developed structure);
i = Gradient = 8% = 0.08 ft./ ft.;
h = Height of effluent mound in feet;
l = Length of application area = 84 ft.

When solving this equation for h, an effluent mound height of 0.42' is calculated. Evidence of seasonal high ground water was observed a minimum of 12" below ground surface (BGS) or alternatively expressed in feet as 1.0' BGS. Therefore, using Darcy's Law, we are able to determine the height of sand fill required below the stone bed. By subtracting 0.42' from 1.0' the difference equals 0.58'. The required vertical separation from ground water is 3.0', minus 0.58' or 2.42'. Therefore, 2.42' of State approved mound sand is required for the proposed performance based mound wastewater disposal area in order to maintain 3' of vertical separation from the induced water table.

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Attachment B

Pressure Distribution and Mound Dimension Details

Submersible Effluent Pump Specifications

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Dykema-Undeveloped +/- 10.0 Acre Parcel
 DATE: 4/20/2011 PERFORMED BY: S. Revell LAG Project #: 09088

Design Flow Rate		420	GPD
Width of Distribution Stone Bed/Trench		5	FEET
Length of Distribution Stone Bed/Trench		84	FEET
Thickness of Sand Beneath Distribution Stone Bed/Trench		2.42	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		8	PERCENT
Thickness of Sand on Upper Side of Level Area		3.09	FEET
Thickness of Sand on Lower Side of Level Area		3.65	FEET
Width of Level Area		7	FEET
Length of Level Area		86	FEET
Area of Distribution Stone Bed/Trench		420	SQUARE FT
Volume of Stone Required		10	CUBIC YARDS
Proposed Basal Area		1898	SQUARE FEET
Volume of Mound Sand Required		345.4	CUBIC YARDS
Number of Laterals		2	
Length of Each Lateral		40.5	FEET
Number of Orifices in the Manifold		0	
Number of Orifices in Each Lateral		14	
Distance Between Manifold and First Orifice		1.5	FEET
Distance Between Orifices (on center)		3	FEET
Distribution Area per Orifice		15.00	SQ. FT.
Design Pressure Head		5	FEET
Diameter of Orifices (enter as fraction)		0.188	INCHES
Elevation From Pump Intake to Laterals (0 if siphon)		5	FEET
Diameter of Force Main		2	INCHES
Length of Force Main		250	FEET
Length of Manifold to Lateral		0	FEET
Diameter of Manifold Pipe		2	INCH
Diameter of Lateral Pipe		2	INCH
Friction Loss in Force Main		3.43	FEET
Friction Loss in Manifold		0.00	FEET
Friction Loss in Section 1		0.01	FEET
Friction Loss in Entire Lateral		0.05	FEET
Discharge Rate at First Orifice		0.93	GPM
Discharge Rate at Last Orifice		0.92	GPM
Percent Difference in Flow Rate First to Last Orifice		0.43	PERCENT
Total Dynamic Head Loss		13.530	FEET
Total Distribution System Flow		25.02	GPM
Volume of Distribution System		13.22	GALLONS
Pump Capacity	25.02 GPM vs	13.530	FEET OF HEAD
Volume per Dose		105	GALLONS
On/Off Float Swing (1,000 gal. Tank)		3.5	INCHES

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Dykema-Undeveloped +/- 10.0 Acre Parcel
 DATE: 4/20/2011 PERFORMED BY: S. Revell LAG Project #: 09088

DIMENSIONS OF MOUND SYSTEM

Dimensions of Mound Sand

7.5 feet from level area to uphill sand toe	10.7 ft corner of level area to upper toe corner
7 ft wide level area	9.4 ft to side toe from upper edge of level area
5 ft wide stone bed/trench	
84 ft long stone bed/trench	11.1 ft to side toe from lower edge of level area
86 ft long level area	
14.6 feet from level area to downhill sand toe	20.6 ft corner of level area to lower toe corner

Dimensions of Final Cover

10.0 feet from level area to uphill toe	14.1 ft corner of level area to upper fill toe
	12.4 ft to side toe from upper edge of level area
7 ft wide level area	
86 ft long level area	14.1 ft to side toe from lower edge of level area
	26.3 ft corner of level area to lower fill toe
18.6 feet from level area to downhill toe	

PLOW AREA LAYOUT MEASUREMENTS

Center of Bed/Trench to Downslope Toe	65.4 feet
End of Level Area @ Midpoint to Downslope Toe	28.9 feet
Center of Bed/Trench to Upslope Toe	54.7 feet
End of Level Area @ Midpoint to Upslope Toe	16.8 feet

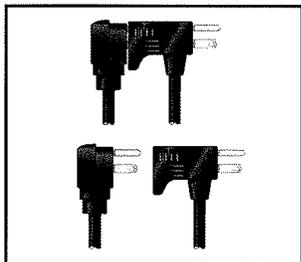
HYDROMATIC®

SHEF30

Submersible Effluent Pump

- Effluent Septic Tank

Automatic operation features easily adjustable, wide-angle float switch with a piggyback plug-in arrangement that allows for simple conversion to manual operation. Special inlet design allows pump to handle 3/4" solids. Cast iron body and an oil-filled motor provide superior cooling characteristics for longer pump life. Motor windings contain automatic thermal overload protection. Energy efficient .3 HP motor pumps up to 35 GPM at 10' total dynamic head. Discharge is 1-1/2" N.P.T.



May be operated manually or automatically with a piggyback switch.



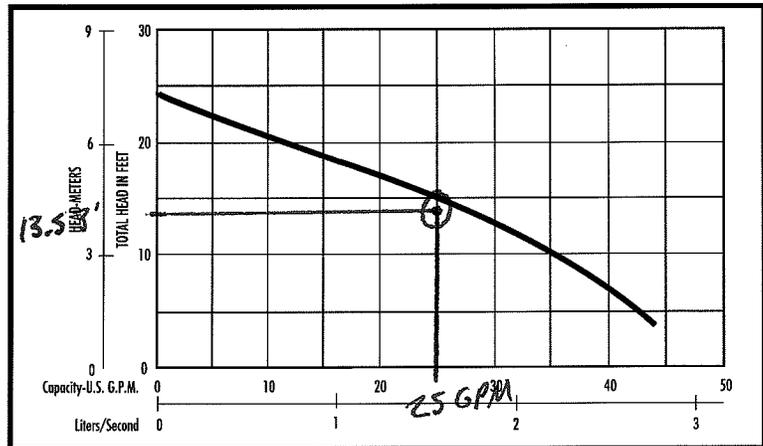
SHEF30 - Submersible Effluent Pump

Details

Pump Characteristics

Pump/Motor Unit	Submersible
Automatic Model	SHEF30A1
Horsepower	.30
Full Load Amps	8.0
Motor Type	Shaded Pole (4 pole)
R.P.M.	1550
Phase Ø	1
Voltage	115
Hertz	60
Temperature	120°F Ambient
NEMA Design	A
Insulation	Class A
Discharge Size	1-1/2" NPT (38mm)
Solids Handling	3/4" (19mm)
Unit Weight	30 lbs.
Power Cord	18/3, SJTW, 20' std.

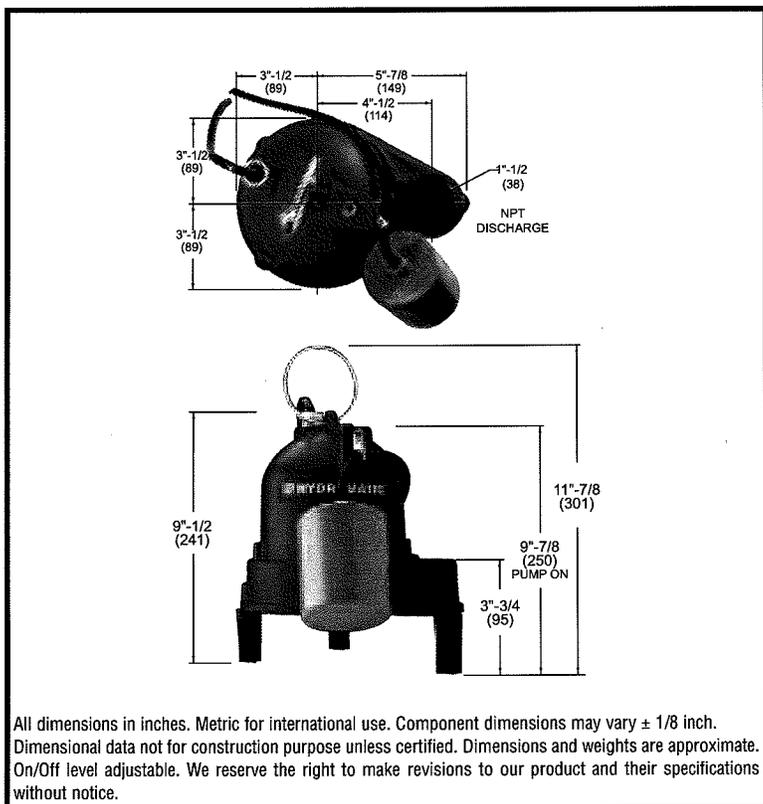
Performance Data



Materials of Construction

Handle	Stainless Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Volute	Cast Iron
Shaft	Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Anodized Steel Spring: Stainless Steel Bellows: Buna-N
Impeller	Engineered Thermoplastic
Upper Bearing	Cast Iron Sleeve
Lower Bearing	Single Row Ball Bearing
Legs	Engineered Thermoplastic
Fastener	Stainless Steel

Dimensional Data



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[®]
Pentair Pump Group

USA

1840 Baney Road Ashland, Ohio 44805
Tel: 419-289-3042 Fax: 419-281-4087

www.hydromatic.com

—Your Authorized Local Distributor—

CANADA

269 Trillium Drive Kitchener, Ontario, Canada N2G 4W5
Tel: 519-896-2163 Fax: 519-896-6337

Attachment C

**Act 145 Certification Statement with List of Affected
Property Owners**

Adjacent Property Owner Notification Letter

First Revision Issued 6-18-2010

Certification Statement for use in compliance with Act 145 of the 2010 Legislative Session

One of the two following certification statements shall be included with any application for a Wastewater System and Potable Water Supply Permit that is filed on or after June 2, 2010

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

When there are affected property owners, the applicant shall use this statement:

I hereby certify that the attached list of names and addresses includes all those whose property may be affected by the proposed water and wastewater systems, and their associated isolation distances and zones, and that all those listed have been sent a copy of the application and any associated plans.

Signature _____

Name (Printed) _____

Date of this certification _____

Affected Property Owners Requiring Act 145 Notification

Petdia II, LLC
1905 Mt. Philo Road, Charlotte, VT

Registered Agent:

Mr. Liam L. Murphy, ESQ
PO Box 4485
Burlington, VT 05401



April 26, 2011

Petdia II, LLC
c/o Mr. Liam L. Murphy, Registered Agent
PO Box 4485
Burlington, VT 05401

Re: Act 145 Notification - Dykema Water & Wastewater System Permitting

Dear Attorney Murphy:

I am currently preparing an application for a State of Vermont Wastewater System and Potable Water Supply Permit on behalf of Ben and Kristine Dykema. The permit application requests approval to develop their +/- 10.72 acre parcel that is directly adjacent to property currently owned by Petdia II, LLC.

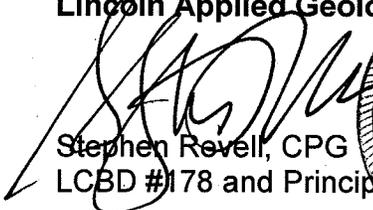
Recent changes to State statute (Act 145) require me to notify you that the isolation distances related to the proposed wastewater disposal area and drilled well minimally extend onto shallow ledge areas owned by Petdia II, LLC. Please be aware that these isolation distances limit your clients ability to place a well and wastewater disposal area in these delineated areas in the future. The statute change does not create any rights other than notification.

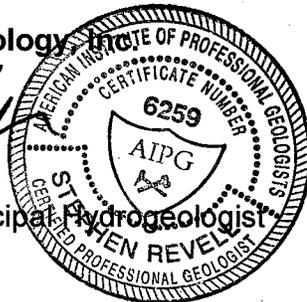
As required, I have enclosed a complete copy of the State permit application, the plans and all related documents. Plan Sheet 1 shows the protective isolation zones surrounding the proposed well and wastewater disposal system which minimally extend onto your clients property.

If you have any questions, please contact me at 802-453-4384.

Very truly yours,

Lincoln Applied Geology, Inc.


Stephen Revell, CPG
LCBD #178 and Principal Hydrogeologist



SR/SK:kg

Enclosure

Cc: Ben & Kristine Dykema
David Miskell

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