NORWICH PLANNING COMMISSION
AGENDA
Thursday January 28, 2021
NOTE DATE & START TIME 6:30pm

Topic: Planning Commission
Time: January 28, 2021 06:30 PM Eastern Time (US and Canada)

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Join Zoom Meeting
https://us02web.zoom.us/j/87406704359
888 475 4499 US Toll-free
877 853 5257 US Toll-free

Meeting ID: 874 0670 4359
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1. Approve Agenda

2. Meeting Objectives:
   - Discuss approaches to a wastewater needs assessment.
   - Discuss process and policies for the Planning Commission

3. Comments from the Public

4. Review and approve Minutes December 10, 2020

5. Announcements, Reports, Updates & Correspondence
   - Correspondence
   - Updates
     i. Town Plan Action Items (Allen)

6. Discuss approaches to a wastewater needs assessment.

7. Update from the Affordable Housing Committee on Prudential Committee land recommendations and plan to develop educational materials that address frequently asked questions about affordable housing in Norwich.

8. Discuss process and policies for the Planning Commission

9. Other Business

10. Future Meeting Schedule & Agendas

11. Comments from the Public

Future Meetings:

Thursday, February 25, 2021 6:30pm Regular Meeting

Encl:

December 10, 2020 minutes
Timeline for Preliminary wastewater needs assessment
Sample Survey Questions
Sample of Assessment Study Scope

NORWICH PLANNING COMMISSION
Thursday December 10, 2020, 6:30pm

DRAFT MINUTES

Zoom Meeting

https://us02web.zoom.us/j/86340389705

Meeting ID: 863 4038 9705

Members Present:	Melissa Horwitz (C), Brian Loeb, Jaci Allen, Jeff Goodrich, Jeff Lubell, Leah Romano, Ernie Ciccotelli
Public Present:	Roger Arnold, Claudette Brochu
Staff:	Rod Francis, Herb Durfee

Meeting Opened: 6:32pm

1. **Approve Agenda:**
   Allen moved and Loeb seconded a motion to approve the Agenda. Motion carried 5 — 1.

2. **Meeting Objectives:**
   - Define next steps on updating the 2005 wastewater study and provide feedback to Selectboard.
   - Update from the Affordable Housing Committee on Prudential Committee land recommendations and plan to develop educational materials that address frequently asked questions about affordable housing in Norwich.
   - Discuss process and policies for the Planning Commission

3. **Public Comment:**
   Claudette Brochu provided comments as Selectboard Chair that she objected to the conduct of commissioner Goodrich in planning commission meetings. She asked Goodrich to consider stepping aside.

   Roger Arnold joined Claudette Brochu in her observations in regard to Goodrich's behavior.

   Jeff Goodrich objected to their characterization of his behavior.

4. **Review and approve Minutes November 12, 2020:**
   Allen moved and Loeb seconded a motion to approve the minutes of November 12, 2020 as amended (see items seven and twelve). Motion carried 5—1.

5. **Announcements, Reports, Updates & Correspondence:**
   - Correspondence: none
   - Updates: Francis informed the meeting:
     i. Norwich has been awarded the Municipal Planning Grant (MPG) for the Subdivision Density Factor Study
     ii. The Planning Commission meetings have been uploaded to the Town of Norwich YouTube website
     iii. The Town received its Village Center Designation (VCD)

   Loeb informed the meeting:
   Rebecca Holcombe will chair the new Town of Norwich Childcare Committee which has met to refine task descriptions, reviewing the childcare section in the 2020 town plan, and the material from the Planning Commission Childcare Forum held as part of the town plan process.

   Allen expressed her thanks to Loeb and Lubell for the Affordable Housing Op-Ed piece published in the *Valley News*

6. **Define next steps on updating the 2005 wastewater study and provide feedback to Selectboard**:
   Allen introduced the item by reminding the meeting that Marion Cross School (MCS) is seeking solutions to their failed wastewater system. She asked if there was something the commission could be doing including exploring the broader issues around wastewater provision in the village area.

   Goodrich informed the meeting again that he is representing MCS and may have a conflict of interest, but that he was able to discuss the broader questions with regard to options the Town has, the village wastewater situation, and how and in what ways they relate the issues at MCS.

   Lubell spoke about the need of encouraging the Selectboard to talk with the MCS School Board, and that there was possibly an historic opportunity to resolve the wastewater issue at MCS and support a solution that works for the village area.

   Francis informed the meeting that the Department of Environmental Conservation (DEC) operates a revolving loan fund that will pay for a Preliminary Engineering Report (PER) if the community opts to proceed with a publicly funded project. Where the community undertakes the PER but does not pursue a publicly funded project the cost of the study must be refunded to DEC. The recent re-admission of Norwich into the Village Center Designation program may benefit the town when applying for state support.

   Roger Arnold commented that he now saw why a wastewater committee was needed. Chair Horowitz reminded the meeting that recent action around the Open Meeting Law (OML) involved the unwinding of a planning commission wastewater working group, and that the experience would likely make the commission very reluctant to initiate something similar.

   Commissioners continued their discussion and then asked that Francis draft a project management document that included a timeline with any known submission deadlines, known requirements for receiving state support for a study, and technical information needed to complete any application for support of a study. Francis responded that he could have a rough draft prepared by January, 2021.

7. **Update from the Affordable Housing Committee:**
   Lubell informed the meeting about recent work by the Affordable Housing Subcommittee:
   - Exploring opportunities for using public lands for a public housing project. The group has encountered some issues associated with conservation restrictions and wastewater challenges, but continues to look
   - An Op-Ed about Affordable Housing appeared recently in the *Valley News*
   - The subcommittee will be working on an FAQ about Accessory Dwelling Units (ADUs)
   - There have been fruitful conversations between members of the Subcommittee and Upper Valley Land Trust about how to pursue the twin goals of affordable housing and land conservation

8. **Discuss process and policies for the Planning Commission:** Deferred

9. **Other Business:** None

10. **Future Meeting Schedule & Agendas**
    - Wastewater study outline
    - Discussion of processes and policies for the Planning Commission

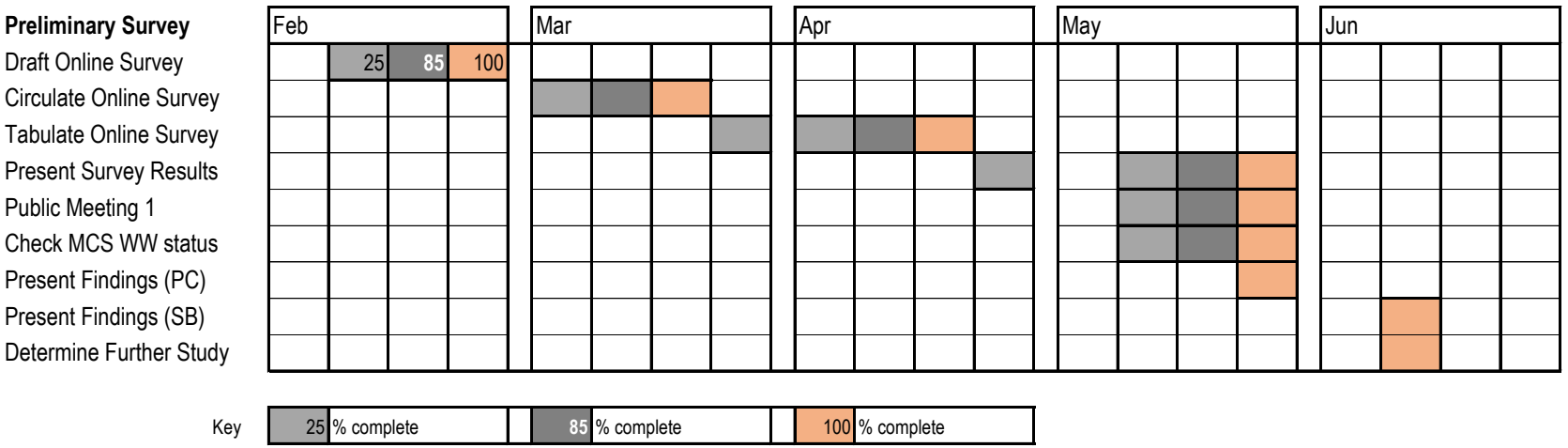
11. **Public Comment:** None

Meeting adjourned: 8:34pm

Future Meetings:
Thursday, January 28, 6:30pm Regular Meeting

Respectfully submitted,
Rod Francis

Norwich Wastewater Preliminary Needs Assessment



PC Agenda and Materials Schedule to Coincide with Preliminary Survey	
January	Sample Survey Questions
	Technical Study Scope
February	Draft Online Survey
	Draft Online Backgound Doc
March	Survey Update/Raw output
April	Survey Results
	Land Use Change Discussion Memo
	Public Meeting Plan Memo
May	Public Meeting Packet
	MCS WW status position
	Draft PC Findings
	Draft SB presentation
June	SB presentation
	PC recommendation

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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont

TABLE 1: Summary of Survey Responses Regarding Needs
Lake Carmi: Surveys Distributed/Attempted: 321, Surveys Completed: 190
Response Rate: 59%

Survey Question	Response	Number of Responses	% of Responses
1	How many family members normally stay at your property?		
	0 or blank	12	6%
	1-2	110	58%
	3-4	52	27%
	5-6	15	8%
	7-10	1	1%
2	How many bedrooms does your house or camp have?		
	0 or blank	13	7%
	1	17	9%
	2	75	39%
	3	67	35%
	4	12	6%
	5	3	2%
	6	2	1%
3	How many days per year, on average, is your home or camp in use?		
	0 or blank	11	6%
	1-7	6	3%
	8-14	12	6%
	15-30	18	9%
	31-60	45	24%
	61-90	28	15%
	91-180	55	29%
	More than 180	15	8%
4	When was your house or camp last purchased or sold? (2011 survey only)		
	Unknown or blank	82	43%
	2007-2011 (Within last 5 years)	27	14%
	2001-2006 (6-10 years ago)	10	5%
	1997-2001 (11-15 years ago)	9	5%
	1991-1996 (16-20 years ago)	13	7%
	1980-1990 (21-30 years ago)	18	9%
	1970-1980 (31-40 years ago)	10	5%
	Before 1970 (More than 40 years ago)	21	11%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
STONE ENVIRONMENTAL, INC
Date/init: 9/27/2011 anm
Path: O:\Proj-11\WRM\2514-W Franklin WW\Data\Survey\Survey.mdb [rptTable1_SurveyResultsLake]

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TABLE 1 (cont.): Summary of Survey Responses Regarding Needs
Lake Carmi: Surveys Distributed/Attempted: 321, Surveys Completed: 190
Response Rate: 59%

Survey Question	Response	Number of Responses	% of Responses
5	What water saving devices have been installed in your home or camp?		
	None	91	48%
	Shower	63	33%
	Toilet	71	37%
	Faucets	22	12%
	Other	3	2%
6	Do you have any of the following appliances?		
	None	27	14%
	Shower	160	84%
	Washing Machine	75	39%
	Dishwasher	26	14%
	In-sink garbage disposal	3	2%
7	What is the source of your household water?		
	No on-site water	13	7%
	Drilled well	60	32%
	Dug well	23	12%
	Spring	15	8%
	Lake	76	40%
	Other	3	2%
8	Do you drink your tap water?		
	Yes	67	35%
	No	114	60%
	Blank	9	5%
9	Have you had your water tested recently?		
	Yes	27	14%
	No	141	74%
	Unsure (or blank)	22	12%
10	If your water has been tested recently, were the results acceptable to you?		
	Yes	14	7%
	No	2	1%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
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Survey Question	Response	Number of Responses	% of Responses
11	Do you have any type of water treatment system?		
	Filter	43	23%
	Ultraviolet (UV) disinfection	7	4%
	Other	4	2%
	None	141	74%
12	What type of wastewater disposal system do you have?		
	Holding tank only	15	8%
	Septic tank and leachfield ("septic system")	158	83%
	Unknown or blank	14	7%
	Other	3	2%
13	How old is your wastewater system (or what year was it installed)?		
	0-3 years (installed or replaced 2008-2011)	13	7%
	3-9 years (installed or replaced 2002-2007)	36	19%
	9-15 years (installed or replaced 1996-2002)	15	8%
	15-29 years (installed or replaced 1982-1995)	55	29%
	30+ years (installed or replaced 1981 or earlier)	20	11%
	Unknown or blank	51	27%
14	How big is your septic tank?		
	250 gallons	6	3%
	500 gallons	25	13%
	1000 gallons	65	34%
	2000 gallons	3	2%
	Other	4	2%
	Unsure (or blank)	87	46%
15	Is there any additional treatment after your septic tank? (2011 survey only)		
	Yes	71	37%
	No	24	13%
	Unsure (or blank)	19	10%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
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Survey Question	Response	Number of Responses	% of Responses
16	If "yes", what? (2011 survey only)		
	In-ground leach field	68	36%
	Drywell(s)	6	3%
	Sand mound or raised leach field	5	3%
	Advanced treatment (Advantex, SeptiTech, etc.—please describe if you know)	1	1%
17	How far is the leach field from water's edge?		
	Less than 25 feet	9	5%
	25-50 feet	48	25%
	50-75 feet	38	20%
	75-100 feet	18	9%
	100-200 feet	18	9%
	More than 200 feet	22	12%
	Unknown	37	19%
18	How far is the leach field above the groundwater level or lake level? (2011 survey only)		
	Less than 2 feet	5	3%
	2-4 feet	12	6%
	4-6 feet	18	9%
	More than 6 feet	36	19%
	Unknown	43	23%
19	How often is your septic tank pumped out?		
	1-2 years	25	13%
	3-4 years	39	21%
	5-7 years	24	13%
	More than 7 years	28	15%
	Never	26	14%
	Unknown	48	25%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
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Response Rate: 59%

Survey Question		Response	Number of Responses	% of Responses
20	Other than septic tank pumping, do you have any maintenance routine for your system?			
		Add yeast	14	7%
		Add Rid-Ex	34	18%
		Other additive	4	2%
		Have someone inspect the system	9	5%
		Other maintenance	1	1%
		None	134	71%
21	Has your septic system ever backed up? (2011 survey only)			
		Yes	5	3%
		No	93	49%
		Unsure	16	8%
21a	Does it give off odors? (2011 survey only)			
		Yes	4	2%
		No	98	52%
		Unsure	12	6%
22	Do you have wet areas in your yard? (2010-2011 surveys only)			
		Yes	21	11%
		No	100	53%
		Unsure (or blank)	15	8%
22a	If you do have wet areas in your yard, when do they occur? (2010-2011 surveys only)			
		Spring snowmelt only	10	5%
		After heavy rains	8	4%
		Other (describe in comment)	5	3%
23	Have you considered upgrading your septic system?			
		Yes	20	11%
		No	111	58%
		Unsure	15	8%
		Blank	44	23%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
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Response Rate: 59%

Survey Question		Response	Number of Responses	% of Responses
24	What factors have prevented you from completing that upgrade?			
		Recent construction or upgrade/replacement	19	10%
		Current system operates properly	27	14%
		Concern about costs	18	9%
		Concern about lack of sufficient area for replacement	2	1%
		Camp has very limited use	5	3%
		Other (describe in comment)	6	3%
		Blank	114	60%
25	Do you think any of your neighbors have problems with their system? (2011 survey only)			
		Yes	4	2%
		No	48	25%
		Unsure	62	33%
26	Do you have any comments regarding wastewater management in Franklin Village or around Lake Carmi?			
		No comment or blank	159	84%
		Support for municipal wastewater system, esp. considering property taxes paid	3	2%
		Support efforts to improve lake water quality	5	3%
		Concern about existing condition of lakeshore wastewater systems	6	3%
		Concern about manure and agricultural runoff reaching the lake	11	6%
		Interest in incentives for wastewater system upgrades	3	2%
		Interest in alternate approaches (composting toilets/greywater systems, etc.)	1	1%

Source: Property owner surveys, FWC 2009-2010 and Stone Environmental, 2011.
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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont

TABLE 2: Summary of Survey Responses Regarding Needs
Franklin Village: Surveys Distributed/Attempted: 94, Surveys Completed: 48
Response Rate: 52%

Survey Question	Response	Number of Responses	% of Responses
1	How many people normally live at your property (or, if this is a business, how many employees normally work at your property)?		
	0 or blank	11	22%
	1-2	14	29%
	3-4	12	24%
	5-6	6	12%
	7-10	3	6%
	11-20	1	2%
	21-30	2	4%
2	If this is a residence or residential property, how many bedrooms does it have?		
	0, blank, or non-residential	16	33%
	2	5	10%
	3	16	33%
	4	5	10%
	5-6	5	10%
	7 or more	2	4%
3	How many days per year, on average, is this property in use?		
	0 or blank	4	8%
	30 or less	3	6%
	31-60	1	2%
	91-180	1	2%
	More than 180	8	16%
	Full time, 365 days	32	65%
4	What type of wastewater disposal system do you have?		
	Holding tank only	3	6%
	Septic tank and leachfield ("septic system")	37	76%
	No wastewater system on property	5	10%
	Unknown or blank	3	6%
	Other	1	2%

Source: Property owner surveys, Stone Environmental, 2011-12.
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TABLE 2 (cont.): Summary of Survey Responses Regarding Needs
Franklin Village: Surveys Distributed/Attempted: 94, Surveys Completed: 48
Response Rate: 52%

Survey Question	Response	Number of Responses	% of Responses
5	Do you have a copy of any sketches, plans, or permits of your septic system available for reference?		
	Yes	10	20%
	No	21	43%
	Unsure (or blank)	17	35%
6	How old is your wastewater system (or what year was it installed)?		
	Unknown or blank	22	45%
	2007-2011 (Within last 5 years)	8	16%
	2001-2006 (6-10 years ago)	2	4%
	1997-2001 (11-15 years ago)	6	12%
	1991-1996 (16-20 years ago)	5	10%
	1980-1990 (21-30 years ago)	4	8%
	1970-1980 (31-40 years ago)	1	2%
7	Please indicate the size and construction of your septic tank or holding tank by checking as many boxes as apply:		
	500 gallons	2	4%
	1,000 gallons	25	51%
	1,500 gallons	1	2%
	2,000 gallons	3	6%
	Unsure of size	17	35%
	Concrete	27	55%
	Metal	1	2%
	Fiberglass or Plastic	1	2%
	Unsure of construction	19	39%
8	How deep below the surface is the top of your septic tank?		
	0-1 foot	7	14%
	1-2 feet	14	29%
	2-3 feet	5	10%
	More than 3 feet	6	12%
	Unsure	16	33%

Source: Property owner surveys, Stone Environmental, 2011-12.
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Franklin Village: Surveys Distributed/Attempted: 94, Surveys Completed: 48
Response Rate: 52%

Survey Question	Response	Number of Responses	% of Responses
9	Is there any additional treatment after your septic tank?		
	Yes	33	67%
	No	5	10%
	Unsure (or blank)	10	20%
10	If "yes", what?		
	In-ground leach field	26	53%
	Drywell(s)	3	6%
	Sand mound or raised leach field	4	8%
	Advanced treatment (Advantex, SeptiTech, etc.—please describe if you know)	2	4%
11	Is your wastewater system shared with another building or property?		
	No	37	76%
	Yes (describe in comment)	4	8%
	Unsure	1	2%
	Blank	6	12%
12	Please describe below any upgrades or repairs that have been performed on your septic system within the last ten years:		
	Replaced the septic tank	4	8%
	Replaced the leachfield	3	6%
	Other repair (describe in comment)	1	2%
	None or blank	41	84%
13	How often is your septic tank pumped out?		
	2 years or less	10	20%
	3-4 years	6	12%
	5-7 years	7	14%
	More than 7 years	6	12%
	Unknown	19	39%

Source: Property owner surveys, Stone Environmental, 2011-12.
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Survey Question	Response	Number of Responses	% of Responses
14	Year that septic tank was last pumped, if known:		
	2010-2011	9	18%
	2008-2009	5	10%
	2006-2007	6	12%
	2005	1	2%
	2000	2	4%
	Before 2000	3	6%
	Unknown or blank	22	45%
15	What company pumps your septic tank?		
	Drummac	21	43%
	Senesac	2	4%
	Unknown or blank	25	51%
16	Other than septic tank pumping, do you have any maintenance routine for your system?		
	Add yeast	6	12%
	Add Rid-Ex	14	29%
	Other additive	3	6%
	Other maintenance	4	8%
	None	26	53%
17	Has your septic system ever backed up?		
	Yes	2	4%
	No	40	82%
	Unsure	6	12%
18	Does it give off odors?		
	No	38	78%
	Unsure	10	20%
19	Do you have wet areas in your yard?		
	Yes	9	18%
	No	34	69%
	Unsure (or blank)	5	10%

Source: Property owner surveys, Stone Environmental, 2011-12.
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Response Rate: 52%

Survey Question	Response	Number of Responses	% of Responses
20	If you do have wet areas in your yard, when do they occur?		
	Spring snowmelt only	4	8%
	After heavy rains	4	8%
	Other (describe in comment)	2	4%
21	Do you think any of your neighbors have problems with their system?		
	Yes	4	8%
	No	17	35%
	Unsure	27	55%
22	What is the source of your household water?		
	Connection to the Franklin Fire District No. 1 system	38	78%
	Drilled well	5	10%
	No water system on property	2	4%
23	Do you have any type of water treatment system?		
	Filter	4	8%
	Other	1	2%
	None	43	88%
24	Have you ever had contamination problems with the water supply system(s) on your property?		
	Yes (describe in comment)	2	4%
	No	38	78%
	Unsure (or blank)	8	16%
25	Have you ever run out of water?		
	Never	48	98%
26	Has the property had any other problems with water, or has work been done on the water system in the last 10 years?		
	Yes (describe in comment)	8	16%
	No	29	59%
	Unsure (or blank)	11	22%
27	Do you have any plans to change the way your property is used (subdivide your property, change the use of your property, etc.)?		
	No	44	90%
	Yes (describe in comment)	4	8%

Source: Property owner surveys, Stone Environmental, 2011-12.
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Survey Question		Response	Number of Responses	% of Responses
28	If you had access to additional wastewater treatment capacity, is there anything you would want to do with your property that you can't do now?			
		No	41	84%
		Yes (describe in comment)	7	14%
29	Are you interested in receiving information or training about the best ways to use and maintain your wastewater treatment system?			
		No	25	51%
		Yes	8	16%
		Unsure	15	31%
30	Have you considered upgrading your septic system?			
		No	39	80%
		Yes	2	4%
		Unsure	7	14%
31	What factors have prevented you from completing that upgrade?			
		Recent construction or upgrade/replacement	2	4%
		Current system operates properly	5	10%
		Concern about costs	6	12%
		Concern about lack of sufficient area for replacement	3	6%
32	Do you have any comments regarding wastewater management in Franklin Village or around Lake Carmi?			
		Blank	1	2%
		No comment or blank	37	76%
		Support for new leachfields, but not for full-scale wastewater plant	1	2%
		Preference for individual or village-wide system over small shared leachfields	1	2%
		Support efforts to improve lake water quality	1	2%
		Concern about existing condition of village wastewater systems	1	2%
		Concern about existing conditions of lakeshore wastewater systems	1	2%
		Concern about Village drinking water quality	1	2%
		Concern about the costs of any new infrastructure	5	10%

Source: Property owner surveys, Stone Environmental, 2011-12.
STONE ENVIRONMENTAL, INC
Date/init: 2/21/2012 anm
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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont

TABLE 2 (cont.): Summary of Survey Responses Regarding Needs
Franklin Village: Surveys Distributed/Attempted: 94, Surveys Completed: 48
Response Rate: 52%

Survey Question	Response	Number of Responses	% of Responses
33	Would you like a member of the Committee or one of the consultants to contact you?		
	Yes	6	12%
	No (or blank)	41	84%

Source: Property owner surveys, Stone Environmental, 2011-12.
Date/init: 2/21/2012 anm
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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
Table 8: Summary of Needs Assessment Results, Lake Carmi Shore

Description:

7	Single Family Residences
302	Seasonal Residences / Camps
10	Camp Locations With No Active Camp
1	Mixed Residential/Commercial Property (Snack Shack)
1	Lake Carmi State Park
321	Properties Total

Water Supplies:

74	Lake water intakes
82	Individual or shared drilled wells
38	Individual or shared shallow wells/springs
15	Locations with no on-site water supply
112	Locations with no water supply information

Wastewater Treatment Systems:

156	In-ground septic system
6	Raised or mound septic system
4	Advanced treatment system (with mound or spray irrigation)
1	Composting toilet
14	Holding tank only
1	Locations with no on-site wastewater system
139	Locations with no wastewater system information

Factors Affecting GIS Risk Assessment:

Factor	Number of Properties Affected	% of Total
Setback-Related Limitations:	165	51%
Leachfield within 50 feet of surface waters	67	21%
Leachfield within 25 feet of surface waters	18	6%
Leachfield or location within wetland, 50-foot wetland buffer, or 100-year floodplain	95	30%
Leachfield proximity to Water Supply Wells	66	21%
Setback-Related Limitations Only, No Groundwater or Bedrock Risk Factors	37	12%
Shallow Seasonal Groundwater	178	55%
Shallow Bedrock	31	10%
No Key Risk Factors Identified	75	23%

Source: Survey results; Town Grand List data table; Town and VT DEC permits; VT DEC wells database; NRCS soils data.

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Note: Many properties were identified as having more than one risk factor--so the numbers of properties affected in each category will sum to a total larger than the total number of properties in the area.

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Date/init: 2/22/2012 anm

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
Table 9: Summary of Needs Assessment Results, Franklin Village

Description:

68 Single Family Residences
2 Apartments
3 Accessory Structures
6 Commercial or Mixed-Use Properties
10 Municipal or Institutional Properties
2 Open Land
91 Properties Total

Water Supplies:

44 Connection to Franklin Fire District No. 1 System
4 Individual drilled wells
5 Locations with no on-site water supply
48 Locations with no water supply information (assume connected to Franklin FD No. 1 System)

Wastewater Treatment Systems:

34 In-ground septic system
3 Raised or mound septic system
2 Advanced treatment system (sand filter and mound)
5 Holding tank only
7 Locations with no on-site wastewater system
40 Locations with no wastewater system information

Factors Affecting Wastewater Risk Assessment:

Factor	Number of Properties	% of Total
Setback-Related Limitations:	23	25%
Leachfield within 50 feet of surface waters	4	4%
Leachfield within 25 feet of surface waters	3	3%
Leachfield or location within wetland, 50-foot wetland buffer, or 100-year floodplain	23	25%
Leachfield proximity to Water Supply Wells	0	0%
Setback-Related Limitations Only, No Groundwater or Bedrock Risk Factors	3	3%
Shallow Seasonal Groundwater	58	64%
Shallow Bedrock	0	0%
No Key Risk Factors Identified	30	33%

Potential Capacity or Management Needs:

Factor	Number of Properties	Total Design Flow (gallons/day)
Properties With Setback-Related Risk Factors	23	7,570
Current or Future Plans Need Wastewater Capacity	8	4,470

Source: Survey results; Town Grand List data table; Town and VT DEC permits; VT DEC wells database; NRCS soils data.

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Note: Many properties were identified as having more than one risk factor--so the numbers of properties affected in each category will sum to a larger value than the total number of properties in the area.

Potential wastewater capacity needs are very rough estimates, to be refined in Phase 2 of this project.

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Date/init: 02/22/2012 anm

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 13: Preliminary Estimate of Total Project Costs, Lake Carmi

Description	System Components	Estimated gallons per day[1]	**Total Construction Costs (incl. 15% contingency)[2]**	Permitting, Engineering, and Legal Costs[3]	Land Acquisition and Easements[5]	**Total Project Costs[6]**
Alternative LC-1 Water conserving fixtures	Faucet aerators, high-efficiency faucets, showerhead, toilet, washing machine	0	$22.00 - $1,600	n/a	n/a	$22.00 - $1,600
Alternative LC-2 Composting toilet retrofit	Single waterless composting toilet OR two foam/vacuum flush toilets on single composter	0	$5,100 - $18,500	n/a	n/a	$5,100 - $18,500
Alternative LC-3 Single camp replacement system (best)	Septic tank, effluent collection, in-ground leachfield	420	$28,391	$2,839	$0	$31,000
Alternative LC-4 Single camp replacement system (worse)	Septic/pump tank, pre-treatment, mound leachfield	420	$43,670	$4,367	$0	$48,000
Alternative LC-5 10-camp replacement system (best)	Septic/pump tanks, effluent collection, shared in-ground leachfield	2,800	$229,828	$51,966	$5,000	$282,000
Alternative LC-6 10-camp replacement system (worse)	Septic/pump tanks, effluent collection, shared pre-treatment and mound leachfield	2,800	$326,713	$81,678	$5,000	$408,000

Notes:

[1] Based on existing needs. Assumes that full design capacity is connected at startup.

[2] Assumes 15% for unforeseen items/construction change orders (LC-3 through LC-6 only)

[3] Based on VT State curve estimates for engineering as a percentage of total construction cost.

[5] Allowance for land purchase or easement for pumping stations, treatment and dispersal locations where applicable.

[6] All costs are rounded to the nearest hundred or thousand dollars, as appropriate

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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 14: Representative Wastewater Flows, Franklin Village

Building Type	Flow Basis (gallons per unit, per day)*/**	Estimated Units	Estimated Design Flows (gallons per day)	Estimated Land Area Required (square ft.)***
Scenario 1: No Action				
Single Family Residences	420 / dwelling (on average)	68 dwellings	28,560	
Multi-Family Homes / Apartments	140 / bedroom	1 property, 5 bedrooms total	700	
Post Office / Accessory Apartment	15 / employee 140 / bedroom	4 employees 4 bedrooms	620	
Franklin Telephone Co. Office / Accessory Apartment	15 / employee 140 / bedroom	4 employees 4 bedrooms	620	
Franklin General Store	100 / butcher shop 150 / deli 30 / seat, 2 meals/day 15 / employee	1 butcher shop 1 deli 10 seats 5 employees	625	
Garage (Dick Wright Ford, Inc.)	15 / employee	10 employees	150	
Franklin Homestead and Carriage House	15 / employee / shift 63 / bed space (metered, approx) 5 / dining room seat	2 employees, 3 shifts 51 beds 33 seats	3,727	
Franklin United Church	5 / seat x 25% 8 / seat for suppers	120 seats	1,110	
Catholic Church	5 / seat x 25%	~100 seats	125	
Franklin Town Office / Haston Library	15 / employee	6 employees	90	
Franklin Fire and Rescue Dept. Office/Garage	5 / person	10 persons	50	
Franklin Town Hall	5 / seat	~100 seats	500	
Franklin Town Garage	15 / employee	2 employees	30	
Franklin Central School	20 / student w/cafeteria 15 / employee 10% water conservation	215 students 28 employees	4,300	
Scenario 1 Total Wastewater Flows			**41,207**	n/a

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 14: Representative Wastewater Flows, Franklin Village

Building Type	Flow Basis (gallons per unit, per day)*/**	Estimated Units	Estimated Design Flows (gallons per day)	Estimated Land Area Required (square ft.)***
Scenario 2: Shared Capacity for Municipal Facilities Only				
Franklin Town Office / Haston Library	15 / employee	6 employees	90	
Franklin Fire and Rescue Dept. Office/Garage	5 / person	10 persons	50	
Franklin Town Hall	5 / seat 8 / seat for suppers	~100 seats	1,300	
Franklin Town Garage	15 / employee	2 employees	30	
Franklin United Church and Congregational Church (option, at current use)	5 / seat x 25% 8 / seat for suppers	212 seats 120 seats for suppers	1,225	
Scenario 2 Total Wastewater Flows			**1,470 / 2,695**	12,200-22,400
Scenario 3: Shared Capacity for Municipal Facilities and "High Risk" Properties				
Single Family Residences	268 / dwelling (shared)	13 dwellings	3,484	
Multi-Family Homes / Apartments	140 / bedroom	1 property, 5 bedrooms total	700	
Post Office / Accessory Apartment	15 / employee 140 / bedroom	4 employees 4 bedrooms	620	
Franklin Town Office / Haston Library	15 / employee	6 employees	90	
Franklin Fire and Rescue Dept. Office/Garage	5 / person	10 persons	50	
Franklin Town Hall	5 / seat 8 / seat for suppers	~100 seats	1,300	
Franklin Town Garage	15 / employee	2 employees	30	
Franklin Historical Society Log Cabin	5 / person	10 persons	50	
Scenario 3 Total Wastewater Flows			**6,274**	52,100
Scenario 4: Shared Capacity for Most Project Area Properties				
Single Family Residences	245 / dwelling (shared)	68 dwellings	16,660	
Multi-Family Homes / Apartments	140 / bedroom	1 property, 5 bedrooms total	700	

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 14: Representative Wastewater Flows, Franklin Village

Building Type	Flow Basis (gallons per unit, per day)*/**	Estimated Units	Estimated Design Flows (gallons per day)	Estimated Land Area Required (square ft.)***
Post Office / Accessory Apartment	15 / employee 140 / bedroom	4 employees 4 bedrooms	620	
Franklin Telephone Co. Office / Accessory Apartment	15 / employee 140 / bedroom	4 employees 4 bedrooms	620	
Franklin General Store	100 / butcher shop 150 / deli 30 / seat, 2 meals/day 15 / employee	1 butcher shop 1 deli 10 seats 5 employees	625	
Garage (Dick Wright Ford, Inc.)	15 / employee	10 employees	150	
Franklin United Church and Congregational Church (option, at current use)	5 / seat x 25% 8 / seat for suppers	212 seats 120 seats for suppers	1,225	
Catholic Church	5 / seat x 25%	~100 seats	125	
Franklin Town Office / Haston Library	15 / employee	6 employees	90	
Franklin Fire and Rescue Dept. Office/Garage	5 / person	10 persons	50	
Franklin Town Hall	5 / seat 8 / seat for suppers	~100 seats	1,300	
Franklin Town Garage	15 / employee	2 employees	30	
Un-Allocated Capacity (~13% of Current Flows)	n/a	n/a	2,805	
Total Shared Wastewater Flows			**25,000**	251,600

Notes: *Residential flows range from 420 gpd for a single 3-bedroom residence, or by bedrooms up to 4 units, to as low as 245 gpd per residential unit for 20+ units connected to a single leachfield.

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**Commercial, multi-use, or institutional properties' design flows are estimated based on current permits or property use.

***Estimated land area is calculated assuming a mound system loading rate of 1 gpd/ft^2 of trench and a minimum effective basal area calculated using a maximum application rate of 0.24 gpd/ft^2. Total required area is assumed to be about twice the basal area. The actual area required on a site will vary with ground slope and other site-specific factors. For Scenario 4, land area requirements are estimated based on a spray irrigation dispersal system dispersing "secondary-plus" quality effluent at a loading rate of 3 inches per week of wetted area.

Source: VT EPRs, Chapter 1, eff. September 29, 2007.

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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 15: Summary of Potential Wastewater Dispersal Sites, Franklin Village

Area Number	Description	Current Permitted Capacity, gpd	Estimated or Potential Available Capacity, gpd*	Advantages	Disadvantages
Area 1	15 School Street, Franklin Central School (existing system)	4,300	1,000 - 1,200+	• 0.43 ac. suitable soils • Public ownership • No downgradient water supplies • System is already constructed, regularly maintained, and in good condition • Minimal ledge removal likely needed • Gravity collection possible • Field testing may prove out additional capacity	• Current potential/permitted capacity not sufficient for any scenario • Utilizing this capacity limits possibilities for future school expansion
Area 2	15 School Street, Frankin Central School (recreational fields)	n/a	1,000 - 2,000	• 4.5 ac. potentially suitable soils • Public ownership • No downgradient water supplies • Minimal ledge removal likely needed • Gravity collection possible	• Nearby wetland and floodplain areas may restrict capacity • Site modifications during ball field construction significantly reduced potential capacity
Area 3	~93 Homestead Drive, open land north of Town Garage	n/a	2,700 - 4,050	• 5.8 ac. potentially suitable soils • Public ownership • No downgradient water supplies • Minimal ledge removal likely needed (in western area)	• Potentially suitable soils may be more limited than soil survey indicates • Shallow bedrock in eastern area of site limits capacity • Site at higher elevation than connections, pumping required
Area 4	Middle Road, south of Maple Grove Cemetery	n/a	3,500 - 6,500	• 2 ac. potentially suitable soils • No downgradient water supplies • Minimal ledge removal likely needed • Gravity collection possible	• Privately owned • Nearby wetland and floodplain areas may restrict capacity

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 15: Summary of Potential Wastewater Dispersal Sites, Franklin Village

Area Number	Description	Current Permitted Capacity, gpd	Estimated or Potential Available Capacity, gpd*	Advantages	Disadvantages
Area 5	~4600 VT Route 120, south of Franklin Village	4,246	4,246 - 8,492+	• 2 ac. suitable soils • Site is over 1,500 feet from nearest stream or floodplain • Site work associated with historic permitting proved at least 4,246 gpd capacity • Several viable opportunities to increase potential capacity	• Privately owned • Development history may increase negotiation challenges • 3-5 potable water supplies potentially downgradient • Site at higher elevation than connections, pumping required
Area 6	~4800 VT Route 120, south of Franklin Village, potential spray site	n/a	10,000 - 25,000	• 6+ ac. potentially suitable soils • Completely wooded • Site is 800-1,000 feet from nearest wetland, stream, or floodplain	• Privately owned • Historic Franklin F.D. No. 1 water source potentially downgradient • Site at higher elevation than connections, pumping required

Notes: gpd = gallons per day

Potential available capacity for undeveloped sites is based on Soil Survey soil texture and estimated system length parallel to topography.

No site confirmation testing or site-specific capacity analysis was performed during this study.

Source: VT EPRs, Chapter 1, eff. September 29, 2007, and Stone Environmental, Inc. 2012 calculations.

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Date/init: 3/20/2012, anm

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 16: Summary of Potential Wastewater Treatment and Dispersal Alternatives, Franklin Village

Scenario	Alternative No.	Treatment System	Collection System	Dispersal	Figure Reference
Scenario 1: No Action • 89 developed properties • 41,208 gpd	n/a	New septic tanks, pump tanks, and/or pre-treatment systems (when existing systems need replacement)	Gravity or low-pressure pipe for effluent	New leachfields (when existing systems need replacement)	Figure 7
Scenario 2: Shared Capacity for Municipal Facilities Only • Shared capacity is provided for the Town Hall, Town Clerk's Office, Library, Fire/Rescue, and Town Garage at 1,470 gpd • Option to add Franklin United Church buildings to the municipal buildings as FV-1A, 2A, and 3A, at 2,695 gpd	FV-1 and FV-1A	New septic/pump tanks at Town Hall. Re-use existing septic or holding tanks for other properties. Shared pre-treatment system and dosing tank at dispersal site. Option to add Franklin United Church buildings.	Low-pressure pipe for septic tank effluent	New mound leachfield at Area 3	Figure 15
	FV-2 and FV-2A	New septic/pump tanks at Town Hall. Re-use existing septic or holding tanks for other properties. Shared dosing tank at dispersal site. Option to add Franklin United Church buildings.	Low-pressure pipe for septic tank effluent	New in-ground leachfield at Area 4	Figure 16
	FV-3 and FV-3A	New septic/pump tanks at Town Hall. Use existing septic or holding tanks for other properties. Shared dosing tank at dispersal site. Option to add Franklin United Church buildings.	Low-pressure pipe for septic tank effluent	New mound leachfield at Area 5	Figure 17

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 16: Summary of Potential Wastewater Treatment and Dispersal Alternatives, Franklin Village

Scenario	Alternative No.	Treatment System	Collection System	Dispersal	Figure Reference
Scenario 3: Shared Capacity for Municipal Facilities and "High Risk" Properties • Shared capacity is provided for the Town Hall, Town Clerk's Office, Library, Fire/Rescue, Town Garage, plus the FHS log cabin, Post Office, a 5 BR apt., and 13 homes • 6,274 gpd	FV-4	New septic/pump tanks at Town Hall. Use existing septic or holding tanks for other Town owned properties. New septic/ pump tanks for all other properties. Shared dosing tank at dispersal site.	Low-pressure pipe for septic tank effluent	New at-grade or mound leachfield at Area 4 (higher design flow may push induced mound higher than in-ground leachfield could handle)	Figure 18
	FV-5	New septic/pump tanks at Town Hall. Use existing septic or holding tanks for other Town owned properties. New septic/ pump tanks for all other properties. Shared pre-treatment system and dosing tank at dispersal site.	Low-pressure pipe for septic tank effluent	New mound leachfield at Area 5	Figure 19
Scenario 4: Shared Capacity for Most Project Area Properties • Shared capacity is provided for all improved properties except accessory structures, Franklin Homestead / Carriage House, and Franklin Central School • 25,000 gpd	FV-6	New septic/pump tank at Town Hall. Use existing septic or holding tanks for other Town owned properties. New septic/ pump tanks for all other properties. Shared pre-treatment system and effluent storage lagoon at Area 3.	Gravity or low-pressure pipe for septic tank effluent	New spray dispersal field at Area 6	Figure 20

Notes: gpd = gallons per day

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Potential available capacity for undeveloped sites is based on Soil Survey soil texture and potential land areas summarized in Table 15.

No site confirmation testing or site-specific capacity analysis was performed during this study.

Source: VT EPRs, Chapter 1, eff. September 29, 2007, and Stone Environmental, Inc. 2012.

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Date/init: 3/20/2012, anm; rev 4/27/2012

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 17: Preliminary Estimate of Total Project Costs, Franklin Village

Description	System Components	Estimated gallons per day[1]	**Total Construction Costs (incl. 15% contingency)[2]**	Permitting, Engineering, and Legal Services[3]	Land Acquisition and Easements[5]	**Total Project Costs[6]**
No Action	Replacement septic tanks and leachfields (with pre-treatment if needed) on individual lots	41,208	$1,650,000	$233,000	$0	$1,883,000
Alternative FV-1 Municipal properties	Septic/pump tanks, effluent collection system, shared pre-treatment and mound dispersal at Area 3	1,470	$227,217	$68,165	$0	$295,000
Alternative FV-1A Municipal + Franklin UC	Septic/pump tanks, effluent collection system, shared pre-treatment and mound dispersal at Area 3	2,570	$310,937	$93,281	$0	$404,000
Alternative FV-2 Municipal properties	Septic/pump tanks, effluent collection system, shared in-ground dispersal at Area 4	1,470	$274,520	$87,606	$17,500	$380,000
Alternative FV-2A Municipal + Franklin UC	Septic/pump tanks, effluent collection system, shared in-ground dispersal at Area 4	2,570	$334,457	$108,737	$28,000	$471,000
Alternative FV-3 Municipal properties	Septic/pump tanks, effluent collection system, shared mound dispersal at Area 5	1,470	$534,713	$176,164	$52,500	$763,000
Alternative FV-3A Municipal + Franklin UC	Septic/pump tanks, effluent collection system, shared mound dispersal at Area 5	2,570	$588,108	$192,182	$52,500	$833,000

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 17: Preliminary Estimate of Total Project Costs, Franklin Village

Description	System Components	Estimated gallons per day[1]	**Total Construction Costs (incl. 15% contingency)[2]**	Permitting, Engineering, and Legal Services[3]	Land Acquisition and Easements[5]	**Total Project Costs[6]**
Alternative FV-4 Municipal and high-risk properties	Septic/pump tanks, effluent collection system, shared mound dispersal at Area 4	6,274	$703,542	$226,813	$52,500	$983,000
Alternative FV-5 Municipal and high-risk properties	Septic/pump tanks, effluent collection system, shared pre-treatment and mound dispersal at Area 5	6,274	$1,012,520	$324,756	$70,000	$1,407,000
Alternative FV-6 Most Village properties	Septic/pump tanks, effluent collection system, shared pre-treatment / lagoon at Area 3, spray dispersal at Area 6	25,000	$3,119,098	$1,145,729	$700,000	$4,965,000

Notes:

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[1] Based on existing needs. For alternatives FV-1 through FV-6, assumes that full design capacity is connected at startup.

[2] Assumes 15% for unforeseen items/construction change orders.

[3] Based on VT State curve estimates for engineering as a percentage of total construction cost.

[5] Allowance for land purchase or easement for pumping stations, treatment and dispersal locations where applicable.

[6] All total project cost estimates are rounded to the nearest thousand dollars.

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Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 18: Evaluation of Alternatives, Lake Carmi

	Alternative LC-1: Water Conservation		Alternative LC-2: Composting Toilet Retrofit		Alternative LC-3: Single Camp Replacement System, Best Case	Alternative LC-4: Single Camp Replacement System, Worst Case	Alternative LC-5: 10- Camp Replacement System, Best Case	Alternative LC-6: 10- Camp Replacement System, Worst Case
Criteria	**Faucet Aerators**	**Water-Conserving Fixture Retrofit**	**Single Waterless Toilet Retrofit**	**Two-Bathroom, Foam or Vacuum Flush Retrofit**				
Construction Costs/Funding	• Lowest cost alternative • Financing not required	• Lower cost alternative • Financing available from most appliance stores	• Lower cost alternative • Potential to finance via signature loan	• Higher cost alternative • Potential to finance via signature loan or home equity line of credit	• Higher cost alternative • Potential to finance via home equity line of credit	• Higher cost alternative • Potential to finance via home equity line of credit	• Higher cost alternative • Potential to finance via home equity line of credit	• Highest cost alternative • Potential to finance via home equity line of credit
Operation/ Maintenance Costs	• None	• None	• Low (minimal annual maintenance, electric use for fan)	• Lower (minimal annual maintenance, electric use for fan and foam/vacuum flush)	• Lower (annual pump check, electric use for pump, pump-out septic tank every 3-5 years)	• Higher (pre-treatment maintenance contract, electric use for pumps, septic tank pump-out)	• Higher (annual engineering inspection, electric use for pumps, pump-out septic tanks every 3-5 years)	• Highest (pre-treatment maintenance contract, annual engineering insp., electric use for pumps, tank pump-outs)
Implementation/ Feasibility	• Simple project implementation	• Simple project implementation	• Installation requires interior construction incl. plumbing and electrical wiring	• Installation requires interior construction incl. plumbing and electrical wiring • Installation may require excavation for utility vault, or construction of small shed for composter	• Requires negotiation with private property owner for dispersal site • Simple project implementation	• Potential flexibility to add limited service connections after project implemented	• May require negotiation with private property owner or lease-holder for dispersal site • Potential flexibility to add limited service connections after project implemented	• May require negotiation with private property owner or lease-holder for dispersal site • Potential flexibility to add limited service connections after project implemented
Administrative Issues	• None	• None	• State permit required ONLY if changing use, adding bedrooms, or existing system is failing/surfacing	• State permit required ONLY if changing use, adding bedrooms, or existing system is failing/ surfacing	• State permit required	• State permit required	• State permit required • Requires creation of owners' association for system ownership / management • Access easement or land purchase may be required for access to tanks and dispersal on private property	• State permit required • Requires creation of owners' association for system ownership / management • Access easement or land purchase may be required for access to tanks and dispersal on private property
Use of existing resources	• Uses existing faucet fixtures, plumbing, and wastewater system	• Uses existing plumbing and wastewater system	• Uses existing wastewater system	• Uses existing wastewater system	• Uses existing tanks where feasible • Requires new dispersal field	• Uses existing tanks where feasible • Requires new dispersal field	• Uses existing tanks where feasible • Requires new dispersal field	• Uses existing tanks where feasible • Requires new dispersal field
Public Acceptability	• Generally acceptable	• Generally acceptable	• Composting toilets not acceptable to all	• Composting toilets not acceptable to all	• Generally acceptable	• Generally acceptable	• Generally acceptable	• Generally acceptable
Complexity	• Least complex alternative	• Relatively low complexity	• Low complexity with gravity collection, fan	• Moderate complexity with vacuum or foam-assisted collection and fan	• Moderate complexity with pressure collection and a pump	• Moderate complexity with pre-treatment, pressure collection, and a pump	• Moderate complexity with pressure collection and multiple pumps	• Most complex with pressure collection, pre-treatment system, and multiple pumps
Adaptability to future growth	• Does not enable growth or changes of use	• Does not enable growth or changes of use	• Does not enable growth or changes of use	• Does not enable growth or changes of use	• Focus on existing flows with limited change-in-use potential	• Focus on existing flows with limited change-in-use potential	• Focus on existing flows with some growth or change-in-use potential	• Focus on existing flows with some growth or change-in-use potential
Effects on environmentally sensitive areas	• Minimal project area/ impact • Reduces water entering system from sinks by 30% or more	• Minimal project area/ impact • A total retrofit may reduce overall water use – and wastewater volume - up to 50%	• Minimal project area/ impact • Reduces water use and organic loading to wastewater system • Reduces nutrient loading to Lake	• Minimal project area/ impact • Reduces water use and organic loading to wastewater system • Reduces nutrient loading to Lake	• Smaller project area/ impact • Properly sited leachfields reduce nutrient loading to Lake	• Smaller project area/ impact • Properly sited leachfields and pre-treatment reduce nutrient loading to Lake	• Larger project area/ impact • Properly sited leachfields reduce nutrient loading to Lake	• Larger project area/ impact • Properly sited leachfields and pre-treatment reduce nutrient loading to Lake
Reliability, redundancy	• Proven, passive technology • No maintenance	• Proven, passive technologies • Little or no maintenance	• Proven, passive treatment system • Composting chamber requires maintenance	• Proven treatment system • Composting chamber and vacuum system or foam dispenser require maintenance	• Proven, passive treatment system • Pumps require maintenance	• Proven treatment system • Pumps and pre-treatment unit require maintenance	• Proven, passive treatment system • Pumps require maintenance	• Proven treatment system • Pumps and pre-treatment unit require maintenance
Evaluation Results (within each scenario)	**Most Favorable**	**More Favorable**	**More Favorable**	**Favorable**	**More Favorable**	**Less Favorable**	**More Favorable**	**Less Favorable**

Source: Stone Environmental, April 2012.
Path: O:\Proj-11\WRM\2514-W Franklin WW\Project Reports\Draft\Final\Tables\Table18-AlternativesMatrix.doc
Date/Init: 4/24/2012, anm

Wastewater Evaluations for Franklin Village and Lake Carmi
Town of Franklin, Vermont
TABLE 19: Evaluation of Alternatives, Franklin Village

	Scenario 1: No Action	Scenario 2: Municipal Facilities Only and Scenario 2a: Municipal Facilities and Churches			Scenario 3: Municipal Buildings and High-Risk Properties		Scenario 4: Capacity for Most Village Properties
Criteria		**Alternative FV-1, FV-1a**	**Alternative FV-2, FV-2a**	**Alternative FV-3, FV-3a**	**Alternative FV-4**	**Alternative FV-5**	**Alternative FV-6**
Construction Costs/Funding	• Higher cost alternative • Individual owners solely responsible for costs / financing	• Lowest cost alternative • Potential to finance via local appropriation	• Lower cost alternative • Potential to fund with local appropriation, VT DEC SRF or USDA-RD loan	• Lower cost alternative • Potential to fund with VT DEC SRF or USDA-RD loan	• Higher cost alternative • Potential to fund with VT DEC SRF or USDA-RD loan • Potential for VT DEC grant if failing systems discovered	• Higher cost alternative • Potential to fund with VT DEC SRF or USDA-RD loan • Potential for VT DEC grant if failing systems discovered	• Highest cost alternative • Potential to fund with VT DEC SRF or USDA-RD loan • Potential for VT DEC grant if failing systems discovered
Operation/ Maintenance Costs	• Variable, depending on individual owners' systems and preferences	• Higher (pre-treatment maintenance contract, electric use for pumps, septic tank pump-outs)	• Lower (annual pump check, electric use for pumps, pump-out septic tanks every 3-5 years)	• Lower (annual pump check, electric use for pumps, pump-out septic tanks every 3-5 years)	• Lower (annual pump check and engineering inspection, electric use for pumps, pump-out septic tanks every 3-5 years)	• Higher (pre-treatment maintenance contract, annual pump check and engineering inspection, electric use for pumps, septic tank pump-outs)	• Highest (pre-treatment maintenance contract, part-time operator, system and down-gradient water quality monitoring, annual engineering inspection, electric use for pumps, septic tank pump-outs)
Implementation/ Feasibility	• Simple project implementation – continues current practice	• Simple project implementation	• Requires negotiation with private property owner for dispersal site	• Requires negotiation with private property owner for dispersal site	• Requires negotiation with private property owner for dispersal site • Potential flexibility to add limited service connections after project implemented	• Requires negotiation with private property owner for dispersal site • Potential flexibility to add limited service connections after project implemented	• Requires negotiation with private property owner for dispersal site • Flexibility to add service connections after project implemented
Administrative Issues	• State and local permits required	• State and local permits required • Tanks, force main and dispersal all on municipal property eases access issues	• State and local permits required • Tanks and collection systems on municipal property ease access issues	• State and local permits required • Tanks and collection systems on municipal property ease access issues	• State and local permits required • Requires creation of management district or expansion of Fire District purpose • Access easement or property purchase required for access to tanks and for dispersal on private property	• State and local permits required • Requires creation of management district or expansion of Fire District purpose • Access easement or property purchase required for access to tanks and for dispersal on private property	• State and local permits required • Pre-treatment and storage lagoon on municipal property ease access issues • Routine system and water quality monitoring likely required • Requires creation of management district or expansion of Fire District purpose • Access easement or property purchase required for access to tanks and for dispersal on private property
Use of existing resources	• All system components assumed to be replaced	• Uses existing tanks where feasible • Requires new dispersal field	• Uses existing tanks where feasible • Uses existing dispersal field	• Uses existing tanks where feasible • Requires new dispersal field	• Requires new tanks and new dispersal field	• Requires new tanks, pre-treatment system, and dispersal field	• Requires new tanks, pre-treatment system, storage lagoon, and spray dispersal field
Public Acceptability	• Generally acceptable • Continues current practice	• Municipally funded solution for only a few properties may meet resistance	• Municipally funded solution for only a few properties may meet resistance	• Municipally funded solution for only a few properties may meet resistance	• Generally acceptable • Inclusion of private properties increases user base	• Generally acceptable • Inclusion of private properties increases user base	• Generally acceptable • Inclusion of most Village properties greatly increases user base
Complexity	• Low complexity	• Moderate complexity with pressure collection, pre-treatment, and multiple pumps	• Moderate complexity with gravity and pressure collection, multiple pumps	• Moderate complexity with pressure collection and multiple pumps	• Moderate complexity with pressure collection and multiple pumps	• Moderate complexity with pressure collection, pre-treatment, and multiple pumps	• Most complex with pressure collection, multiple pumps, pre-treatment, disinfection, and spray irrigation
Adaptability to future growth	• Extremely limited capacity for growth or changes in use	• Extremely limited capacity for additional connections	• Extremely limited capacity for additional connections	• Extremely limited capacity for additional connections	• Focus on existing flows with little growth potential	• Focus on existing flows with little growth potential	• Focus on existing flows, with growth and change-in-use potential
Effects on environmentally sensitive areas	• Project area/ impact limited to individual replacements	• Smaller project area/ impact	• Smaller project area/ impact	• Smaller project area/ impact	• Larger project area/ impact	• Larger project area/ impact	• Largest project area/ impact
Reliability, redundancy	• Proven treatment systems • Pumps and pre-treatment systems require maintenance	• Proven treatment systems • Pumps and pre-treatment system require maintenance	• Proven, passive treatment system • Pumps require maintenance	• Proven, passive treatment system • Pumps require maintenance	• Proven, passive treatment system • Pumps require maintenance • Requires management to maintain public infrastructure	• Proven treatment system • Pumps and pre-treatment system require maintenance • Requires management to maintain public infrastructure	• Proven pre-treatment system • Pumps, pre-treatment, and spray field require monitoring and maintenance • Requires management to maintain public infrastructure
Evaluation Results (within each scenario)	**Less Favorable**	**More Favorable**	**Less Favorable**	**Less Favorable**	**More Favorable**	**Less Favorable**	**More Favorable**

Source: Stone Environmental, April 2012.
Path: O:\Proj-11\WRM\2514-W Franklin WW\Project Reports\Draft\Final\Tables\Table18-AlternativesMatrix.doc
Date/Init: 4/24/2012, anm

Assessment of Decentralized Wastewater Options:

A Survey of Needs, Capacity and Solutions for Historic Waitsfield Village and Irasville, Vermont

FINAL REPORT

Project ID 102345

January 25, 2011

This project is being performed by Stone Environmental, Inc. for the Waitsfield Planning Commission's Wastewater Committee with funding provided by the Vermont Department of Housing and Community Affairs.

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Assessment of Decentralized Wastewater Options: A Survey of Needs, Capacity and Solutions for Historic Waitsfield Village and Irasville, Vermont

Executive Summary

Following a failed bond vote at Town Meeting in March 2008 for a proposed centralized wastewater collection, treatment, and dispersal system to serve Irasville, the Town of Waitsfield's Selectboard approved a request from the Planning Commission review alternative options for wastewater management in Waitsfield Village and Irasville. This request recognized that a centralized wastewater treatment solution was unlikely to move forward, but significant wastewater treatment and capacity challenges still existed in the two village areas.

The Town of Waitsfield's Planning Commission appointed a Wastewater Committee to undertake a decentralized wastewater study funded by a FY10 Municipal Planning Grant from the Vermont Department of Housing and Community Affairs (DHCA). Stone Environmental Inc. (Stone) was retained by the Committee using the grant funding to update an existing (2001) survey of property owners and consider decentralized wastewater treatment options for the Historic Waitsfield Village and Irasville areas, located along Vermont Route 100.

The overall goals of the study are to:

- Update the existing 2001 survey of water supply and wastewater treatment infrastructure;
- Re-evaluate wastewater treatment and dispersal capacity and needs in light of the municipal water project currently under construction; and
- Evaluate wastewater management options and develop a summary report.

This report provides information about current conditions, the range of wastewater treatment and capacity needs expressed in the survey, and an approach to meeting those expressed needs by providing targeted wastewater capacity with decentralized treatment systems where and when that capacity is needed.

The information gathered and updated from property owners during this study indicated that substantial wastewater treatment needs currently exist within Waitsfield Village and Irasville. Examples of current wastewater challenges, as described by respondents to the property owner survey, include:

- Periodic wastewater system malfunctions.
- Lack of wastewater capacity where desired by business owners to sustain and grow existing enterprises.

- Significant repair and replacement for failed or failing on-site wastewater systems, requiring owners to borrow funds and assume debt to cover repair and replacement costs.
- Lack of any strategic, community-level wastewater management support or potential solutions.

Nearly 50% of the developed properties in Waitsfield Village, and 25% of the parcels in Irasville, may not be able to replace their current on-site wastewater systems with a fully complying replacement on the same lot in the future.

The chief limitation on providing sufficient wastewater capacity for Waitsfield Village and Irasville is the proximity of wells and wellhead protection areas to on-site wastewater treatment and dispersal systems. The update of infrastructure mapping completed for this report, which includes recent wastewater system replacements or upgrades as well as an assessment of recent permits issued by the Vermont DEC, illustrated that in the absence of a municipal wastewater solution, several property owners have invested significant resources to replace their own on-lot infrastructure. However, in some cases, even these recently-replaced systems represent a "best fix" solution, with system components such as leach fields located too close to nearby potable water supply wells to meet full regulatory standards. In fact, the planning-level assessment of lot-by-lot wastewater treatment needs and capacity completed for this study indicated that nearly 50% of the developed properties in Waitsfield Village, and 25% of the parcels in Irasville, may not be able to replace their current on-site wastewater systems with a fully complying replacement system on the same lot in the future.

The Waitsfield Municipal Water Project, now under construction in Waitsfield Village and Irasville, is integral to the conversation regarding decentralized wastewater needs. A completed water system will eliminate many wellhead protection areas, and thus will directly increase the number of sites in the study area that can support on-site wastewater treatment and dispersal. The municipal water program will also address long-standing concerns regarding inadequate separation distances between water supply wells and onsite wastewater treatment systems, while also providing water supply capacity for fire protection. However, while the issues of water supply and appropriate wastewater treatment are inseparable, provision of a municipal water system will not fix existing outdated or undersized wastewater treatment infrastructure. In Waitsfield Village, the most significant limitations on wastewater capacity relate to the wellhead protection areas that will remain in force even after the municipal water project is complete. In Irasville, fewer wellhead protection areas will remain in force once the municipal water project is complete, but the underlying soils still present challenges for soil-based wastewater treatment—especially in the vicinity of Winter Park, the Skatium, and Fiddler's Green.

Engineering, treatment technology, management, and funding approaches can all be developed to address wastewater needs and the challenges of soil conditions and remaining wellhead protection areas. The Town of Waitsfield now has the opportunity to consider re-purposing previously granted wastewater infrastructure funding to address these expressed needs and physical constraints.

In the final recommendations of this study, significant attention is given to funding options that would help provide loans for upgrades or replacements of decentralized systems. This study has identified a relevant and transferable precedent in Vermont for establishing a municipal program of long-term, low-interest revolving loan funds for property owners repairing and/or replacing decentralized wastewater infrastructure on private property. The precedent includes basic system management requirements and other legal protections to safeguard the public loan investments.

This study has identified a relevant and transferable precedent in Vermont for establishing a municipal system of long-term, low-interest revolving loan funds for property owners repairing or replacing decentralized wastewater infrastructure on private property.

Based on significant expressed and ongoing needs in the study area for improved wastewater management, an expressed desire for a broad variety of wastewater solutions, and the availability to Waitsfield of state and regional funding solutions, this study recommends establishment of a structured program that can provide incremental support for improved wastewater management to the community.

In summary, this study recommends that the Town of Waitsfield consider implementation of a revolving loan fund based on relevant Vermont precedent, and to proceed by first establishing a Wastewater Management District. This District would oversee a structure and process for directing existing EPA State and Tribal Assistance Grants, Clean Water State Revolving Loan Funds, and other available funding solutions, to support the provision of appropriately managed decentralized wastewater treatment and dispersal capacity in Waitsfield Village and Irasville.

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1. INTRODUCTION

The Town of Waitsfield's Planning Commission received a FY10 Municipal Planning Grant from the Vermont Department of Housing and Community Affairs (DHCA) to update an existing survey of property owners and consider decentralized wastewater treatment options for the Waitsfield Village and Irasville areas, located along Vermont Route 100 (Figure 1).

The objectives of the study are to:

- Update the existing survey of water supply and wastewater treatment infrastructure;
- Re-evaluate wastewater treatment and dispersal capacity and needs in light of the municipal water project now under construction; and
- Evaluate wastewater management options and develop a summary report.

Stone Environmental Inc. (Stone) was selected by the Town of Waitsfield to conduct this study. This final report provides information on each of the objectives listed above.

1.1. Project Background

The Town of Waitsfield's Selectboard requested that the Planning Commission review the potential options for wastewater management in Waitsfield Village and Irasville, following a failed bond vote for a proposed centralized wastewater collection, treatment, and dispersal system to serve Irasville at Town Meeting in 2008. The Planning Commission appointed a Wastewater Committee to undertake this effort in the spring of 2010. The following paragraph, from the Town's Request for Proposals to complete this project, describes Waitsfield's ongoing search for wastewater management solutions:

> For well over a decade, the Town of Waitsfield has explored options for providing wastewater needs in the town's center (Waitsfield Village Center and Irasville)…An organized wastewater system would replace currently inadequate and failing septic systems and increase capacity for new development within the Mad River Valley's commercial and residential core. Waitsfield's 2004 *Wastewater Facilities Plan* focused on a proposal for a centralized wastewater collection system providing significant wastewater capacity at a projected cost of $12 million in two phases. Due to the Plan's capacity design, the feasibility of decentralized options to supply wastewater capacity did not receive detailed study. A town bond vote in 2008 for the proposed centralized collection and treatment system serving only Irasville failed by a significant margin due to concern over substantial initial and ongoing costs. Despite this setback, the need for wastewater management continues to be paramount… Examination of decentralized wastewater options as an alternative or part of a phased implementation of a centralized system is an important step in enabling Waitsfield to move forward.

1.2. Local Outreach

Although the scope of this planning grant did not require local outreach, it was nonetheless an important component of the work of the project. The Waitsfield Planning Commission's Wastewater Committee actively participated in and oversaw the project; the members are all residents of Waitsfield. The members of the Wastewater Committee are listed in Appendix A. The committee met regularly during the course of the project to take part in detailed discussions on the study scope and results. Members of the Wastewater Committee wrote columns and letters to the editor for publication in the Valley Reporter announcing the property owner survey and inviting participation (Appendix B), and contacted or met individually with key property owners to ensure that their opinions were reflected in the survey results.

The property owner survey questionnaire was the primary outreach tool utilized in this project. Two versions of the survey were developed and distributed to the study area property owners:

- Survey I was distributed to property owners who responded to the property owner survey regarding water and wastewater infrastructure distributed by Phelps Engineering, Inc. in November 2001. This version of the survey asked for information about any changes to water and wastewater systems since the last survey, and about the property owners' plans (or desires) for the future.
- Survey II was distributed to property owners who did not respond to the 2001 survey. This version of the survey asked for basic information about existing water and wastewater systems, and about the property owners' plans (or desires) for the future.

The results of the surveys are summarized in Tables 1 (Survey I) and 2 (Survey II). Question responses that were identical between the two survey versions are included in Table 1; these responses are also tabulated separately within the Survey II summary for respondents to that survey only. The overall response rate for the surveys was 44%, or 68 out of 154 surveys mailed. Figure 2 summarizes the geographical distribution of respondents to both version of the survey. Details of the survey responses are described further in Section 3 of this report.

2. STUDY AREA DESCRIPTION

The study area includes parcels within the Village Business, Village Residential, and Irasville Village zoning districts in Waitsfield, Vermont. The study area is further bounded by the service area for the municipal water project, to include only properties within these zoning districts on the northern/western side of the Mad River. Waitsfield Village and Irasville are located along Vermont Route 100 near the western border of the Town of Waitsfield. Waitsfield is located in Washington County in the northeast portion of the state. Figure 1 shows the borders of the study area in their wider geographical context. Table 3 includes a list of properties within the study area including parcel identification numbers, street addresses, owner or contact names, property uses, and approximate parcel sizes.

2.1. Community Profile

Waitsfield serves as the commercial center of the Mad River Valley, and is located between the villages of Moretown and Warren in central Vermont. The Town is bordered by Moretown and Duxbury to the north, Northfield to the east, Warren to the south, and Fayston to the west. Waitsfield Village contains residences and commercial development, as well as municipal services including the Waitsfield Elementary School, fire and ambulance services, the Town Offices, and the Joslin Memorial Library. Existing development in Irasville is primarily commercial, through there are a few residences, as well as apartments and senior housing. Woodlands and agricultural land surround both village areas.

The Town of Waitsfield's population grew from 1,422 in 1990 to 1,659 in 2000 (US Census, 2000 and Waitsfield Town Plan, 2005), representing a 17% increase in this ten year period. The population results of the 2010 US Census are not currently available, but are expected in the spring of 2011.

The Waitsfield Village and Irasville study area includes 139 properties, totaling approximately 255 acres. Within the Waitsfield Village area, 21 properties contain single-family residences or multi-unit residential condominiums. The area contains over a dozen small retail stores, offices, cafés, and restaurants, some with accessory apartments or residences, as well as the Mad River Valley Health Center. There are also several public buildings including the Town Offices, post office, library, Waitsfield-Fayston Fire Station, Mad River Valley Ambulance, the Waitsfield United Church of Christ, Mad River Valley Welcome Center, and the Waitsfield Elementary School. The Irasville area, in contrast, functions as the Mad River Valley's "downtown" for commercial and service businesses (Waitsfield Town Plan, 2005)—and hosts two grocery stores and a natural foods market, several restaurants, the Mad River Green and Village Square shopping centers, the Waitsfield Inn, a movie theater, lumber yard, and three gas stations, as well as senior and affordable housing, additional commercial enterprises, and 10 residences. Property sizes for developed properties in both areas range from less than 0.1 acre to about 26 acres.

Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 1: Summary of Survey Responses Regarding Needs and Options
Survey I: Surveys Mailed: 154, Surveys Returned: 68, Response Rate: 44%

Survey Question		Response	Number of Responses	% of Responses
1a	Has anything about your water supply changed since the last property owner survey was completed in November-December 2001?			
		No changes	50	76%
		Deepened my existing well	3	5%
		Installed a water softener or filter	2	3%
		Decided to connect to municipal water	8	12%
		Other (describe in comment)	4	6%
1b	Has anything about your wastewater system changed since the last property owner survey was completed in November-December 2001?			
		No changes	55	83%
		Discovered a problem, but have not fixed it yet	1	2%
		Replaced septic tank	2	3%
		Replaced or upgraded leachfield	6	9%
		Other (describe in comment)	4	6%
2	If you made changes that required an Act 250 permit or a DEC water supply/wastewater system permit, please provide the permit number.			
		Permit number provided (in comment)	9	14%
		Permit number not provided or no answer	59	89%
3	Have you ever experienced any of the following conditions in or around your leach field or drywell?			
		Surfacing sewage or effluent	10	14%
		Sink holes	1	1%
		Sewage smell	2	3%
		None	62	86%
4	Have you ever experienced sewage back up into a building?			
		Yes	10	14%
		No	63	88%

Source: Property owner surveys, Stone Environmental, 2010.

STONE ENVIRONMENTAL, INC

Note: Responses from Survey 2 that were for identical questions asked in both surveys are included in this table.

Date/init: 11/30/2010 anm

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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 1 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey I: Surveys Mailed: 154, Surveys Returned: 68, Response Rate: 44%

Survey Question	Response	Number of Responses	% of Responses
4a	If Yes, has the situation been corrected?		
	Yes	5	7%
	No	1	1%
4b	If Yes, please briefly describe how the situation was corrected.		
	Describe in comment	7	10%
5	Are there any other changes to your property, or to neighboring land, that might affect future wastewater planning in your area?		
	No	64	97%
	Yes (describe in comment)	4	6%
6	Do you have any plans to change the way your property is used (subdivide your property, change the use of your property, etc.)?		
	No	60	82%
	Yes (describe in comment)	13	18%
7	If you had access to additional wastewater treatment capacity, is there anything you would want to do with your property that you can't do now?		
	No	46	62%
	Yes (describe in comment)	28	38%
8	Are you interested in receiving information or training about the best ways to use and maintain your wastewater treatment system?		
	No	32	44%
	Yes	24	33%
	Unsure	18	25%
9	Do you feel like you need help maintaining your wastewater treatment system?		
	No	62	86%
	Yes	6	8%
	Unsure	6	8%

Source: Property owner surveys, Stone Environmental, 2010.
STONE ENVIRONMENTAL, INC
Note: Responses from Survey 2 that were for identical questions asked in both surveys are included in this table.
Date/init: 11/30/2010 anm
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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 1 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey I: Surveys Mailed: 154, Surveys Returned: 68, Response Rate: 44%

Survey Question	Response	Number of Responses	% of Responses
10	If a decentralized approach is taken, what do you think is the right wastewater treatment outcome for Waitsfield Village and Irasville?		
	Keep all wastewater treatment systems on individual properties or as they are now.	4	5%
	Keep only wastewater treatment systems that are working properly and meet regulations, and provide a few small, shared systems only to fix existing problems.	13	17%
	Keep working systems that meet regulations, and provide some capacity using shared wastewater systems to fix problems and allow for limited in-fill development, limited growth, or changes in use (adding home businesses, etc.).	21	28%
	Provide additional distributed, off-site wastewater treatment capacity for any property in Waitsfield Village or Irasville that needs it, similar to the system that was voted down in 2007.	30	40%
	Other (describe in comment)	7	9%
11	How do you think wastewater treatment systems should be maintained and managed in Waitsfield Village and Irasville?		
	Property owners should be responsible for all maintenance and management, as they are now.	21	29%
	Property owners should be responsible for replacing major components (like septic tanks, leachfields, etc.) but the Town should ensure the systems are working properly by periodically evaluating the systems and pumping septic tanks if needed.	11	15%
	The Town should be responsible for both maintenance and major component replacement (like a centralized sewer, even if a system is entirely on-site).	28	39%
	I have a different idea (describe in comment):	14	19%
12	Do you have any comments regarding wastewater management in Waitsfield Village and Irasville?		
	No (or blank)	56	78%
	Yes (describe in comment)	19	26%

Source: Property owner surveys, Stone Environmental, 2010.

STONE ENVIRONMENTAL, INC

Note: Responses from Survey 2 that were for identical questions asked in both surveys are included in this table.

Date/init: 11/30/2010 anm

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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 1 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey I: Surveys Mailed: 154, Surveys Returned: 68, Response Rate: 44%

Survey Question	Response	Number of Responses	% of Responses
13	To discuss these comments in greater detail, would you like a member of the Town of Waitsfield Planning Commission's Wastewater Committee to contact you about this survey or the Decentralized Wastewater Options project?		
	No (or blank)	59	82%
	Yes (contact info in comment)	15	21%

Source: Property owner surveys, Stone Environmental, 2010.

STONE ENVIRONMENTAL, INC

Note: Responses from Survey 2 that were for identical questions asked in both surveys are included in this table.

Date/init: 11/30/2010 anm

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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 2: Summary of Survey Responses Regarding Needs and Options
Survey II: Surveys Mailed: 31, Surveys Returned: 6, Response Rate: 19%

Survey Question	Response	Number of Responses	% of Responses
1	Please indicate when your septic system was originally installed:		
	Before 1970	1	17%
	1982-1989	1	17%
	1990-1995	1	17%
	2002-present	2	33%
	Unsure	1	17%
2	Please indicate the size and construction of your septic tank by checking as many boxes as apply:		
	500 gallons	1	17%
	1,000 gallons	3	50%
	1,500 gallons	1	17%
	Other size (describe in comment)	1	17%
	Concrete	5	83%
3	Please indicate construction of your system's distribution and disposal components by checking as many boxes as apply:		
	Pump station	1	17%
	Distribution box (d-box)	5	83%
	Leach field (in-ground trenches or bed)	2	33%
	Dry well(s)	1	17%
	Other (describe in comment)	1	17%
4	If your system includes an alternative or advanced treatment component, please check the appropriate box or boxes below:		
	Other advanced treatment (describe in comment)	1	17%
	Blank or no advanced/alternative components	5	83%
5	Please describe below any upgrades or repairs that have been performed on your septic system within the last ten years:		
	Other repair (describe in comment)	2	33%
	None or blank	4	67%
6	Is your wastewater system shared with another building or property?		
	No	2	33%
	Yes (describe in comment)	4	67%

Source: Property owner surveys, Stone Environmental, 2010.
STONE ENVIRONMENTAL, INC
Date/init: 11/12/2010 anm
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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 2 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey II: Surveys Mailed: 31, Surveys Returned: 6, Response Rate: 19%

Survey Question	Response	Number of Responses	% of Responses
7	How often is your septic tank pumped?		
	1-2 years	1	17%
	3-4 years	4	67%
	Unknown	1	17%
7a	Year that septic tank was last pumped, if known		
	2009	1	17%
	2007	1	17%
7b	What company pumps your septic tank?		
	Known (enter in comment)	2	33%
8	How deep below the surface is your septic tank?		
	1-2 feet	3	50%
	2-3 feet	1	17%
	Unsure	2	33%
9	Have you ever experienced any of the following conditions in or around your leach field or drywell?		
	Surfacing sewage or effluent	1	17%
	None	5	83%
10	Have you ever experienced sewage back up into a building?		
	Yes	2	33%
	No	4	67%
11	Do you have a copy of any sketches, plans, or permits of your septic system available for reference?		
	Yes	3	50%
	No	3	50%
B	If you intend to connect to the municipal water system, check here and go to Section III below.		
	Checked	1	17%
12	Please indicate which type of water system you have:		
	Individual drilled well	3	50%
	Individual dug well	1	17%
	Shared drilled well	2	33%

Source: Property owner surveys, Stone Environmental, 2010.
STONE ENVIRONMENTAL, INC
Date/init: 11/12/2010 anm
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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 2 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey II: Surveys Mailed: 31, Surveys Returned: 6, Response Rate: 19%

Survey Question	Response	Number of Responses	% of Responses
13	If your water system is shared with another building or property, please describe:		
	Described in comment	3	50%
	Blank	3	50%
14	Does your well casing extend above the ground?		
	Yes	5	83%
	Unsure	1	17%
15	Have you ever had contamination problems with the water supply system(s) on your property?		
	No	3	50%
	Unsure	3	50%
16	Have you ever run out of water?		
	Never	2	33%
	Every few years	4	67%
17	Do you have a water softener?		
	Yes	2	33%
	No	4	67%
18	Has the property had any other problems with water, or has work been done on the water system in the last 10 years?		
	Yes (describe in comment)	4	67%
	No	1	17%
	Unsure	1	17%
19	Do you have any plans to change the way your property is used (subdivide your property, change the use of your property, etc.)?		
	No	4	67%
	Yes (describe in comment)	2	33%
20	If you had access to additional wastewater treatment capacity, is there anything you would want to do with your property that you can't do now?		
	No	4	67%
	Yes (describe in comment)	2	33%

Source: Property owner surveys, Stone Environmental, 2010.
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Path: O:\Proj-10\2345-W-W-Waitsfield\Data\Survey\Waitsfield_Survey.mdb [rptTable2_SurveyResultsV2]

Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 2 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey II: Surveys Mailed: 31, Surveys Returned: 6, Response Rate: 19%

Survey Question	Response	Number of Responses	% of Responses
21	Are you interested in receiving information or training about the best ways to use and maintain your wastewater treatment system?		
	No	3	50%
	Yes	1	17%
	Unsure	2	33%
22	Do you feel like you need help maintaining your wastewater treatment system?		
	No	4	67%
	Yes	1	17%
	Unsure	1	17%
23	If a decentralized approach is taken, what do you think is the right wastewater treatment outcome for Waitsfield Village and Irasville?		
	Keep only wastewater treatment systems that are working properly and meet regulations, and provide a few small, shared systems only to fix existing problems.	1	17%
	Keep working systems that meet regulations, and provide some capacity using shared wastewater systems to fix problems and allow for limited in-fill development, limited growth, or changes in use (adding home businesses, etc.).	2	33%
	Provide additional distributed, off-site wastewater treatment capacity for any property in Waitsfield Village or Irasville that needs it, similar to the system that was voted down in 2007.	1	17%
	Other (describe in comment)	2	33%

Source: Property owner surveys, Stone Environmental, 2010.
Date/init: 11/12/2010 anm
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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
TABLE 2 (cont.): Summary of Survey Responses Regarding Needs and Options
Survey II: Surveys Mailed: 31, Surveys Returned: 6, Response Rate: 19%

Survey Question	Response	Number of Responses	% of Responses
24	How do you think wastewater treatment systems should be maintained and managed in Waitsfield Village and Irasville?		
	Property owners should be responsible for all maintenance and management, as they are now.	1	17%
	Property owners should be responsible for replacing major components (like septic tanks, leachfields, etc.) but the Town should ensure the systems are working properly by periodically evaluating the systems and pumping septic tanks if needed.	1	17%
	The Town should be responsible for both maintenance and major component replacement (like a centralized sewer, even if a system is entirely on-site).	2	33%
	I have a different idea (describe in comment):	2	33%
25	Do you have any comments regarding wastewater management in Waitsfield Village and Irasville?		
	No (or blank)	4	67%
	Yes (describe in comment)	2	33%
26	To discuss these comments in greater detail, would you like a member of the Town of Waitsfield Planning Commission's Wastewater Committee to contact you about this survey or the Decentralized Wastewater Options project?		
	No (or blank)	4	67%
	Yes (contact info in comment)	2	33%
27	Please indicate the approximate location of your house or other building, driveway, septic tank, leach field, and water supply.		
	Sketch provided	5	83%
	No sketch provided	1	17%
28	Is any portion of your property restricted from development by an easement, deed restriction, natural feature, or something else?		
	Yes, and restrictions indicated on sketch	1	17%
	No restrictions indicated	5	83%

Source: Property owner surveys, Stone Environmental, 2010.
Date/init: 11/12/2010 anm
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Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
Table 6: Summary of Needs Assessment Results, Waitsfield Village

Description:

23	Single Family Residences
1	Apartment Building
12	Commercial Properties
15	Mixed Residential/Commercial Properties
8	Municipal or Institutional Properties
4	Open Land
63	Properties Total

Water Supplies:

27	Planned Connections to Community Water System
17	Individual or shared drilled wells
2	Individual or shared shallow wells/springs
1	Public Water Supply (Drilled Well)

Factors Affecting GIS Needs Assessment:

Factor	Number of Properties Affected	% of Total
Limited Available Area Only	27	43%
Proximity to Structures or Property Lines	27	100%
Proximity to Water Supply Wells	21	78%
Proximity to Steep Slopes	3	11%
Proximity to Surface Waters	7	26%
Proximity to Wetland	3	11%
Proximity to Floodplain	8	30%
Proximity to Soils Ranked 'Not Suited'	4	15%
Shallow Seasonal Groundwater Only	0	0%
Shallow Seasonal Groundwater and Limited Available Area	0	0%
Shallow Bedrock Only	0	0%
No Restrictions	36	57%

Potential Capacity or Management Needs:

Factor	Number of Properties	Total Design Flow (gallons/day)
GIS Area or Groundwater Limitation	27	23,805
Plan to change property use in future	3	1,335
Plans to change use need wastewater capacity	3	5,480
Change planned and wastewater capacity needed	2	580
Other issues	0	0

Source: Survey results; Town Grand List data table; Phelps 2004 WW Facilities Plan; VT DEC permits; parcel GIS database; November 2010 water project information

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Note: Within the potential capacity or management needs, if a parcel has both a GIS limitation and a survey response, the parcel's wastewater design flow is counted in both applicable categories.

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Date/init: 12/29/2010 anm

Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
Table 7: Summary of Needs Assessment Results, Irasville

Description:

12	Single Family Residences
2	Apartment Buildings/Properties
37	Commercial Properties
11	Mixed Residential/Commercial Properties
3	Municipal or Institutional Properties
7	Open Land
72	Properties Total

Water Supplies:

46	Planned Connections to Community Water System
10	Individual or shared drilled wells
2	Individual or shared shallow wells/springs

Factors Affecting GIS Needs Assessment:

Factor	Number of Properties Affected	% of Total
Limited Available Area Only	13	18%
Proximity to Structures or Property Lines	13	100%
Proximity to Water Supply Wells	6	46%
Proximity to Escarpments	4	31%
Proximity to Surface Waters	5	38%
Proximity to Wetland	2	15%
Proximity to Floodplain	2	15%
Proximity to Soils Ranked 'Not Suited'	1	8%
Shallow Seasonal Groundwater Only	2	3%
Shallow Seasonal Groundwater and Limited Available Area	2	3%
Shallow Bedrock Only	0	0%
No Restrictions	55	76%

Potential Capacity or Management Needs:

Factor	Number of Properties	Total Design Flow (gallons/day)
GIS Area or Groundwater Limitation	17	33,560
Plan to change property use in future	2	980
Plans to change use need wastewater capacity	10	20,073
Change planned and wastewater capacity needed	5	1,455
Other issues	5	5,500

Source: Survey results; Town Grand List data table; Phelps 2004 WW Facilities Plan; VT DEC permits; parcel GIS database; November 2010 water project information

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Note: Within the potential capacity or management needs, if a parcel has both a GIS limitation and a survey response, the parcel's wastewater design flow is counted in both applicable categories.

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Date/init: 12/29/2010 anm

Study of Decentralized Wastewater Options for Waitsfield Village and Irasville
Town of Waitsfield, Vermont
Table 8: Summary of Needs Assessment Results

Description:

35	Single Family Residences
3	Apartment Buildings/Properties
49	Commercial Properties
26	Mixed Residential/Commercial Properties
11	Municipal or Institutional Properties
11	Open Land
135	Properties Total

Water Supplies:

73	Planned Connections to Community Water System
27	Individual or shared drilled wells
4	Individual or shared shallow wells/springs
1	Public Water Supply (Drilled Well)

Factors Affecting GIS Needs Assessment:

Factor	Number of Properties Affected	% of Total
Limited Available Area Only	40	30%
Proximity to Structures or Property Lines	40	100%
Proximity to Water Supply Wells	27	68%
Proximity to Steep Slopes	3	8%
Proximity to Surface Waters	12	30%
Proximity to Wetland	5	13%
Proximity to Floodplain	10	25%
Proximity to Soils Ranked 'Not Suited'	5	13%
Shallow Seasonal Groundwater Only	2	1%
Shallow Seasonal Groundwater and Limited Available Area	2	1%
Shallow Bedrock Only	0	0%
No Restrictions	91	67%

Potential Capacity or Management Needs:

Factor	Number of Properties	Total Design Flow (gallons/day)
GIS Area or Groundwater Limitation	44	57,365
Plan to change property use in future	5	2,315
Plans to change use need wastewater capacity	13	25,553
Change planned and wastewater capacity needed	7	2,035
Other issues	5	5,500

Source: Survey results; Town Grand List data table; Phelps 2004 WW Facilities Plan; VT DEC permits; parcel GIS database; November 2010 water project information

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Note: Within the potential capacity or management needs, if a parcel has both a GIS limitation and a survey response, the parcel's wastewater design flow is counted in both applicable categories.

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Date/init: 12/29/2010 anm