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Submitted via e-mail to jreilly@hoyletanner.com

Stone Project No. 20-004 (Hoyle Tanner Project No. 20.130600.00)
Subject: Greensboro Wastewater Treatment Alternatives Study, Desktop Screening for <6,500 gpd Subsurface Disposal Sites

Dear John,

We are pleased to submit the findings of our desktop screening assessment for subsurface disposal sites within and near the Greensboro Village project area under Vermont's Wastewater System and Potable Water Supply Rules (Environmental Protection Rules, Chapter 1, effective April 12, 2019, referred to in this letter as the WSPWSRs). This work was advanced in parallel with additional evaluations of Site 10, where work was completed in August-November 2023 to determine the feasibility of a subsurface wastewater disposal site with approximately 30,000 gpd treatment capacity.

Background

In Stone's April 10, 2023 proposal for *Greensboro, VT Additional Site Investigation Services*, we proposed to develop and execute a desktop screening assessment using existing public data to identify <6,500-gpd subsurface disposal sites. The investigation area was to be determined in consultation with Hoyle, Tanner and the Town of Greensboro. Deliverables were proposed to include a summary map and list of potential sites for consideration by Hoyle, Tanner and the Town. A desktop screening analysis was also proposed for 30,000 gpd capacity surface spray disposal sites under Vermont's Indirect Discharge Rules (Environmental Protection Rules, Chapter 14, effective April 12, 2019). Initial consultation with the Town determined that surface spray disposal sites of any design capacity were not preferred, so this portion of the assessment was discontinued.

Screening Analysis Methods

The GIS-based planning level assessment identifies areas which may be constrained in terms of environmental or development-based limitations, as well as areas where soil treatment capacity may exist to support community wastewater treatment.

The objective of the available area analysis is to identify portions of parcels within a 1-mile radius of the Greensboro Village area that would be unavailable for siting of soil-based wastewater disposal systems if the systems were to comply with all horizontal setbacks as set forth in current regulations. For example, state regulations require that certain "setbacks" or distances from natural or artificial features be maintained in order to protect those resources. A summary of the data layers utilized and related isolation distances as specified in the WSPWSRs is included in Table 1. Portions of the analysis area that were subject to one or more of the limiting factors listed in Table 1 were excluded from further consideration.

Table 1. Summary of Screening Analysis Data Sources and Spatial Analysis Criteria

Limiting Feature and Related Dataset Name	Data Source	Buffer or Isolation Distance (ft)	Included in Analysis?	Comment
Building Footprints	VCGI	35	Yes	Assume that all buildings in E911 Footprints layer have foundation drains
Conserved Parcels	2019 Greensboro Town Plan		Yes	Included but flagged as 'encumbered'. Conservation easements often exclude any development.
Culverts	ANR Atlas / Stormwater Infrastructure lines, Existing Culverts and Existing Stormlines	50	Yes	
Current Use (Use Value Appraisal) lands	VCGI		Yes	Included but flagged as 'encumbered'. Lands may be removed from UVA program, but penalties apply.
Ditches	ANR Atlas / Stormwater Infrastructure lines, Existing Swales	35	Yes	
Greensboro Village project area extents	Engineer PDF and VCGI parcels		Yes	Provided by Hoyle, Tanner
Parcel boundaries	VCGI	25	Yes	
Ponds	ANR Atlas / Stormwater Infrastructure polygons, Existing Ponds	50	Yes	Stormwater treatment ponds - no overlap with VT Hydrography data
Private drilled wells	ANR Atlas / Open data Private Wells	100	Yes	
Private shallow wells	None	150	No	No publicly available data for use in screening analysis.
Public Water Sources	ANR Atlas / Public Water Sources	100	Yes	Isolation buffer utilized only where no Public Groundwater Source Protection Area mapping available.
Public Water System Groundwater Source Protection Areas	ANR Atlas / WHPAs layers	Source Protection Area extent	Yes	Groundwater Source Protection Area polygons excluded; no additional buffering applied to polygons.
Roads	VCGI	10	Yes	Covered by impervious surfaces
Roadways, driveways, parking lots	Vermont Impervious Surfaces Land Cover 2016	10	Yes	
Soils	VCGI		Yes	Soil series classified by Stone based on soil suitability for subsurface wastewater disposal systems as outlined in the 2019 WSPWSRs (Table 2).
Top of embankment, or slope greater than 30%	VCGI LiDAR slope layer, 1-meter resolution - 2014	25	No	Areas with slope >20% excluded; no additional buffering applied.
VT Hydrography Lines (streams)	VCGI	50	Yes	
VT Hydrography Polygons (lakes and ponds)	VCGI	50	Yes	
Water mains	Record Drawings	50	No	Only PDF of Greensboro F.D. No 1 record drawings available. Not georeferenced or digitized for desktop assessment.
Water service lines	Record Drawings	25	No	
Wetlands	ANR Atlas / VSWI & Wetlands Advisory layers	50	Yes	

Separately, the soil series included in the Orleans County Soil Survey for Greensboro were characterized according to the type of soil-based wastewater disposal system may be sited given key design criteria including depth to seasonal high groundwater or water table, depth to bedrock, and slope as set forth in the WSPWSRs (Table 2). The resulting soil series rankings were assigned to soil series polygons by unique series identifier (MUSYM) and soil series name (Figure 1). Portions of the soils layer that contained one or more limiting factors described in Table 1 were removed from the soils layer, resulting in a soils layer summarizing only non-constrained areas classed by the most feasible disposal system type.

Table 2. Small-scale (less than 6,500 gpd design flow) wastewater disposal system soil suitability criteria

Soil Series Ranking	Wastewater Disposal System Type	Minimum Depth to Bedrock (inches)	Minimum Depth to Seasonal High Groundwater (ft)	Maximum Depth to Seasonal High Groundwater (ft)	Minimum Slope (%)	Maximum Slope (%)
1	Conventional Subsurface	72	5.0		0	20
2	Conventional w/Excessive Slope or Permeability	72	5.0		20.01	n/a
3	At-Grade or Filtrate + Conventional	48	3.0		0	20
4	Mound or Filtrate + At-Grade	24	2.0		3	20
5	Mound with Curtain Drain or Filtrate + Mound	24	1.5		3	20
6	Filtrate + Mound with Curtain Drain	18	0.5		3	20
7	Not Suited	0	0.0		31	n/a
8	Not Suited or Two-Year Time of Travel and/or Store and Dose	6	0.0	0.5	0	20
9	Not Rated	999	99.9		999	999

Screening Analysis Results and List of Priority Parcels

The desktop screening analysis identified 216 parcels within the Greensboro Village project area and its one-mile analysis buffer that were not conserved and contained at least 0.25 acres of land potentially suitable for a soil-based wastewater disposal system. This selection of parcels was prioritized for further consideration using a series of field calculations in ArcGIS Pro. Distance from the project area, available acres of suitable soil, and soil suitability for onsite wastewater treatment were the major prioritization factors applied (Table 3).

Table 3 Parcel suitability prioritization rankings and criteria.

Prioritization Ranking	Distance to project area (ft)	Suitable Area (acres)	Other
1	Completely within or bordering	Greater than or equal to 10 acres	
2	Completely within or bordering	Between 1 and 10 acres	
3	Distance > 0	Greater than or equal to 10 acres	
4	Distance > 0	Between 1 and 10 acres	
5	Distance > 0	Less than 1 acre	
6			Encumbered (UVA or conserved)

The 20 highest-priority parcels are shown on Figure 2, and key parcel details are summarized in Table 4. Further details on these priority parcels are included in the Excel spreadsheet (Greensboro_Parcels_Analysis_ranks1-3.xlsx) accompanying this letter. The full list is available upon request.

Table 4. Summary of Desktop Screening Results, Top 20 Priority Parcels

			Parcel Characteristics (acres)					
Parcel ID	Owner	Emergency 911 Address	Grand List Total	Suitable Soils	One or More Limiting Factors	Percent Suitable	Soil Class	Parcel Rank
058-0112.	MOUNTAIN VIEW COUNTRY CLUB	112 COUNTRY CLUB RD	77.94	58.12	19.82	75	4	1
408-0081.	ROCHE DOROTHY L	81 BARR HILL RD	47.43	14.37	33.06	30	4	1
414-0644.	OHLROGGE RICHARD & KRISTINE	644 CEMETERY RIDGE	21.11	7.99	13.12	38	4	2
406-0324.	DESCHEPPER CORNELIA Y	324 LAUREDON AVE	20.14	6.36	13.78	32	4	2
406-0518.	MCDONALD MARTIN C	518 LAUREDON AVE	16.23	6.22	10.01	38	4	2
414-0670.	DONAGHY LUCY	670 CEMETERY RIDGE	23.10	5.19	17.92	22	4	2
406-0160.	COOK BEVERLEE	160 LAUREDON AVE	6.53	4.34	2.20	66	4	2
305-0251.	NICHOLS JESSE AND AMY	251 GRAY BARN RD	8.35	3.91	4.45	47	4	2
406-0072.	COOK JAMES C TRUSTEE	72 LAUREDON AVE	4.93	3.31	1.61	67	4	2
414-0165.	STEGNER TRUST	165 CEMETERY RIDGE	9.38	3.04	6.34	32	4	2
406-0228.	COOK PHILIP S REVOCABLE TRUST	228 LAUREDON AVE	3.52	2.05	1.48	58	4	2
414-0160.	ISAACSON FAMILY TRUST	160 CEMETERY RIDGE	18.49	2.00	16.49	11	4	2
407-0150.	HOWES LIDIE	150 BAKER HILL RD	9.69	1.68	8.01	17	4	2
216-0103.	GORDON WILLIAM S III TRUST	103 HIGH PINES	4.04	1.64	2.39	41	4	2
406-0315.	PERRON ALICE	315 LAUREDON AVE	4.46	1.34	3.12	30	4	2
414-0005.	MACKIN JOHN & MICHELE	5 CEMETERY RIDGE	6.03	1.14	4.89	19	4	2
414-0604.	FAIRBANK CAROL	604 CEMETERY RIDGE	15.75	5.30	10.45	34	6	2
311-0017.	O'BRIEN JOHN & JILL	17 PLEASANTS STR	14.50	2.77	11.72	19	6	2
001-2307.	FLETCHER TODD B & LISA J	2307 THE BEND RD	59.37	2.73	56.64	5	6	2
414-0305.	GREENSBORO TOWN OF	305 CEMETERY RIDGE	4.22	1.57	2.65	37	6	2
216-0137.	GRAYLIN-FREY ALEXANDRA S	137 HIGH PINES	2.73	1.44	1.29	53	6	2
406-0394.	LICHTENSTEIN MARK	394 LAUREDON AVE	10.28	1.32	8.96	13	6	2

We stand ready to adjust the prioritization and results outlined above, conduct additional desktop assessments, or discuss next steps.

Sincerely,

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