



CIVIL ENGINEERING ASSOCIATES, INC.

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July 15, 2021

Ms. Meredith Maskell, Non-Community System Supervisor
VT DEC Drinking Water and Groundwater Protection Division
1 National Life Drive, Main 2
Montpelier, Vermont 05620-3522

**Re: Alburgh Maplefields – Well Relocation Water Supply System WW-6-0328
2154 US Route 2 South, Alburgh, VT
Transient Non-Community Source Permit Application**

Dear Ms. Maskell:

R.L. Vallee, Inc. has purchased the existing service station and convenience store located at 2154 US Route 2 South in Alburgh, VT. As part of a previous wastewater permit WW-6-0328, the drill well was relocated to the south west corner of the parcel away from the diesel MPDs. This application proposes to abandon the existing drilled well that was relocated once before and drill a new well to southwest.

This project is a part of a site redevelopment and expansion project that involves removing the existing convenience store and building a new convenience store on the site. New parking areas are proposed as well as canopy expansions, wastewater improvements and stormwater improvements. The existing well will be abandoned in accordance with the State Water Supply Rule and a new well will be drilled approximately 176±ft southwest. The proposed flow is proposed to be increased as part of this project and we are preparing a State Wastewater and Potable Water Supply Application and a Water Supply Construction Permit in conjunction with this Transient Non-Community Source permit application.


The components of this application package include:

1. Source Permit application signed by the authorized representative of the property owner (see Secretary of State Business Listing).
2. Application Fee of \$385.00.
3. Avg. Daily Design Flow computations for the facility. The 2,597 GPD design flow computes to a MDD of 3.61 GPM.
4. PSOC Mapping which shows graphically both with a USGS map background, but more clearly with the orthophoto background the land uses creating potential sources of contamination. This mapping also shows the location of the Dollar General well and its corrected position based on our site visit and GPS location on the attached plans.
5. Potential Sources of Contamination Narrative which identifies the existing land uses with both the 500 foot radius (MDD<5 GPM) and 1,000 feet for a potential test rate of greater than 5 GPM.
6. Time of Travel Analysis showing that the time of travel is greater than 2-years for the path between the nearest wastewater disposal system and the proposed source of water for this well.

7. Fixture Units Calculation for the Alburgh Maplefields
8. Well Reports for those few wells located in the proximity of the Alburgh Crossroads Maplefields gas station.
9. Technical Compliance Summary which represents a summary of the WSR's as they relate to the permitting of this proposed TNC Source and system.
10. Site Plans showing (C1.1) the proposed well location, proposed wastewater disposal systems and isolation areas and the proposed conveyance system (C1.1/C1.2).

This completes our general summary of the proposed project. If you should have any questions please feel free to call me at 864-2323 x310 or via email at dmarshall@cea-vt.com.

Respectfully,

A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke, positioned above the typed name.

David S. Marshall, PE
Principal Engineer

Cc: (all w/enclosures, 11x17 plans) CEA File 17160.02

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Drinking Water and Groundwater Protection Division

Public Source Water Permit Application

A Source Permit Application is required for proposed new, or changes to existing, Groundwater and Surface Water Source(s) to serve a Proposed or Existing Public Community Water Supply, pursuant to *Vermont Water Supply Rule*. A site visit will be scheduled following review of an administratively and technically complete application and certification of public notice.

NOTE: The Applicant shall provide notice of this Application by U.S. mail to all property owners adjoining the project parcel at the time this Application is submitted to the Secretary. The Applicant shall sign the certification on Page 3 of this Application that all adjoining property owners have been notified of the Application.

This application will not be considered administratively complete until the full fee is received. The correct fee for a Community system is \$945.00, for a NTNC \$770.00, or for a TNC \$385.00. See instructions on Page 5.

I: Project Overview

For Division Use Only	
Check No.	
Check Amount	

A: Project Information

Project Name			
Type of Water System Proposed	<input type="checkbox"/> Public	<input type="checkbox"/> Non-Transient Non-Community (NTNC)	<input type="checkbox"/> Transient Non-Community (TNC)
	<input type="checkbox"/> New Water System	<input type="checkbox"/> Modification to Existing PWS	
Water System Name and, if existing, WSID			
Project 911 Address			
Town			
SPAN Number(s)			
Town, Book, and Pages for deed to parcel containing the Source Isolation Zone showing ownership or control			

Brief Description of Project (maximum 1000 characters)

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B: Source Owner

Owner Name			
Authorized Contact Person & Title			
Mailing Address			
Business Phone		Business Cell	
Business Email			
Note: certification and signature required on Page 4			

C: Engineering Consultant

Organization/Firm Name			
Engineer Name			
Mailing Address			
Business Phone		Business Cell	
Business Email			

D: Hydrogeology Consultant

Organization/Firm Name			
Hydrogeologist Name			
Mailing Address			
Business Phone		Business Cell	
Business Email			

II: Detailed Project Information

Type of Proposed Source			
<input type="checkbox"/> Bedrock Well	<input type="checkbox"/> Surface Water	<input type="checkbox"/> Other, please describe:	
<input type="checkbox"/> Gravel Well	<input type="checkbox"/> Hydro-fracture		
<input type="checkbox"/> Spring	<input type="checkbox"/> Deepening		
Project Demand – see III B			
ADD (gpd)			
MDD (gpm)			
Peaking Factor			
GPS Coordinates of Proposed Source(s)			
Unique Source ID	Latitude	Longitude	
		N	W
		N	W
		N	W
		N	W
		N	W
Project Location Information			
i. Is the proposed source within a Class IV Groundwater Area? (Refer to ANR Atlas here: http://anrmaps.vermont.gov/websites/anra5/ , see instructions on Page 6, and sign certification statement on Page 3). <input type="checkbox"/> No <input type="checkbox"/> Yes			
ii. Does this project contain areas within the 100-year floodplain? <input type="checkbox"/> No <input type="checkbox"/> Yes, identify these areas on the Site Plan			
iii. Are there agricultural lands within the investigation radius that may affect the proposed source(s)? <input type="checkbox"/> No <input type="checkbox"/> Yes, see instructions and sign certification statement on Page 4.			

III: Required Attachments

- A. Description of methods used to choose site (i.e. fracture trace, geophysics, setbacks) and include supporting information.
- B. Supporting calculations for Project Demand and Peaking Factor.
- C. Appropriate scale topographical map and orthophoto showing:
 - i. Proposed and existing source location(s) labeled with unique source ID letter(s).
 - ii. Investigation radius (see instructions).
 - iii. Location of potential sources of contamination (PSOCs).
 - iv. Location of agricultural lands in the area that may affect the proposed source(s). Certification required on Page 4.
 - v. Location of other water supply sources within investigation radius.
 - vi. Location of wetlands and surface waters.
- D. Class IV Map from ANR Atlas, showing proposed source locations.
- E. Site Plan showing:
 - i. Proposed and current source location(s) labeled with unique source ID and Source Parcel SPAN number(s).
 - ii. Properties and names of all landowners adjoining the parcel(s) containing the proposed source location(s) and identifying any source easement(s).
 - iii. List of adjoining landowners' names, e-mail addresses, mailing addresses, and phone numbers
 - iv. Identify any areas within the 100-year floodplain.
- F. Proposed or existing source design plans (i.e. well or spring construction, surface water intake).
- G. Preliminary engineering plans for final water system development.
- H. For Non-Transient Non-Community (NTNC) and Transient Non-Community (TNC), attach a copy of any prior Water/Wastewater Permits issued by the Agency of Natural Resources for this parcel.
- I. If the proposed source is an existing well, attach a copy of the Well Completion Report.

NOTE: Any proposed change to a Public Community, Bottled/Bulk Water, and Non-Transient Non-Community (NTNC) Water Supply Source Protection Area requires a 30 day public notice with the draft Source Permit using the Environmental Notice Bulletin (ENB) at <https://enb.vermont.gov/>. The applicant shall identify and submit a list of all landowners within the proposed Source Protection Area and their mailing and email addresses to allow the Division to notify landowners located in the Source Protection Area of the application.

IV: Certifications

A. Public Notice Certification

With my signature, I hereby certify that the Applicant has provided notice of this Application by U.S. mail to all property owners adjoining the project parcel at the time this Application is submitted to the Secretary.

Signature of Project Applicant or Legal Representative: _____

Printed Name and Title: Rodolphe Vallee CEO

Date: 6/1/21

B. Class IV Groundwater Certification

With my signature, I hereby certify that the ANR Atlas has been checked for the location of Class IV Groundwater Areas and the proposed sites are not located within a Class IV Area.

Signature of Project Applicant or Legal Representative: _____

Printed Name and Title: David S. Marshall, P.E.

Date: 7/15/2021

C. Certification of Water Source Likely Affected by Agricultural Lands

Vermont Statutes, 10 VSA Chapter 56 Section 1676a, requires that the applicant for a new source for a public water system certify in the permit that the proposed source will be abandoned, replaced, or treated if it becomes contaminated by agricultural activities conducted on agricultural lands. Based upon findings by the Secretary, there are agricultural lands in the area that are likely to affect the proposed source, but not likely to constitute a public health hazard related to the source.

With my signature, I hereby certify that the proposed source will be abandoned, replaced, or treated (as defined below) if it becomes contaminated by agricultural activities conducted on the agricultural lands.

Abandoned: Abandoning the source requires discontinuing its use as a drinking water source, disconnecting it from the public water system, and if it is a drilled well, closure by a licensed well driller through being filled with grout or native material per the *Vermont Water Supply Rule* Chapter 21.

Replaced: Replacing the source requires the use of an alternative water source that is permitted by the Drinking Water and Groundwater Protection Division.

Treated: Treating the source requires that all applicable water quality standards as outlined in the *Vermont Water Supply Rule* Chapter 21 are continually met using a permitted treatment system.

Signature of Project Applicant or Legal Representative: _____

Printed Name and Title: David S. Marshall, P.E.

Date: 7/15/21

D. Source Permit Applicant Certification

With my signature, I hereby certify that the statements and representations made in this document are true and accurate to the best of my knowledge and that I am the Owner or have the lawful authority to sign this Source Water Permit Application on behalf of the Owner. I consent to employees of the State of Vermont to enter the subject property and conduct all necessary inspections for the purpose of processing this application.

Signature of Project Applicant or Legal Representative: _____

Printed Name and Title: Kodolpha Vallee

Date: 6/1/21

Please return to address below:

Electronic Submittals: [ftp://ftp.anr.state.vt.us/Public Water Supply/](ftp://ftp.anr.state.vt.us/Public%20Water%20Supply/) (NOTE: link **MUST** be opened in Windows Explorer, not a web browser)

Drinking Water and Groundwater Protection Division
1 National Life Drive, Davis 4
Montpelier, VT 05620-3521
Fax: 802-828-1541

This form and related environmental information are available electronically via the internet. For information visit us through the Vermont Homepage at <http://www.vermont.gov> or visit directly at <http://www.vermontdrinkingwater.org>

PUBLIC SOURCE WATER PERMIT
APPLICATION INSTRUCTIONS

Note: This application represents the first in a three-step process to obtain a source permit from the Drinking Water and Groundwater Protection Division. The full process is as follows:

Step 1: Submit a complete Source Permit Application (this document) for review.

Step 2: Submit a complete Source Testing Application (attached) for review.

Step 3: Submit a Final Report to the Division for review – see Source Testing Application for Report requirements. For Community and NTNC projects, this includes the Source Protection Area (SPA) and Source Protection Plan (SPP).

The Applicant shall provide the following information:

Application Fee

Any water system involving a new source will be charged an application fee, as required by State Statute, which will cover a single (1) Source. An additional Source Permit Application and fee will be required for each additional permitted Source. An application fee will also be charged for each existing source that is, or is proposed to increase its yield, be drilled deeper, or hydro-fractured. See table below for source permit application fees by system type.

Public Water System Type	Source Permit Application Fee
Community	\$945.00
Non-Transient Non-Community (NTNC)	\$770.00
Transient Non-Community (TNC)	\$385.00

Please send the fee for the Application by US mail or by delivery to the address shown below, c/o Helen Banevicius. Please reference the project name, applicant's name, and town on the check or money order.

I: Project Overview

A: Project Information

Project Name: Name of project (Please notify the Division if project name changes).

Type of Water System Proposed: New Water System, or Change to Existing System, i.e. additional source, changes in yield, drilled source deeper or hydrofracturing. Refer to the *Vermont Water Supply Rule* Chapter 21 for definitions of a public water system.

Water System Name and, if existing, WSID: The name by which a new water system would like to be known or the name of an existing water system. If a change to an existing water system, insert the water system's identification (WSID) number.

Project 911 Address and Town: 911 Address where the water source can be located

Town: Town where the project's water source is located

SPAN Number(s): The SPAN number(s) for the land parcel the water source(s) are, or will be, located on.

Town, Book, and Pages for parcel deed: List the town, book and page numbers of the deed, deed restrictions, and any easements needed for the water system to have control of the Source and include a copy of the executed documents along with an attorney's opinion of their ability for the applicant to control land use activities within it. For Public Community Water Systems, include this information for the Source Isolation Zone as well.

Brief Description of Project: Explain the purpose of the project and the project type - municipal, privately owned, cooperative, condominium, subdivision, expansion, change in use, change in yield; etc. Include number of service connections and types, details of fire protection if protection will be provided, and water storage needs.

B: Source Owner

Owner's name(s) as shown on property deed, authorized contact person, mailing addresses, work and/or cell phone numbers, and email address. If more than one legal owner, attach an additional page with this information.

C: Engineering Consultant

Engineering consulting firm, consultant name, mailing address, work and/or cell phone numbers, and email address. At least one consultant field (engineering or hydrogeology) must be completed.

D: Hydrogeology Consultant

Hydrogeology consulting firm, consultant name, mailing address, work and/or cell phone numbers, and email address. At least one consultant field (engineering or hydrogeology) must be completed.

II: Detailed Project Information

A: Type of Proposed Source

Check appropriate source type (gravel wells include all dug or drilled wells constructed entirely in unconsolidated materials) and indicate type of work being done if not construction of a new water source.

B: Project Demand

ADD and MDD: Calculated project demand in both gallons per day and gallons per minute: [Ave. Day Demand (ADD) in $\text{gpd} \times 2 =$ Maximum Day Demand (MDD) in gpd . The MDD divided by 1440 min/day = the MDD in gpm]. For design demand criteria, see Vermont Water Supply Rule, Unitized Average Day Flows, Table A2-1. Provide table of connections, fixtures, uses, etc. and design flows for each and the total (gpd).

Note: For existing systems, a Peaking Factor other than 2 may be calculated from water use meter data (see VT Water Supply Rule). Projects proposed to serve resorts and/or recreational facilities may need to use a larger Peaking Factor.

C: GPS Coordinates of Proposed Source(s)

Proposed and existing water sources for the project, labeled with unique source ID letters, shall be GPS located using the **NAD 83 format** (report in Decimal Degrees to at least 6 places to the right of the decimal). All proposed water supply locations shall be securely marked and identified on the site to facilitate identification of the correct drilling or construction location. Attach another sheet for additional water sources if needed.

D: Project Location Information

Class IV Groundwater Area: New sources shall not be located within a Class IV Groundwater area. (See Natural Resources Atlas.) Provide map with proposed source locations.

100 Year Floodplain: Provide a site map showing the 100 year floodplain, if present within the source investigation area.

Agricultural Lands: Field investigations, identifying existing and likely future agricultural land uses. If yes, review and sign Certification of Water Source Likely Affected by Agricultural Lands.

III: Required Attachments

A: Description of Methods

Rationale for source location, include maps, calculations, graphs, etc.

B: Supporting Calculations

Calculated project demand in both gallons per day and gallons per minute: [Ave. Day Demand (ADD) in $\text{gpd} \times$ Peaking Factor = Maximum Day Demand (MDD) in gpd . The MDD divided by 1440 min/day = the MDD in gpm]. For design demand criteria, see Vermont Water Supply Rule, Unitized Average Day Flows, Table A2-1.

C: Topographical map and orthophoto

Appropriate scale topo map and orthophoto (with contours, if available) including:

1. Location of existing water source(s) and/or proposed water source(s) Labeled with unique source ID letters or numbers (i.e. Well B, McDugal Well, Well 56)
2. location of each source (proposed or existing) with appropriate investigation radius circle drawn around each one (see table below in 3. b). **Note:** For surface water sources show intake(s) location, elevation, and watershed boundary.
3. Location of ***all potential sources of contamination*** (PSOC) within each radius as delineated in (2) above (A map at larger scale may be needed), including residential, agricultural, commercial, industrial, and home occupations. Information on potential or existing sources of contamination shall include identification of existing and likely future land use practices and be gathered from ***at least:*** Vermont Agency of Natural Resources - Waste Management and Prevention Division, ANR Regional Offices (Include identification of permits issued for land use activities not yet constructed), local residents' knowledge, and consult the Agency's Natural Resource Atlas for hazardous waste sites.
 - a. ***For surface water sources:*** identify PSOC's within the watershed boundary above the intake elevation.
 - b. ***For groundwater sources:*** identify all potential sources of contamination within the distance determined from the following table: (***Pump test rate or project demand, whichever is larger, must be used.***)

Table 1. Investigation radii for Community Water Systems

Pump Test Rate/Project Demand (gpm)	Gravel or Rock Well, Spring, Other (ft)
0-20	2000
20+	3000

Table 2. Investigation radii for NTNC and TNC Water Systems

Source Maximum Day Demand (gpm)	Investigation Area Radius (ft)
<2.0	200
2.0 – 4.9	500
5 – 19.9	1000
20 – 49.9	2000
50 – 99.9	2500
>100	3000
Surface Water Source	Drainage basin up-gradient of intake

D: Class IV Groundwater Map

The ANR Atlas should be checked to identify whether the proposed source location(s) may be located within a Class IV Groundwater area. See Certification statement on Page 3.

E: Site Plan

The most current site plan including the following:

1. Proposed and current source location(s) labeled with unique source ID letter(s) (For existing Sources use current source designations; i.e. WL003, IN001), and the source parcel SPAN number.
2. For NTNC and TNC Systems: show all property boundaries and the names of all landowners adjoining the parcel(s) containing the Source.
3. For Public Community Water Systems: include a 200 foot radius or other proposed Source Isolation Zone and show all property boundaries and names of all landowners adjoining the parcel(s) and those containing the Source Isolation Zone for all proposed source locations.
4. Show any easement areas and include a copy of the signed easement agreement.
5. Attach a list of the names, e-mail addresses, mailing addresses, and phone numbers for all adjoining landowners to the project parcel and, if applicable, the Source Isolation Zone.

F: Source Design Plans

Source construction plans which show that each source is, or will be, constructed to Water Supply Rule standards. If the source is located greater than 150 feet from surface water and has greater than 50 feet of grouted casing, then it is eligible for an exemption from microscopic particulate analysis (MPA) testing. If this is an existing well or a change in use, submit the corresponding Well Completion Report for the well.

G: Preliminary Engineering Plans

Preliminary engineering plans which show the project layout including, septic systems, roads, parking areas, buildings, recreational facilities, proposed and existing water sources, sewer lines etc. Isolation distances and compliance with all prohibited land uses must be demonstrated.

IV: Certifications

This application shall be signed by the source owner or legal representative.

Drinking Water and Groundwater Protection Division

Source Testing Review Application

This form is to be completed AFTER the Source is constructed or after approval of an existing source. This begins the review and approval process for safe yield determination, adverse interference with existing uses, water quality testing, and any special studies to show adequate protection of the proposed water source for a Public Community, Public Non-Community (NTNC, TNC), Domestic Bottled/Bulk Water Supply, and for a Groundwater Withdrawal Permit. The constant discharge test or required studies, or both, may commence following Division approval of a complete Source Testing Review Application submittal.

I: Source Testing Information
A: Complete for All Sources

1. Project ID # (PID)			
2. Water System Name		WSID	
3. Project Name			
4. Town			
5. Source ID Letter(s) or Name			
6. Source GPS Location		N	W
7. Source Type	<input type="checkbox"/> Drilled Well <input type="checkbox"/> Surface Water <input type="checkbox"/> Dug Well <input type="checkbox"/> Other: <input type="checkbox"/> Spring		
8. Project Max Day Demand (gpm)			

B: Drilled Wells Only

9. Well Report or Tag Number. Attach Well Completion Report.	
10. Well Drillers Yield (gpm)	
11. Proposed Constant Discharge Test Rate (gpm)	
12. Proposed Monitor Radius (ft)	
13. Proposed Test Duration (hrs)	

C: Other Source Types (e.g. dug wells, well points, springs, infiltration galleys, surface water intakes)

14. Source Construction	Attach as-built source construction plans and specifications
15. Springs	Attach as-built construction and description of high and low flow analysis
16. Surface Water	Attach as-built intake structure and description of safe yield analysis

II: Required Attachments

- A. Interference Assessment:** On an appropriate scale topo map or orthophoto, locate and identify all water supplies and appropriate monitor wells within the specified area. Refer to Table App-1 or Table App-2 below to determine the appropriate radius. For Springs or Surface Water sources, include documentation of all other withdrawals as part of the low flow analysis. For each source specified above, include the following:
- i. Source owner's name, mailing address, email address, and phone number.

- ii. Source type, source depth, yield, pump setting, and well log.
- iii. Demand (e.g. number of bedrooms). See *Vermont Water Supply Rule* Table A2-1.

Table App-1. For PCWS, Bottled/Bulk Water Sources, and for Groundwater Withdrawal Permits

Discharge Test Rate (gpm)	Monitor Radius* (ft)	Test Duration (hr)
0 – 19.9	1000	72
20 – 49.9	2000	72
50 – 99.9	2500	96
100 – 199.9	3000	120
200 +	3000	168

* Use monitor radius listed in Table App-1 *only if* monitoring of the Area of Influence is not required.

Table App-2. For NTNC and TNC Water Sources

Discharge Test Rate (gpm)	Monitor Radius* (ft)	Test Duration (hr)
0 – 1.9	200	24
2 – 4.9	500	36
5 – 7.9	1000	48*
8 – 19.9	1000	72
20 – 49.9	2000	72
50 – 99.9	2500	96
100 +	3000	120

* May be increased to 72 hours if interference or special studies are required.

H. Proposed Scope of Required Studies; including but not limited to:

- i. Type of study.
- ii. Locations and construction of proposed monitoring wells.
- iii. Data collection procedures.
- iv. Proposed methods of analysis, including references

III: Notes

Note 1: For commercial and industrial Groundwater Withdrawal Permit source testing, the applicant shall comply with all specific testing and monitoring requirements of the *Vermont Groundwater Withdrawal Reporting and Permitting Rule*, Chapter 24 that may be appropriate if not identified here.

Note 2: If permission to monitor a source is denied, the Division requires the potential interference impact to be estimated using design criteria and the best available information.

Note 3: Yield Analyses per *Vermont Water Supply Rule* regulations: For a well, a constant rate discharge test. For springs, low flows analysis (and high flow for SPA delineation). For surface water safe yield without raw water impoundment, 1Q20 analysis; or with raw water impoundment, 20-50 year drought condition using a mass diagram. Minimum stream flow requirements shall be evaluated for any proposed source.

Note 4: Any proposed change to a Public Community, Bottled/Bulk Water, and Non-Transient Non-Community (NTNC) Water Supply Source Protection Area requires a 30 day public notice with the draft Source Permit. The applicant shall identify and submit a list of all landowners within the proposed Source Protection Area and their mailing and email addresses.

Note 5: Pursuant to the *EPA Surface Water Treatment Rule*, the Division is responsible for determining which public water sources are under the direct influence of surface water. It is the applicant's responsibility to provide the Division with the information necessary to make this determination as set forth in the Water Supply Division Guidance Document, "Groundwater Under the Direct Influence of Surface Water".

A new well may not be subject to microscopic particulate analysis testing if the following criteria are met:

- 1. The well is located over 150 feet from the surface water source; and
- 2. The well has greater than 50 feet of sealed casing; or
- 3. The well casing penetrates an areally extensive confining bed

Note 6: Bottled or Bulk Water Sources, in addition to complying with the *Water Supply Rule* Chapter 21, shall also comply with the requirements of the *Groundwater Withdrawal Reporting and Permitting Rule* Chapter 24.

Application Completion Instructions

Source Testing Information I:

Applicant shall provide the following information:

1. Project Identification number assigned to this project by the Drinking Water and Groundwater Protection Division ("Division"). For Source Permits, this number has the format S-####-##.#.
2. Water System Name and Identification Number (WSID) the source is proposed to serve.
3. Name of project. Please notify the Division if the project name changes from the one identified on the Source Application.
4. Town in which the project is located.
5. Source ID letter(s) or name from the *Source Permit Application* form or from a previous *Wastewater System and Potable Water Supply* application.
6. Include the GPS location of the source following construction. If more than one source is being evaluated, include this information for each source on an attachment.
7. Choose the type of source construction, or choose other, and describe the source.
8. Enter the Project Max Day Demand in gpm derived from the basis of design and show all calculations.

Drilled Wells Only

9. Enter the Well Report Number or Tag Number from the Well Completion Report and attach a copy of the Well Completion Report
10. Drillers yield from Well Completion Report
- 11-13. Determine the proposed constant discharge test rate, interference monitoring radius, and test duration.

Other Source Types

14. Attach source construction as-built plans and specifications including materials and dimensions. For Springs and Dug Wells, include a sediment profile.
15. For Springs: Attach as-built construction and a description of the proposed high and low flow safe yield analysis. For Surface Water: Attach as-built intake structure and a description of the safe yield analysis.

Required Attachments II:

- A. Interference Assessment: Provide the requested information for drinking water sources, and for non-drinking water source uses (e.g. farm irrigation wells, livestock watering, wetlands, ponds)
- B. Proposed Scope of Required Studies: Explain the studies that need to be performed (e.g. Potential Source of Contamination study, 2 Year Time-of-Travel (2Y TOT) study, hydraulic connection study)

Please return to address below

Electronic Submittals: [ftp://ftp.anr.state.vt.us/Public Water Supply/](ftp://ftp.anr.state.vt.us/Public%20Water%20Supply/) (NOTE: link **MUST** be opened in Windows Explorer, not a web browser)

Drinking Water and Groundwater Protection Division
1 National Life Drive, Davis 4
Montpelier, VT 05620-3521
Fax: 802-828-1541

This form and related environmental information are available electronically via the internet. For information visit us through the Vermont Homepage at <http://www.vermont.gov> or visit directly at <http://www.vermontdrinkingwater.org>

Submittal of Source Evaluation Report

The Report shall contain all the information below, organized in the same format, unless exempted by the Division:

- A Site: Documentation of ownership or control of the source location, and source isolation zone if one is required. Include the deed's town, book and page numbers.
- B Source Construction: Submit as-built engineering plans for Source Construction (Well Completion Report, spring box/tile details, or surface water intake structure).
- C Interference Analysis:
 - 1. Analysis and determination of interference effects on existing sources or uses of water. If undue adverse interference is present or calculated, describe the method of resolution. Show interference monitoring data and all calculations;
 - 2. Analysis and determination of no undue adverse effect on wetlands under the Vermont wetland rules or on other water resources hydrologically interconnected with the source of withdrawal;
 - 3. Submit completed Production Well and Observation Well ID Sheets. These can be found at: <http://www.drinkingwater.vt.gov/pcwsapps.htm>
- D Surface waters: An evaluation and determination of undue adverse impacts to any surface waters (i.e. streams, brooks, rivers, ponds, reservoirs, lakes) in the area of influence.
- E Source Yield:
 - For wells: submit analysis for determination of safe yield that satisfies the project demands, submit constant rate, step test, and other pumping test data;
 - For springs: submit high and low flow analysis;
 - For surface water withdrawals: submit safe yield analysis.
- F Water Quality:
 - 1. Attach results of all required water quality testing. Initial source testing water samples are to be collected immediately following the end of the Constant Rate Discharge Test, or immediately following the Peak Instantaneous Flow Test. If yield testing is not required, then the source is to be flushed and purged (run to waste) for several hours or for 2-3 well volumes prior to taking the water quality samples. The source sample shall NOT contain a disinfectant;
 - 2. When **initial source water quality sampling** is performed the following information is to be included on the testing laboratory's report and chain of custody forms:
 - i. *Water System ID #*: This is the WSID # (i.e. WSID 5001, WSID 20345).
 - i. *FacilityID #*: This is the well/spring/intake number assigned by the Division (i.e. WL001, IN001).
 - ii. *Sample Point #*: This is the Raw Water sample point number assigned by the Division (i.e. RW001).
 - iii. *Sample Type*: Write "Special".
 - iv. *Description*: Write "**Raw Water, Initial, Source Water Permitting for** (insert Project Identification # here)". (This is the PID # assigned by the Division (i.e. S-2878-13.0)).
 - 3. If Microscopic Particulate Analysis (MPA) testing is required, follow the laboratory sampling protocols.
- G Source Protection Area (SPA):
 - 1. For Public Community (PCWS) and Non-Transient, Non-Community (NTNC) water systems submit an analysis and map of the Source Protection Area (SPA) and the Zones within it.
 - 2. List of land owners within the SPA and their mailing and email addresses; Submit a tax map if available.
 - 3. Electronic submittal procedure for Source Protection Areas following the Division's approval:
The format to be used for all submittals of new or changed Source Protection Areas and is to be included along with the Source Evaluation Final Report. Please visit <http://www.drinkingwater.vt.gov/pcwspermits.htm> Look under the heading 'Electronic Submittal Procedure for Source Protection Areas (SPAs)' to find the electronic format template;
 - 4. For multiple water sources – each water source is to have a specific SPA associated with it.
- H Special Studies: Analysis and conclusions for any additional studies as required, showing rationale for assumptions and calculations.
- I Source Protection Plan (SPP): At the Applicant's discretion, to expedite the issuance of the Source Permit, the SPP may be submitted at a date following issuance of the Permit (to be included as a Permit Condition) and shall conform to the requirements of Subchapter 21-16 of the VT Water Supply Rule.
- J Include in the Report any additional information that is required by the Groundwater Withdrawal Reporting and Permitting Rule, Chapter 24 as appropriate (for bottled or bulk water sources or for non-drinking water sources requiring a *Withdrawal Permit*).



[Back](#)

Business Information

Business Details

Business Name: R. L. VALLEE, INC.

Business ID: 0056290

File #: V10461

Business Type: Domestic Profit Corporation

Business Status: Active

**Date of Incorporation /
Registration Date:** 06/28/1961

Business Description: Not Available

Fiscal Year Month: 12

**Principal Office Business
Address:** 282 SO MAIN STREET, ST
ALBANS, VT, 05478, USA

**Principal Office Mailing
Address:** P O BOX 192, ST ALBANS,
VT, 05478, USA

**Citizenship / Domestic
Jurisdiction:** Domestic/VT

Last Annual Report Year: 2019

Last Report Filed: 01/28/2020

Next Filing Due Date: 01/01/2021

Principals Information

Name/Title:

Physical Address:

TIMOTHY L. VALLEE /President

282 SO MAIN STREET, ST ALBANS, VT, 05478, USA

RODOLPHE M. VALLEE /Vice President

282 SO MAIN STREET, ST ALBANS, VT, 05478, USA

RODOLPHE M. VALLEE /Treasurer

282 SO MAIN STREET, ST ALBANS, VT, 05478, USA

[View All Principals\(7\)](#)

Registered Agent Information

Name: TIMOTHY L VALLEE

Physical Address: 280 S MAIN ST, ST ALBANS, VT, 05478, USA

Mailing Address: 280 S MAIN ST, ST ALBANS, VT, 05478, USA

Agent Type: Registered Entity

Assumed Business Name Information

Assumed Business Name	Business ID	Registration Status
SHARON TRADING POST	0368018	Active
PETRO PLUS	0154207	Inactive
HIGHGATE VILLAGE MARKET	0180729	Active
STOWE ROAD MARKET	0180743	Active

NORTHFIELD FUEL COMPANY	0181652	Inactive
TIM'S CONVENIENCE CENTER	0187298	Active
VALCO	0195604	Inactive
MCGEE ENERGY ASSOCIATES	0197605	Inactive
SWITCHYARD MOBIL	0200506	Inactive
EAST WILLISTON ROAD ASSOCIATES	0202792	Inactive
HEATING SHOP, THE	0218435	Inactive
MAPLE LEAF ENERGY	0220431	Inactive
NEW HAVEN MOBIL	0220968	Inactive
CROSSROADS MOBIL	0221850	Active
MADONNA MOBIL	0222445	Inactive
STOWE ROAD MOBIL	0240066	Inactive
GPR ASSOCIATES	0244717	Inactive
WOODSTOCK VILLAGE MOBIL	0244771	Inactive
MAPLEFIELDS	0246189	Inactive
ON THE RUN ST. ALBANS	0247399	Inactive
ED'S MOBIL	0251948	Inactive
VALLEE PETROLEUM	0251949	Inactive
MAPLEFIELDS	0260158	Active
EAST END MARKET	0263351	Inactive
EAST END QUIK STOP	0265276	Inactive
CHUCKS MOBIL	0271933	Active

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Water Supply Design Flows

Maplefields - Alburgh

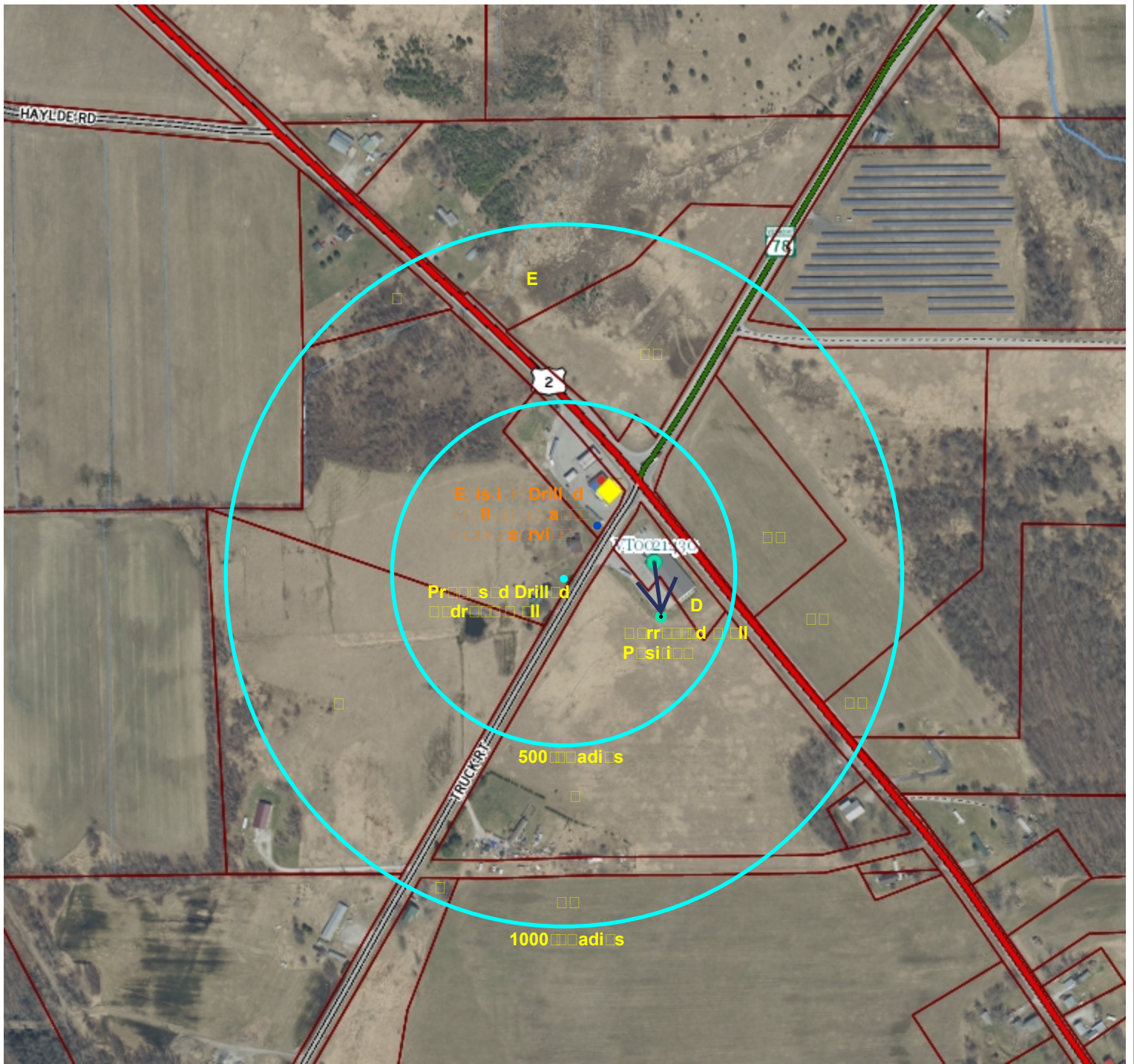
Alburgh, Vermont

6/5/2021

Use	Number	Unit		Flow/Unit			GPD
Fueling Hoses (Positions)	15	Hose	x	125	GPD/Hose	=	1,875
Employees	14	Each	x	13	GPD	=	182
Restaurant Seats	20	Each	x	27	GPD	=	540

Project Total 2,597

Maximum Day Demand (GPM) = 3.61

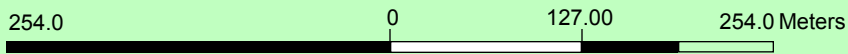


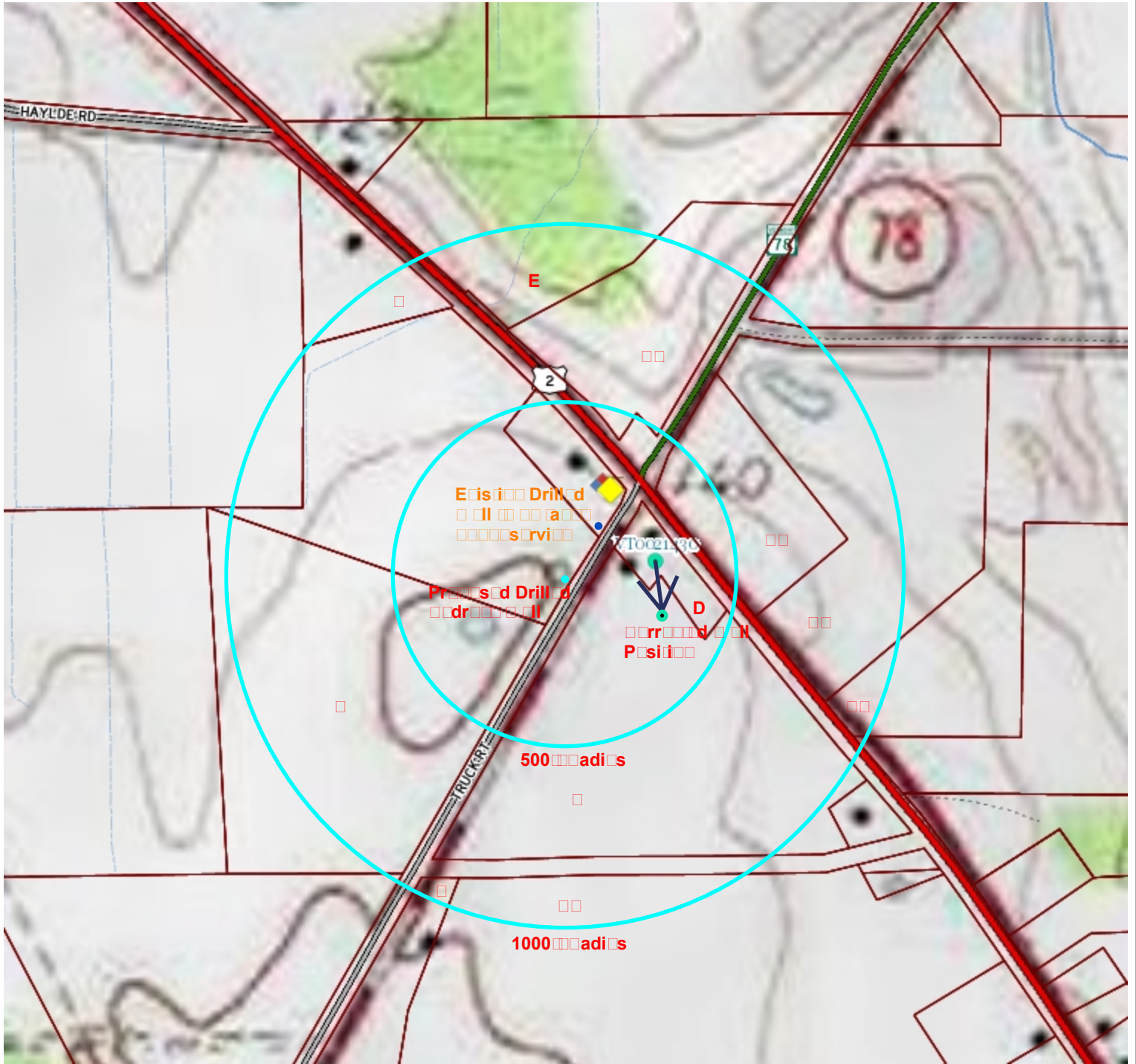
- LEGEND**
- ◆ Hazardous Site
 - ◆ Hazardous Waste Generators
 - ◆ Brownfields
 - Underground Storage Tank (working)
 - Public Water Sources**
 - Active
 - Proposed
 - Inactive

NOTES

Map created using ANR GIS mapping technology.

1: 5,000
October 14, 2020





- LEGEND**
- ◆ Hazardous Site
 - ◆ Hazardous Waste Generators
 - ◆ Brownfields
 - Underground Storage Tank (working)
 - Public Water Sources
 - Active
 - Proposed
 - Inactive

NOTES

Map created using ANR GIS mapping technology.

1: 5,000
October 14, 2020



Potential Sources of Contamination Narrative

- iii. location of **all potential sources of contamination** (PSOC) within each investigation area as delineated in ii above (A map at larger scale may be needed), including residential, agricultural, commercial, industrial, and home occupations.
- b) **For groundwater sources:** identify all PSOC's within the distance determined from the following table: (*Pump test rate or project demand, whichever is larger, must be used*).

Source Max. Day Demand	Investigation area
From 2.0 through 4.9 gpm	500 ft. radius (Design MDD)
From 5 through 19.9 gpm	1000 ft. radius (Potential Pump Test Rate)

Information on potential or existing sources of contamination shall include identification of existing and likely future land use practices and be gathered from **at least:**

- Vermont Agency of Natural Resources - Waste Management and Prevention Division
 - This resource indicates that the existing gas station represents the only hazardous site located within the 500 foot or 1,000-foot radius.
 - ANR Regional Offices (Include identification of permits issued for land use activities not yet constructed),
 - The only recent activity in this area is the 2014 construction of the wastewater mount system and drilled well for the Dollar General facility located across the street at 35 Town Hwy 4, Alburg, VT.
 - Consult the Agency's Natural Resource Atlas for hazardous waste sites and Class IV Groundwater areas.
 - The only Class IV groundwater area within 13 miles of the site is the St. Albans Engine House project site in the City of St. Albans. There are no hazardous waste sites located within the study area and immediate surrounds.
 - Local residents' knowledge.
 - Other uses in the area include (With distance from well to bldg.):
 - A. Residential Home at 234 Town Highway 4 (1061 Feet)
 - B. Residential Home at 245 Town Highway 4 (1024 Feet)
 - C. Residential Home at 187 Town Highway 4 (697 Feet)
 - D. Retail Store (237 Feet)
 - E. Residential Home and shed at 2045 US Route 2 S (950 & 1060ft)
 - F. Residential Home at 1996 US Route 2 S (1155 Feet)
 - G. Existing Streets (US Route 2, VT Route 78, Town Highway 4)
- iv. Field investigations, identifying existing and likely future agricultural land uses. If needed, include a signed Certification of Water Source Likely Affected by Agricultural Lands (see Division web site). (These are located hydraulically downgradient and to the southeast of the existing field areas. The proposed well will be protected by a thick clay layer between the surface and the likely gravel producing source of water).
- iv. Location of other water supply sources within the Investigation radius. The Dollar General Alburgh well is located within the investigative radius for the proposed well. This well currently benefits from a thick clay layer that adequately separates the same potential sources of contamination from the underlying gravel aquifer.
- v. Locate wetlands and surface waters for pumping test monitoring for interference if appropriate. There are wetlands and small surface waters north of this well. As noted in section iv. Above the existing wells in the area all demonstrate that there is thick isolating layer of clay (Dollar General Alburgh well) which provides ample protection from surface water influences and vice versa.

Time of Travel Calculation

RL Vallee - Alburgh Crossroads Maplefields

Method: Darcy's Law

1. Calculate vertical groundwater velocity downward through overburden.
2. Calculate vertical travel time downward through overburden, using vertical groundwater velocity.

1. Calculate Vertical Groundwater Velocity in overburden:

Formula: $V = (K \times i) / n$:

where:

V = Vertical groundwater velocity; ft/day.

K = Hydraulic conductivity; ft/day.

i = Hydraulic gradient; dimensionless.

n = Porosity; dimensionless.

Parameter	Value	Units	Notes
K	5.0E-08	m/sec	Lowest Range of estimated value for Clay, from various hydrogeo references (see attached); based on closest well logs identifying "Clay-Till" overburden.
i	1.0	ft/ft	Assumed maximum hydraulic gradient (conservative)
n	0.35	dimensionless	Lowest range of estimated porosity value, clay/till
Solve for V:			Formula: $V = (K \times i) / n$
Conversion	m/sec to	ft/sec x	3.048
V =	4.35E-07	ft/sec	Vertical groundwater velocity, downward through clay

2. Calculate vertical time-of-travel downward through overburden:

Formula: $T = D / V$:

where:

T = Time of Travel; days.

D = Vertical distance of travel; ft.

V = Vertical groundwater velocity; ft/day

Parameter	Value	Units	Notes
D	36	Feet	Reported clay overburden thickness, from subject well log description for Well Tag #51539
V	4.35E-07	ft/sec	Previously calculated
Solve for T:			Formula: $T = D / V$:
Conversion	957	Days	
V =	2.6	Years	

International Plumbing Code

International, 2009 Edition

International Code Council, Inc. M22 2nd Edition

International Code Council
 1515 L Street, N.W.
 Suite 500
 Alexandria, Virginia 22304-1744

R.L. Vallee, Inc.
 232 US-2
 Alburgh
 Convenience Store/Gas Station

Fixture	Flow Coefficient (K)	Number of Fixtures	Pressure Factor	Adjusted Demand (gpm)
Kitchen Sink	2.2	x 2	=	4.4
Lavatory	1.5	x 3	=	4.5
Utility Sink	4	x 1	=	4
Urinal (wall)	7	x 0	=	0
Urinal (flush valve)	35	x 1	=	35
Toilet (tank)	4	x 2	=	8
Toilet (flush valve)	35	x 0	=	0
Hose (50 ft. Wash Down) - 1/2"	5	x 0	=	0
Hose (50 ft. Wash Down) - 5/8"	9	x 3	=	27
Hose (50 ft. Wash Down) - 3/4"	12	x 0	=	0
Subtotal				2.0
Customer Peak Demand (gpm) from Fig. 4.2				48
Pressure Factor* 40 psi				0.80
Adjusted Peak Demand				38
Irrigation - None				0
Total Peak Demand				38

*Extrapolated using best fit curve of data from Table 4.1

Prepared By Civil Engineering Associates, Inc.
October 19, 2020

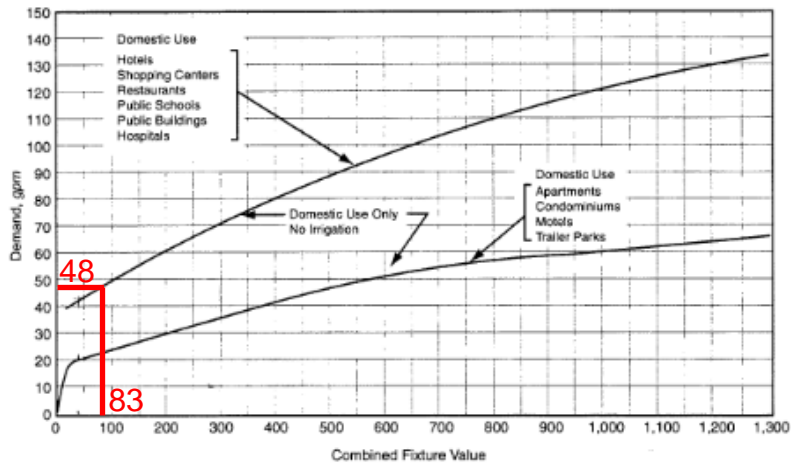


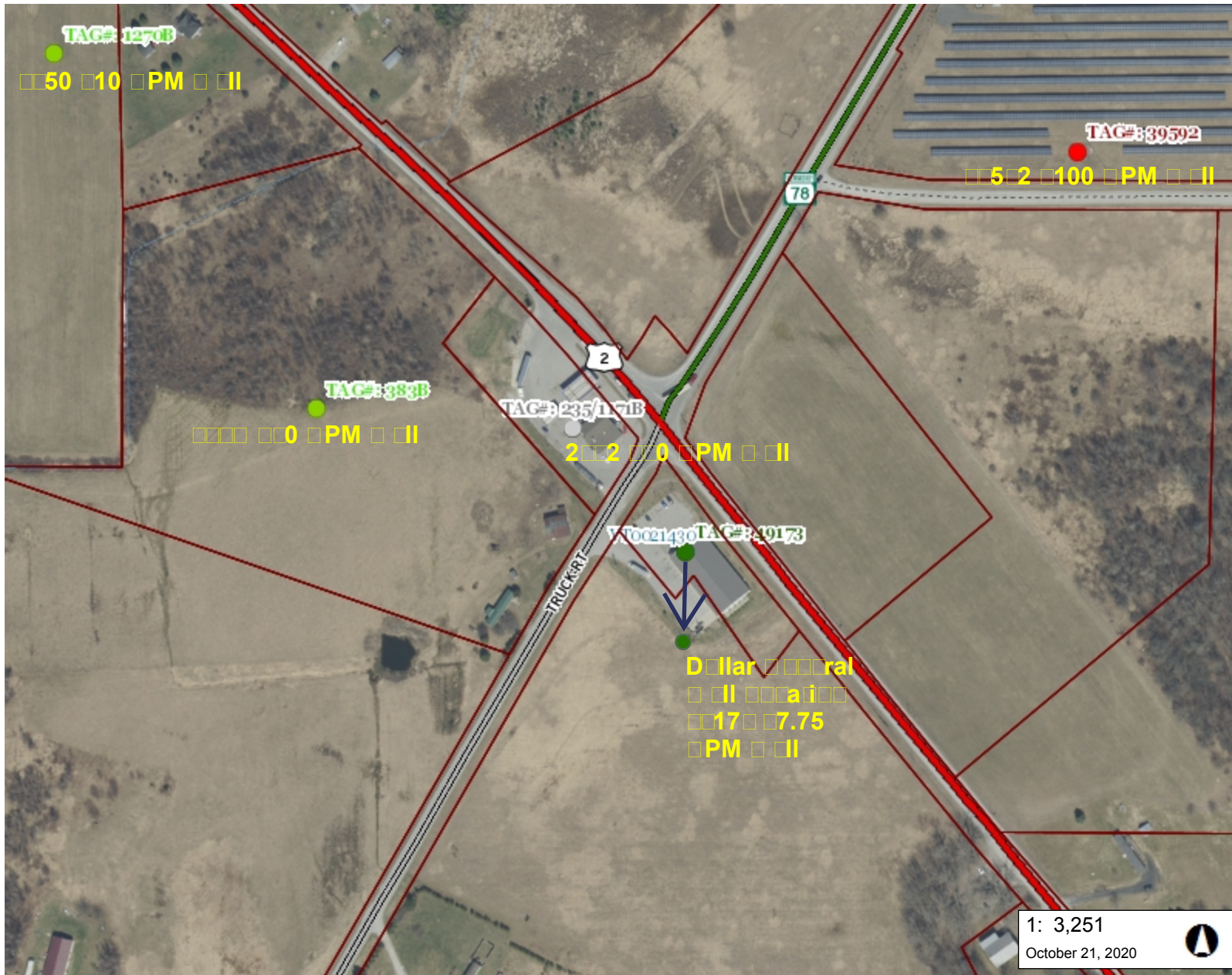
Figure 4-2 Water flow demand per fixture value—low range

Table 4-1 Pressure adjustment factors*

Working Pressure at Meter Discharge (psi)	Average Flow from 50 ft of 5/8-in. Hose and Sprinkler (gpm)	Pressure Adjustment Factor
35	6.7	0.74
40	7.2	0.80
50	8.1	0.90
60	9.0	1.00
70	9.8	1.09
80	10.5	1.17
90	11.2	1.25
100	12.1	1.34

*derived from Table 4-1 and 4-2 of Manual M22 (1975).

NOTE: To convert psi to kPa: psi × 6.89476; to convert gpm to m³/hr: gpm × 0.227.



LEGEND

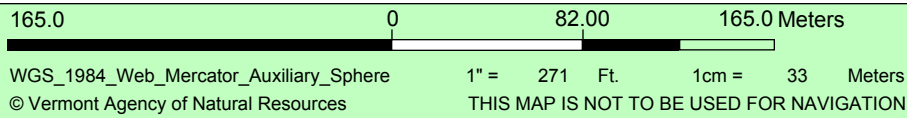
- Private Wells**
 - Incorrectly Located
 - GPS Located
 - Screen Digitized
 - E911 Address Matched
 - Welldriller/Clarion
 - Unknown Location Method
- Public Water Sources**
 - Active
 - Proposed
 - Inactive
- Parcels (standardized)**
- Roads**
 - Interstate
 - US Highway; 1
 - State Highway
 - Town Highway (Class 1)
 - Town Highway (Class 2,3)
 - Town Highway (Class 4)
 - State Forest Trail
 - National Forest Trail
 - Legal Trail
 - Private Road/Driveway
 - Proposed Roads
- Stream/River**
 - Stream
 - Intermittent Stream

1: 3,251
October 21, 2020



NOTES

Map created using ANR's Natural Resources Atlas



DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

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Department of Environmental Conservation



Well Completion Report Searchable Database

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If you need help, please call 802-585-4893

Date Well Was Completed: 03-31-2014

Date Report Received: 05-01-2014

Well Driller License Number: 191 = David Chevalier , Chevalier Drilling Co Inc

Drilled By:

Well Report Number: 49173

Well Number/Tag Number: 49173

Comments:

Town: Alburg

Map Cell:

Tax Map:

E-911 Address: Rte 2

Sub Division:

Lot Number:

Owner's First Name: Dollar General

Owner's Last Name:

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 05 = Business Establishment

Reason for Well Code: 1 = New Supply

Drilling Equipment Code:

Total Depth of Well (in feet): 220.00

Yield (in GPM): 7.75

Yield Test Tested For (in hours): 3.00

Static Water Level (in feet):

Well Is Overflowing: N

Date Measured:

Depth To Bedrock (in feet): 37.00

Total Casing Length (in feet): 91.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 67.00

Casing Length Exposed (in feet): 24.00

Casing Material: 1 = Steel

Casing Weight (in lbs/foot): 19.00

Casing Finish Code:

Length of Liner used (in feet):

Liner Diameter (in inches):

Liner Material:

Liner Weight (in lbs/foot):

Liner Type:

Grout Type: 1 = Neat Cement

Seal Type:

Diameter Drilled In Bedrock (in inches):

Depth Drilled In Bedrock (in feet):

Screen Make and Type:

Screen Material:

Screen Length (in feet):

Screen Diameter (in inches):

Screen Slot Size (in inches):

Depth to top of Screen below land surface (in feet):

Gravel Size or Type:

Method of Sealing Casing Code: 3 = Shoe & grout bottom
 Yield Test Method Code:
 Well Development Code:
 Not Steel Casing: N
 Has Water Been Analyzed N
 Well Has Screen: N
 AW Partial: N
 Unique GIS Name: AM49173
 Latitude: 44.95917
 Longitude: -73.27694
 Well Not Visible At Latitude/Longitude: N
 Location Determination Method: 14 = GPS location
 Well Type: Bedrock
 Depth To Liner Top (in feet):
 HydroFractured: N
 Hydro Fractured Resulting Flow (GPM):
 Well Location Submitted As A Dot On A Map: N
 Abandoned Per Water Supply Rule: N
 Date Of Abandonment:
 Reason For Abandonment:
 Well Driller Supervising Abandonment:
 Date Of Deepening or Hydrofracture:
 Well Driller Deepened/Fractured:
 Provided VDH Info To Owner: N
 Signed Form:
 RecordStatus: A
 UOE: Heather Campbell
 DOE: 5/9/2014 9:33:00 AM
 UOC: Tim Phillips
 DOC: 8/25/2016 9:05:00 AM
 WellReportID: 112668

If you need help, please call 802-585-4893

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
View	0.00	3.00		T	Till	w/clay
View	13.00	21.00		C	Clay	
View	21.00	27.00		GS	Sand and gravel	
View	27.00	37.00		H	Hardpan	w/clay
View	37.00	220.00		R	Rock, bedrock, ledge	shale

If you need help, please call 802-585-4893

Deepened/HydroFractured No Records Found

If you need help, please call 802-585-4893

Closure Log No Records Found

If you need help, please call 802-585-4893

	Date Of Change	User Who Changed	Field Name	New Value	Old Value
Change Log	8/25/2016 9:05:00 AM	Tim Phillips	Longitude	-73.2769400000000	-73.2771500000000
	8/25/2016 9:05:00 AM	Tim Phillips	Latitude	44.9591700000000	44.9591200000000
	5/9/2014 9:36:00 AM	Heather Campbell	OverBurdenThickness	37	0
	5/9/2014 9:36:00 AM	Heather Campbell	GroutType	1	0
	5/9/2014 9:36:00 AM	Heather Campbell	DrillerLicenseNumber	191	0
	5/9/2014 9:36:00 AM	Heather Campbell	CasingSealingMethodCode	3	0

5/9/2014 9:36:00 AM	Heather Campbell	CasingMaterial	1	0
---------------------------	---------------------	----------------	---	---

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Date Well Was Completed: 11-15-1996

Date Report Received: 01-16-1997

Well Driller License Number: 36 = , Chevalier Drilling Company Inc

Drilled By:

Well Report Number: 2932

Well Number/Tag Number: 235/1171B

Comments:

Town: Alburg

Map Cell: 01C7

Tax Map:

E-911 Address:

Sub Division:

Lot Number:

Owner's First Name:

Owner's Last Name: CROSS ROADS MOBILE STATION

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 2 = Replace existing supply

Drilling Equipment Code: 2 = Rotary (AP)

Total Depth of Well (in feet): 210.00

Yield (in GPM): 30.00

Yield Test Tested For (in hours): 0.00

Static Water Level (in feet): 0.00

Well Is Overflowing: N

Date Measured:

Depth To Bedrock (in feet): 36.00

Total Casing Length (in feet): 53.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 0.00

Casing Length Exposed (in feet): 0.00

Casing Material:

Casing Weight (in lbs/foot): 0.00

Casing Finish Code: 1 = Above ground, finished

Length of Liner used (in feet): 0.00

Liner Diameter (in inches): 0.00

Liner Material:

Liner Weight (in lbs/foot): 0.00

Liner Type:

Grout Type:

Seal Type:

Diameter Drilled In Bedrock (in inches): 0.00

Depth Drilled In Bedrock (in feet): 0.00

Screen Make and Type:

Screen Material:

Screen Length (in feet): 0.00

Screen Diameter (in inches): 0.00

Screen Slot Size (in inches): 0.000

Depth to top of Screen below land surface (in feet): 0.00

Gravel Size or Type:

Method of Sealing Casing Code: 3 = Shoe & grout bottom

Yield Test Method Code: 3 = Compressed air

Well Development Code:
 Not Steel Casing: N
 Has Water Been Analyzed N
 Well Has Screen: N
 AW Partial: N
 Unique GIS Name: AM2932
 Latitude: 44.95975
 Longitude: -73.27769
 Well Not Visible At Latitude/Longitude: N
 Location Determination Method: 13 = E911 Address
 Well Type: Bedrock
 Depth To Liner Top (in feet): 0.00
 HydroFractured: N
 Hydro Fractured Resulting Flow (GPM): 0.00
 Well Location Submitted As A Dot On A Map: N
 Abandoned Per Water Supply Rule: N
 Date Of Abandonment:
 Reason For Abandonment:
 Well Driller Supervising Abandonment:
 Date Of Deepening or Hydrofracture:
 Well Driller Deepened/Fractured:
 Provided VDH Info To Owner: N
 Signed Form:
 RecordStatus: A
 UOE:
 DOE:
 UOC: Tim Phillips
 DOC: 1/8/2019 9:36:55 AM
 WellReportID: 425

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Lithology

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
View	0.00	33.00		C	Clay	CLAY
View	33.00	36.00		CG	Clay and gravel	GRAVEL & CLAY
View	36.00	210.00		R	Rock, bedrock, ledge	SHALE

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Deepened/HydroFractured

No Records Found

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Closure Log

No Records Found

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Change Log

Date Of Change	User Who Changed	Field Name	New Value	Old Value
1/8/2019 9:36:55 AM	Tim Phillips	WellType	Bedrock	
10/5/2015 9:37:00 AM	Tim Phillips	LongSeconds	39.67000000000000	42.19800000000000
10/5/2015 9:37:00 AM	Tim Phillips	LocationDeterminationMethod	13	4
10/5/2015 9:37:00 AM	Tim Phillips	LatSeconds	35.10000000000000	34.58400000000000

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Date Well Was Completed: 03-26-2009

Date Report Received: 06-03-2009

Well Driller License Number: 191 = David Chevalier , Chevalier Drilling Co Inc

Drilled By:

Well Report Number: 39592

Well Number/Tag Number: 39592

Comments: Grout Type: Cement 70 gpm @ 400' 35 gpm @ 300' 6 gpm @ 140'

Town: Alburg

Map Cell:

Tax Map:

E-911 Address: Vt Rte 78

Sub Division:

Lot Number:

Owner's First Name: Tom

Owner's Last Name: Anderson

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 1 = New Supply

Drilling Equipment Code:

Total Depth of Well (in feet): 570.00

Yield (in GPM): 100.00

Yield Test Tested For (in hours): 3.00

Static Water Level (in feet): 0.00

Well Is Overflowing: N

Date Measured:

Depth To Bedrock (in feet): 40.00

Total Casing Length (in feet): 60.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 58.00

Casing Length Exposed (in feet): 2.00

Casing Material: 1 = Steel

Casing Weight (in lbs/foot): 19.00

Casing Finish Code:

Length of Liner used (in feet): 0.00

Liner Diameter (in inches): 0.00

Liner Material:

Liner Weight (in lbs/foot): 0.00

Liner Type:

Grout Type:

Seal Type:

Diameter Drilled In Bedrock (in inches): 0.00

Depth Drilled In Bedrock (in feet): 0.00

Screen Make and Type:

Screen Material:

Screen Length (in feet): 0.00

Screen Diameter (in inches): 0.00

Screen Slot Size (in inches): 0.000

Depth to top of Screen below land surface (in feet): 0.00

Gravel Size or Type:

Method of Sealing Casing Code: 1 = Drive shoe only
 Yield Test Method Code:
 Well Development Code:
 Not Steel Casing: N
 Has Water Been Analyzed: N
 Well Has Screen: N
 AW Partial: N
 Unique GIS Name: AM39592
 Latitude: 44.96104
 Longitude: -73.27435
 Well Not Visible At Latitude/Longitude: N
 Location Determination Method:
 Well Type: Bedrock
 Depth To Liner Top (in feet): 0.00
 HydroFractured: N
 Hydro Fractured Resulting Flow (GPM): 0.00
 Well Location Submitted As A Dot On A Map: N
 Abandoned Per Water Supply Rule: N
 Date Of Abandonment:
 Reason For Abandonment:
 Well Driller Supervising Abandonment:
 Date Of Deepening or Hydrofracture:
 Well Driller Deepened/Fractured:
 Provided VDH Info To Owner: N
 Signed Form:
 RecordStatus: A
 UOE: MARYT
 DOE: 1/19/2010 12:00:00 AM
 UOC: MARYT
 DOC: 1/19/2010 12:00:00 AM
 WellReportID: 106762

If you need help, please call 802-585-4893

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
View	0.00	9.00		C	Clay	
View	9.00	16.00		S	Sand	
Lithology View	16.00	40.00		H	Hardpan	
View	40.00	570.00		R	Rock, bedrock, ledge	shale

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Deepened/HydroFractured

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Closure Log

If you need help, please call 802-585-4893

Change Log

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Date Well Was Completed: 09-23-1985

Date Report Received: 01-06-1986

Well Driller License Number: 36 = , Chevalier Drilling Company Inc

Drilled By:

Well Report Number: 119

Well Number/Tag Number: 383B

Comments:

Town: Alburg

Map Cell: 01C7

Tax Map:

E-911 Address:

Sub Division:

Lot Number:

Owner's First Name: GERALD BOVAT

Owner's Last Name: TERRY BOVAT

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 2 = Replace existing supply

Drilling Equipment Code: 2 = Rotary (AP)

Total Depth of Well (in feet): 302.00

Yield (in GPM): 40.00

Yield Test Tested For (in hours): 0.00

Static Water Level (in feet): 0.00

Well Is Overflowing: N

Date Measured:

Depth To Bedrock (in feet): 49.00

Total Casing Length (in feet): 52.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 0.00

Casing Length Exposed (in feet): 0.00

Casing Material:

Casing Weight (in lbs/foot): 0.00

Casing Finish Code: 1 = Above ground, finished

Length of Liner used (in feet): 0.00

Liner Diameter (in inches): 0.00

Liner Material:

Liner Weight (in lbs/foot): 0.00

Liner Type:

Grout Type:

Seal Type:

Diameter Drilled In Bedrock (in inches): 0.00

Depth Drilled In Bedrock (in feet): 0.00

Screen Make and Type:

Screen Material:

Screen Length (in feet): 0.00

Screen Diameter (in inches): 0.00

Screen Slot Size (in inches): 0.000

Depth to top of Screen below land surface (in feet): 0.00

Gravel Size or Type:

Method of Sealing Casing Code: 1 = Drive shoe only

Yield Test Method Code: 3 = Compressed air

Well Development Code:
 Not Steel Casing: N
 Has Water Been Analyzed: N
 Well Has Screen: N
 AW Partial: N
 Unique GIS Name: AM119
 Latitude: 44.95984
 Longitude: -73.27938
 Well Not Visible At Latitude/Longitude: N
 Location Determination Method: 4 = screen digitized
 Well Type: Bedrock
 Depth To Liner Top (in feet): 0.00
 HydroFractured: N
 Hydro Fractured Resulting Flow (GPM): 0.00
 Well Location Submitted As A Dot On A Map: N
 Abandoned Per Water Supply Rule: N
 Date Of Abandonment:
 Reason For Abandonment:
 Well Driller Supervising Abandonment:
 Date Of Deepening or Hydrofracture:
 Well Driller Deepened/Fractured:
 Provided VDH Info To Owner: N
 Signed Form:
 RecordStatus: A
 UOE:
 DOE:
 UOC: Tim Phillips
 DOC: 1/8/2019 9:36:53 AM
 WellReportID: 290

If you need help, please call 802-585-4893

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
Lithology View	0.00	49.00		Cl	Clay and silt	CLAY & SILT
View	49.00	302.00		R	Rock, bedrock, ledge	SHALE

If you need help, please call 802-585-4893

Deepened/HydroFractured

No Records Found

If you need help, please call 802-585-4893

Closure Log

No Records Found

If you need help, please call 802-585-4893

	Date Of Change	User Who Changed	Field Name	New Value	Old Value
Change Log	1/8/2019 9:36:53 AM	Tim Phillips	WellType	Bedrock	

If you need help, please call 802-585-4893

AGENCY OF NATURAL RESOURCES

Department of Environmental Conservation

Well Completion Report Searchable Database

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If you need help, please call 802-585-4893

Links To Any Scanned Documents:

If you need help, please call 802-585-4893

Date Well Was Completed: 10-22-1997

Date Report Received: 10-29-1997

Well Driller License Number: 36 = , Chevalier Drilling Company Inc

Drilled By:

Well Report Number: 4650

Well Number/Tag Number: 1270B

Comments:

Town: Alburg

Map Cell: 01C7

Tax Map:

E-911 Address:

Sub Division:

Lot Number:

Owner's First Name: Lee

Owner's Last Name: Reynolds

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 2 = Replace existing supply

Drilling Equipment Code: 2 = Rotary (AP)

Total Depth of Well (in feet): 23.00

Yield (in GPM): 10.00

Yield Test Tested For (in hours): 0.00

Static Water Level (in feet): 0.00

Well Is Overflowing: N

Date Measured:

Depth To Bedrock (in feet): 23.00

Total Casing Length (in feet): 20.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 18.00

Casing Length Exposed (in feet): 0.00

Casing Material: 1 = Steel

Casing Weight (in lbs/foot): 19.00

Casing Finish Code: 1 = Above ground, finished

Length of Liner used (in feet): 0.00

Liner Diameter (in inches): 0.00

Liner Material:

Liner Weight (in lbs/foot): 0.00

Liner Type:

Grout Type:

Seal Type:

Diameter Drilled In Bedrock (in inches): 0.00

Depth Drilled In Bedrock (in feet): 0.00

Screen Make and Type: 4 = Continuous Slot

Screen Material: 2 = Stainless Steel

Screen Length (in feet): 5.00

Screen Diameter (in inches): 5.00

Screen Slot Size (in inches): 20.000

Depth to top of Screen below land surface (in feet): 18.00

Gravel Size or Type:

Method of Sealing Casing Code:

Yield Test Method Code: 3 = Compressed air

Well Development Code:
 Not Steel Casing: N
 Has Water Been Analyzed: N
 Well Has Screen: N
 AW Partial: N
 Unique GIS Name: AM4650
 Latitude: 44.96150
 Longitude: -73.28111
 Well Not Visible At Latitude/Longitude: N
 Location Determination Method: 4 = screen digitized
 Well Type:
 Depth To Liner Top (in feet): 0.00
 HydroFractured: N
 Hydro Fractured Resulting Flow (GPM): 0.00
 Well Location Submitted As A Dot On A Map: N
 Abandoned Per Water Supply Rule: N
 Date Of Abandonment:
 Reason For Abandonment:
 Well Driller Supervising Abandonment:
 Date Of Deepening or Hydrofracture:
 Well Driller Deepened/Fractured:
 Provided VDH Info To Owner: N
 Signed Form:
 RecordStatus: A
 UOE:
 DOE: 11/20/1997 12:00:00 AM
 UOC: GISLatLongUpdater
 DOC: 4/10/2008 12:00:00 AM
 WellReportID: 428

If you need help, please call 802-585-4893

Lithology

If you need help, please call 802-585-4893

Deepened/HydroFractured

If you need help, please call 802-585-4893

Closure Log

If you need help, please call 802-585-4893

Change Log

If you need help, please call 802-585-4893

Subchapter 21 Source and Sperm PEMS – Health and Environment

Introduction

This subchapter applies to the following water systems:

- (a) **Public Community** water systems;
- (b) **Public Non-Transient Non-Community** (NTNC) water systems;
- (c) **Public Transient Non-Community** (TNC) water systems; and
- (d) **Domestic Bottled** water systems.

4.0 General

Source permits for **Public Community** and **Domestic Bottled** water systems shall be governed by Section 4.1 of this subchapter, and the requirements of Appendix A, Part 3. Source permits for **Public Non-Transient Non-Community** water systems shall be governed by Appendix A Part 11.

Construction permits for, or improvements to, **Public Community** and **Domestic Bottled** water systems shall be governed by Section 4.2 of this subchapter, as well as the requirements of Appendix A, Parts 1 through 10, and 12.

Construction permits for **Public Non-Transient Non-Community**, and **Public Transient Non-Community** water systems shall be governed by Sections 4.2.4, and 4.2.8 of this subchapter *these sections are outlined below* and the requirements of Appendix A, Parts 11 and 12. For **Public Non-Transient Non-Community** and **Public Transient Non-Community** water systems, some provisions of Parts 1-10 apply and are clearly noted in the text of Part 11 of Appendix A. *The applicable portions of Part 11 Appendix A are embedded thereafter with comments in italics and blue font.*

4.0.3 Applicability of Vermont Standards

In addition to meeting the applicable requirements of this rule, all water system changes including construction, alteration, renovation, installation, extension and/or connection after the date this rule become effective shall conform to the *Vermont Standards for Water System Design, Construction and Protection* in Appendix A.

4.1 Source Permits

4.1.0.1 Application Requirements

- (c) General procedural requirements for **Public Non-Transient Non-Community** water system Source Permits are outlined in Appendix A Parts 11 and 12. *Acknowledged.*

4.2 Construction Permits

4.2.1 Application Requirements

- (a) An application for a construction permit shall be made on an application form provided by the Secretary, signed by the applicant, and shall be accompanied by, but not limited to, maps and detailed plans and specifications of the **Public** water system prepared by or

under the direction of a Registered Professional Engineer, other than exceptions as provided in Paragraph 4.0.2. *Acknowledged.*

- (b) Applications for permits to construct **Public Non-Transient Non-Community** and **Public Transient Non-Community** water systems shall follow the requirements as described in Appendix A, Parts 11 and 12. *Acknowledged.*

4.2.4 Suspension and Revocation of Construction Permits

A construction permit may be suspended or revoked in accordance with Section 3.2 of this rule. *Acknowledged.*

4.2.8 Avoidance of Public Health Hazard or Risk

A construction permit for a **Public** water system shall not be issued or renewed if the Secretary determines that operation of the system will constitute a public health hazard or public health risk. *Acknowledged.*

Part 11 Minimum Standards for Public Non-Transient Non-Community and Public Transient Non-Community Water Systems

11.1 Introduction and Definitions

11.1.0 General

This part provides regulation and guidance for potable water sources, storage, and distribution systems serving **Public Non-Transient Non-Community** water systems and **Public Transient Non-Community** water systems. Information to be submitted with permit applications, methodologies to be used in source evaluation, and minimum standards for construction and operation of such systems are provided.

Public Transient Non-Community water systems are administered by the Department's Drinking Water and Groundwater Protection Division.

These standards and limits represent minimum criteria. Designers should note that the use of this part requires professional judgement. The standards are minimal and the safety factors are marginal, and will not yield satisfactory designs, by themselves, in all situations.

These regulations have two principal goals:

- (a) the prevention of health hazards caused by water sources of inadequate quality and quantity; and
- (b) the assurance that water sources and distribution systems are adequate for the needs of a project.

11.2 Preconstruction Requirements

11.2.0 General

For all **Public Non-Transient Non-Community** water systems and **Public Transient Non-Community** water systems, a water source site plan, basis of design statement, and design plans and specifications, along with all available information on the source, must be submitted with the permit application.

Increased demands to existing or previously approved **Public Non-Transient Non-Community** water systems and **Public Transient Non-Community** water systems will require analysis of additional maximum day demand and/or instantaneous peak demand. *This will take the form of an*

engineer's report in its final form. In the meantime this technical review with responses is used to demonstrate compliance with Appendix A, Part 11.

11.2.1 Basis of Design

A statement of the basis of design, and supporting calculations, shall include:

- (a) Average Day Demand; *2597 GPD (Please see attached Basis of design Flow Summary)*
- (b) Maximum Day Demand; *3.61 GPM (2,597 /720 min)*
- (c) Instantaneous Peak Demand; *38.0 GPM Please see the attached Fixture Unit Calculation Sheet*
- (d) Source Capacity; *TBD*
- (e) Storage Capacity; *TBD*
- (f) Pump Capacities; *_38.0 GPM Match Peak Demand*
- (g) Operating Pressure Ranges; *35 to 45 psi* and
- (h) reference to the flood plain *There are no mapped flood plains within 1/2 mile of the site.*

11.2.2 Water Source Site Plan

A water source site plan shall include:

- (a) plan view at a scale of 1" = 200', or larger; *See Sheet C1.1*
- (b) surface drainage features and general topography; *See Sheets C1.0 and C1.1*
- (c) potential sources of contamination within the distances listed in Appendix A Part 11 Tables 11-1 and 11-2; *See attached PSOC plans and narrative*
- (d) neighboring wells as shown in the interference monitoring distance table; and *See attached PSOC plans.*
- (e) minimum separation zones per Appendix A Subpart 11.4.1. *See Sheet C1.1*

11.2.3 Design Plans and Specifications

The design plans and specifications shall include:

- (a) source development, transmission, storage and distribution; *See Sheet C1.1 for the proposed well location and transmission to the proposed building.*
- (b) system component site plan at a scale of 1" = 100', or larger; *See Sheet C1.1 for the site components. See sheet C2.2 for the conceptual water storage layout if the well is developed with a source capacity less than the instantaneous peak or if the use of casing storage is not suitable.*
- (c) piping, valving and standard pressure; and *See sheet C2.4 for the conceptual water storage and pumping layout*
- (d) specific construction instructions. *See Sheet C2.4 for the water supply technical specifications.*

11.2.4 Source Development and Testing

11.2.4. Projects with Maximum Day Demand of 5 gpm or less *This project has a MDD of 3.61 GPM.*

These projects will be permitted prior to water source development unless there is reason to suspect that sufficient water may not be available *(the existing well that currently serves the Alburgh Crossroad Maplefields has a reported capacity of 30 GPM. The proposed well will likely rely upon the same gravel deposit that the Alburgh Crossroad Maplefields well uses to supply the project.*

The existing well is to be taken out of service for project expansion), in which case the Secretary may:

- (a) require that the water source be developed and tested before the permit is issued; or
- (b) issue a permit with a condition that the water source be developed and tested before a subdivision is created, a building is constructed or a mobile home park is established.

11.2.4.2 Projects with Maximum Day Demand of More Than 5 gpm (*Not Applicable*)

11.2.4.3 Subdivision With Individual On-Site Sources (*Not Applicable*)

11.3 Water System Demand

11.3.0 Average Day Demand

- (a) For **Public** water systems, the average day demand shall be determined according to the design flows per Appendix A, Part 2, Table A2-1 of this rule. *2,597 GPD (Please see attached Basis of Design Flow Summary*
- (b) For residential units average day demand shall be 90% of the design flow. (*Not Applicable*)
- (c) Installation of low flow plumbing fixtures, 3.5 gallon or less flush toilets, 3.0 gallon per minute or fewer showerheads, and faucet aerators will allow for a 10% reduction in design flows as calculated from Table A2-1. *The credit has been taken.*

11.3.1 Maximum Day Demand

The maximum day demand is calculated by dividing the average day demand by not more than 720 minutes. The resulting flow rate is expressed in gallons per minute. *3.61 GPM (2,597 /720 min)*

11.3.2 Instantaneous Peak Demand

The instantaneous peak demand, expressed in gallons per minute (gpm), shall be calculated as follows:

- (a) determined by the State Plumbing Code; or *To be provided.*
- (b) for residential units only, the instantaneous peak demand equals 5 gpm multiplied by the number of units.

11.4 Isolation and Separation Distances

11.4.0 General

The proposed site of the water source for the building or project shall be approved by the Secretary before the source is developed. *This was achieved with the issuance of the WW permit which recognized the well isolation distances depicted on Sheet C1.1.*

Adequate horizontal isolation distances between wells and potential sources of contamination are required. *Acknowledged.*

Table A11-1 - REQUIRED HORIZONTAL MINIMUM SEPARATION DISTANCES

POTENTIAL SOURCE OF CONTAMINATION AND OTHER SITING LIMITATIONS	SEPARATION DISTANCE
Roadway, Parking Lot (outer edge of shoulder)	25 Feet <i>(27 feet)</i>
Driveway (Fewer than 3 residences)	15 Feet <i>(27 feet)</i>
Sewage System Disposal Fields	(See a.) <i>(329 feet)</i>
Subsurface Wastewater Piping and Related Tanks	50 Feet <i>(150 feet)</i>
Property Line	10 Feet (See b.) <i>(15 feet)</i>
Limit of Herbicide Application on utility R O W	100 Feet (See c.) <i>(NA)</i>
Surface Water	10 Feet (See d.) <i>(248 feet)</i>
Flood ways	(See e.) <i>(NA)</i>
Buildings	10 Feet <i>(181 feet)</i>
Conc. Livestock Holding Areas & Manure Stor. Systems	200 Feet <i>(NA)</i>
Hazardous or Solid Waste Disposal Site	(See f.)
Non-sewage Wastewater Disposal Fields	(See f.)

f. If a water source is potentially downgradient of a source of contamination, then the Secretary shall apply the criteria in Appendix A Subpart 11.4.2.2. *This is not applicable as the majority of the more severe PSOC are located on the north side of the well. Those lessor PSOC's on the north side of the facility are primarily parking lot 25 feet and downslope from the well.*

Table A11-2 - REQUIRED MINIMUM HORIZONTAL SEPARATION DISTANCES TO SEWAGE SYSTEM DISPOSAL FIELDS^{1,2} (Feet)

11.4.1.0 Separation Distances to Sewage System Disposal Fields

Wells and sewage system disposal fields should be located to optimize the hydrogeologic separation within the project limitations. The applicant's designer must establish a separation zone around the water source which defines the probable area of groundwater recharge to the water source. The separation zone may be established by a presumptive method which uses ground surface topography and minimum distances.

The minimum separation distances for leachfields can be also estimated by using methods to define Source Protection Areas in accord with procedures defined in this rule (see Appendix A Part 3), or with other methods approved by the Secretary.

The isolation areas depicted on Sheet C1.1 depict the minimum recommended standard of being Greater than 150-feet upgradient of the wastewater disposal system. This separation distance does not recognize the hydraulic isolation represented by the thick clay layer between the surface contamination sources and the underlying gravel aquifer.

11.4.1.1 Presumptive Minimum Separation Zone Methods for a Water Well *See discussion above.*

11.4.1.2 Presumptive Minimum Separation Zone Methods for a Shallow Water Source *(Not applicable)*

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11.4.2.0 Requirements for Investigation of Potential Hydrogeologic Connections Between Water Sources and Sewage Disposal Fields *See discussion in above section 11.4.1.0 as it relates to the lack of hydraulic connection between the wastewater disposal system and the proposed well aquifer.*

- (d) If a detailed hydrogeologic investigation demonstrates a time of travel exceeding two years in accordance with Appendix A Subpart 11.4.2.1, then the minimum separation zone around the well head may be reduced to a radius of not less than 100 feet. *The attached time of travel study shows that the existing time far exceeds the 2-year standard.*

11.4.2.1 Two Year Time of Travel *(Not required for this proposed well)*

11.5 Well and Spring Construction Standards

11.5.0 Water Well

The requirements of this subpart presume that water wells are constructed in compliance with Appendix A, Part 12 (Construction and Isolation Standards for Wells).

11.5.1 Spring and Shallow Well Construction *(not applicable and removed for brevity).*

11.6 Water Quantity Testing

11.6.0 Water Sources

11.6.0.1 Projects with a Maximum Day Demand of 5 gpm or less: *This project has a MDD of 3.61 GPM*

These projects:

- (a) may use 50 percent of the well drillers estimated yield as long term yield; and
(b) if project maximum day demand is greater than 50 percent of the well drillers estimated yield, a constant discharge pumping test as defined in Appendix A Subpart 11.6.1 is required. *Acknowledged and TBD depending on the actual well drillers estimated yield.*

11.6.0.2 Projects with Maximum Day Demand of more than 5 gpm *(Not applicable)*

11.6.0.3 Springs *(Not applicable)*

11.6.1 Long Term Yield Testing *(To be determined if this testing is required, see 11.6.0.1)*

11.6.1.1 Water Wells

When a constant discharge test is required by the provisions of Appendix A Subpart 11.6.0, the following conditions shall be met:

- (a) the test shall be designed and analyzed by a qualified hydrogeologist, or a professional engineer, who is proficient in well testing and analyses;
(b) the test shall be conducted for the durations listed in Table A11-3 at a pumping rate greater than or equal to the required maximum day demand of the well;
(c) water level drawdown and rate of discharge shall be measured using accepted methods at intervals that will plot evenly on a logarithmic scale graph;
(d) the draw down measurements shall continue into the recovery period for two days or until a minimum of 90% recovery is achieved whichever occurs first.
(e) alternate testing methods may be considered by the Secretary; and
(f) monitoring for interference shall be performed as required in Appendix A Subpart 11.6.3.

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Table A11-3 - CONSTANT DISCHARGE PUMPING TEST DURATION

MAXIMUM DAY DEMAND OF WELL ^a	MINIMUM TEST LENGTH, HOURS
0.0 - 1.9 gpm	24
2.0 - 4.9 gpm	36
5.0 - 7.9 gpm	48 ^b
8.0 - 49.9 gpm	72
50.0 - 99.9 gpm	96
100 gpm or Greater	120

11.6.1.2 Shallow Water Sources (*Not applicable*)

11.6.2 Long Term Yield Analysis (*To be determined if this is required, see 11.6.0.1*)

The following material shall be submitted to the Secretary for approval:

- (a) “as-built” water source site plans;
- (b) pumping test data;
- (c) predicted long-term yield and method of analysis;
- (d) predicted interference; and
- (e) all supporting graphs and calculations.

11.6.2.1 Water Wells

The analysis shall predict the long term yield that shall meet or exceed the following criteria:

- (a) constant withdrawal at the Average Day Demand for 180 days; and
- (b) drawdown shall not exceed 90 percent of the total available head

11.6.2.2 Springs (*Not applicable*)

Analysis of monitoring data shall follow accepted hydrogeologic methods such as low flow analyses or other suitable methods.

11.6.2.3 Shallow Water Sources Excluding Springs

Analyses shall be in accordance with Appendix A Subpart 11.6.2.1 and take into account seasonal low static water level. (*Not applicable*)

11.6.3 Interference Testing and Analysis

- (a) Any existing water source for a public or private potable water system, located within the distances specified in Table A11-4 shall be located and reported with the application. The Secretary may require interference testing to assess the impact of the project well or wells on, and/or from, other water sources. *The Dollar General well is located 256 feet from the proposed well.*

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**Table A11-4 - MONITORING DISTANCES FROM TEST WELLS
MONITORING DISTANCE FROM TEST WELL TO A POTABLE WATER
SOURCE**

MDD OF TESTED WELL (GPM)	DISTANCE, FT.
0 - 1.9	0 - 200
2 - 4.9 (<i>3.71 GPM</i>)	0 - 500
5 - 19.9	0 - 1000
20 - 49.9	0 - 2000
50 - 99.9	0 - 2500
100 or greater	0 - 3000

11.7 Water Quality

11.7.0 Water Quality Requirements for **Public Transient Non-Community**

Public Transient Non-Community water systems shall be designed to provide potable water. The requirements for water quality testing are as follows:

- (a) All **Public Transient Non-Community** water systems shall monitor initially for contaminants as follows:
 - (1) **Public Transient Non-Community** water systems shall initially monitor for all the contaminants identified in Tables A11-5 and A11-6.

**Table A11-5 - SECONDARY CONTAMINANT STANDARDS FOR
Public Transient Non-Community water systems and Non-Public Systems Requiring a Permit**

Secondary Contaminant	Secondary Max. Contaminant Level
Chloride	250 mg/l
Sodium	250 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor	3 threshold odor number
pH	6.5 to 8.5

**Table A11-6 - PRIMARY CONTAMINANT STANDARDS FOR PUBLIC TRANSIENT
NON-COMMUNITY WATER SYSTEMS**

Primary Contaminant	Maximum Contaminant Level
Arsenic	0.050 mg/l
Nitrate	10 mg/l
Nitrite	1.0 mg/l
Total Coliform Bacteria	Absent
Uranium	20 ug/l

- (b) The Secretary may require the monitoring and compliance with the additional contaminants not listed in Tables A11-5, A11-6, and A11-7, as well as with the contaminants listed in these tables when there is reason to suspect their presence, or suspect a public health or welfare risk.

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- (c) **Public Transient Non-Community** water systems shall comply with the sampling and laboratory requirements as described in Subchapter 21-6.
- (d) **Public Non-Transient Non-Community** water systems and **Public Transient Non-Community** water systems shall comply with the water quality standards and monitoring requirements as specified in Subchapter 21-6 of this rule and in 40 CFR, Part 141.
Public Transient Non-Community water systems with contaminants exceeding the primary or secondary standards may be required to treat or abandon the sources at the discretion of the Secretary.
- (e) When a water system is developed before a permit is issued, the analysis shall be part of the permit application.
- (f) When a water system is developed after a permit is issued, the analysis shall be submitted as a permit condition.

11.8 Design Standards for Pumping, Storage and Distribution

11.8.0 General Considerations

The Secretary has jurisdiction over water system appurtenances including pumps, pressure tanks and water storage tanks, including those located within a building.

Service water, storage facilities and all water system appurtenances shall be located to provide adequate isolation from potential sources of contamination.

11.8.0.1 Sample Taps

Sample taps shall be provided so that water samples can be obtained from each water source and from appropriate locations in each unit of distribution.

11.8.0.2 Disinfection Prior to Use

- (a) All walls, pipe, tanks, and equipment which can convey or store potable water shall be disinfected in accordance with AWWA procedures; and

11.8.2 Finished Water Storage

11.8.2.1 Water Storage Requirements

A water system and distribution system must be capable of satisfying both the maximum day demand of a project or building and the instantaneous peak demand of the plumbing system. Unless the combination of the water source, withdrawal system and pressurization system can meet both these criteria, water storage shall be required.

11.8.2.2 Instantaneous Peak Yield Testing

If the water source's long-term yield is less than the water system instantaneous peak demand, then an abbreviated peak demand test may be performed on the source by one of the following methods:

- (a) pumping of the source at the water system instantaneous peak demand rate or greater for a duration at which the total volume pumped equals twice the average day demand. *(2,597 GPD x 2 = 5,194 Gallons)* The pumping test must be supervised by a qualified hydrogeologist, professional engineer, licensed well driller or well servicer. The pump discharge rate shall be measured and recorded at 30 minute intervals with a minimum of three readings. If the pumping discharge rate during the test period is equal to, or greater than

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the water system instantaneous peak demand, and the source is not dewatered to the level of the pump, then no water storage is required to meet instantaneous peak demand, provided the well service pump is capable of delivering at a flow rate equal to, or greater than the peak demand;

- (b) a three hour blow test with flow measurements at less than or equal to 30 minute intervals performed by a licensed well driller;
- (c) licensed well driller's yields determined by methods which do not meet the requirements of Appendix A Subpart 11.8.2.2(a) or (b) shall be divided by two to determine flow rate for instantaneous peak; and
- (d) other methods for determining instantaneous peak yield of the water source may be used if a written proposal detailing them is approved by the Secretary prior to testing.

11.8.2.3 Storage Volume

If the water system instantaneous peak demand exceeds the water source yield and/or the source pump capacity, water storage volume computed by one of the following methods shall be provided:

- (a) storage equal to average day demand if the water source long term yield equals or exceeds two-thirds of the maximum day demand;
- (b) storage equal to 55 percent of average day demand if the water source long term yield equals or exceeds the maximum day demand; or
- (c) storage equal to the following equation if the water source yield equals or exceeds the maximum day demand:

$$S = D (1 - Y/P)$$

Where S = Volume of water storage (gallons)

D = Project average day demand (gallons) (See Appendix A Subpart 11.3);

P = Project water system instantaneous peak demand (gallons/minute) (See Appendix A Subpart 11.3); and

Y = Water source yield (either long term yield per Appendix A Subpart 11.6 or peak yield per Appendix A Subpart 11.8.2.2).

11.8.2.3.1 Casing Storage

A portion of the required storage may be met by using the effective storage provided by the well casing, well tile or spring box. Calculation of the effective storage shall take into account the predicted drawdown of the water level in the casing, based on the daily usage of the water source.

- (a) For water wells, the effective storage shall be determined as follows:
 - (1) for a source where a pumping test and analysis has been performed, the effective storage shall be the volume of water between the predicted drawdown associated with Subpart 11.6.2.1(a) of this rule and the pump cut-off level.
 - (2) for a source where the pumping test and analysis has not been performed, the effective storage shall be the volume of water between the predicted drawdown, as calculated below, and the pump cut-off level.

The predicted drawdown shall be based on the long term yield, the maximum day demand and the total available head as follows:

Vermont Water Supply Rule

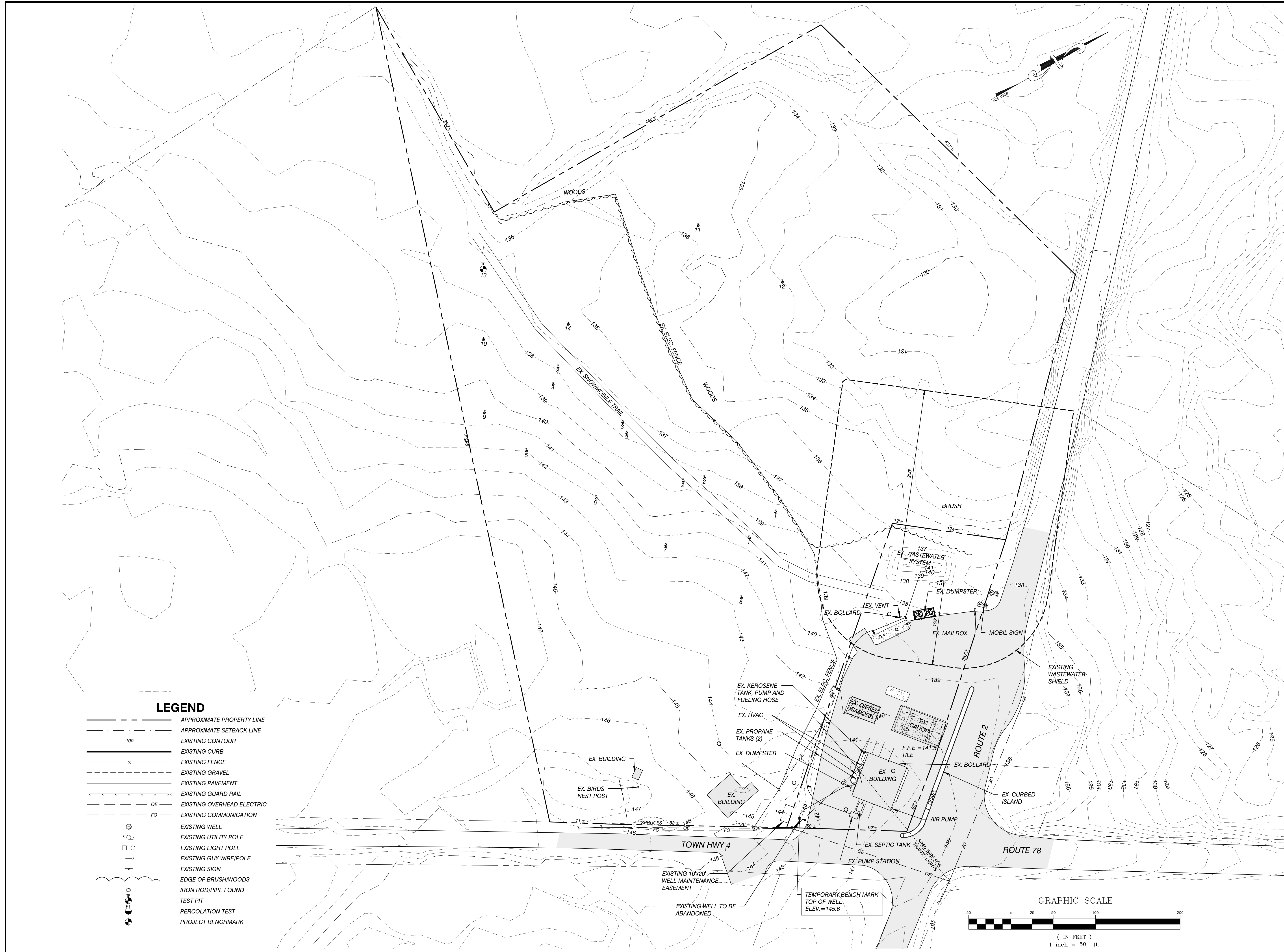
$$DD = SE + (TAH (MDD / Y))$$

where DD= depth to predicted drawdown, below ground surface (ft)
SE= depth to static water level in well, below ground surface (ft)
TAH= total available head (ft)
MDD=maximum day demand (gpm)
Y= long term yield (gpm) (per 11.6)

- (b) for shallow water sources, the effective storage is one half of the volume between the annual low water level and the outlet or pump cut off level.

11.8.2.4 Reservoirs General

The materials and designs used for finished water storage structures shall provide stability and durability as well as protect the quality of the stored water. Steel structures shall follow the current AWWA standards concerning steel tanks, reservoirs, and elevated tanks wherever they are applicable. Other materials of construction are acceptable when properly designed and approved by the Secretary. Design for cast-in-place and pre-cast concrete structures must be reinforced and specify the material for sealing the joints. Reservoirs should be tested for leakage.



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 ST. ALBANS
 VERMONT 05478

PROJECT:
PROPOSED SITE IMPROVEMENTS
 CROSSROADS MOBIL
 VT ROUTE 78/U.S. ROUTE 2
 ALBURGH, VT

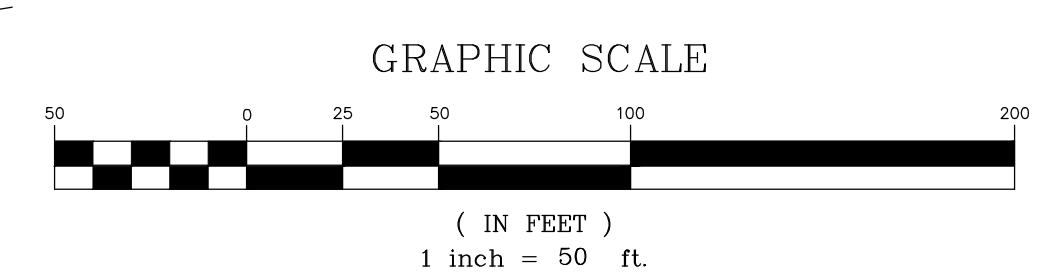
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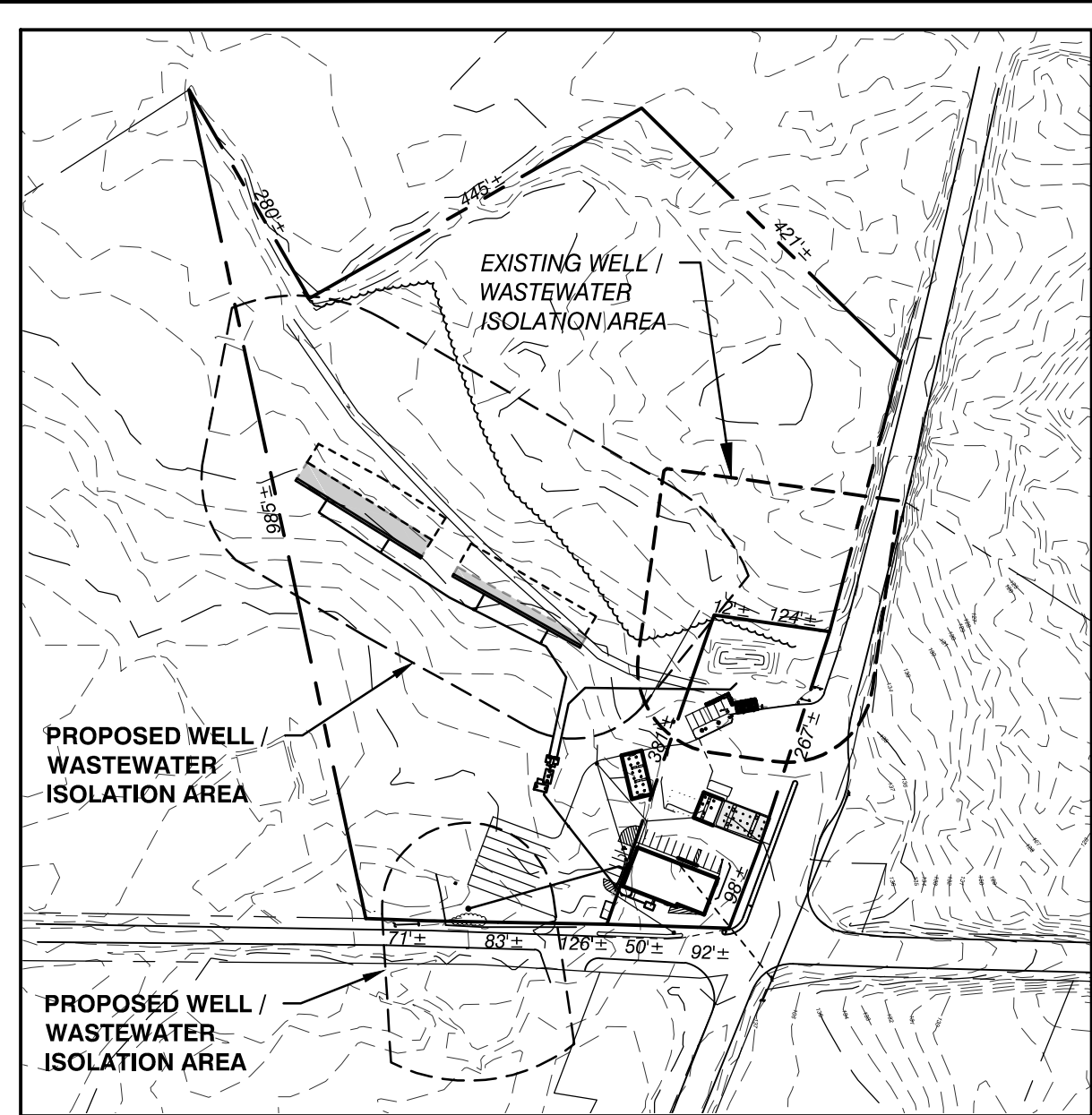
EXISTING CONDITIONS PLAN

DATE 04/16/2021	DRAWING NUMBER C1.0
SCALE 1" = 50'	PROJ. NO. 17160.02

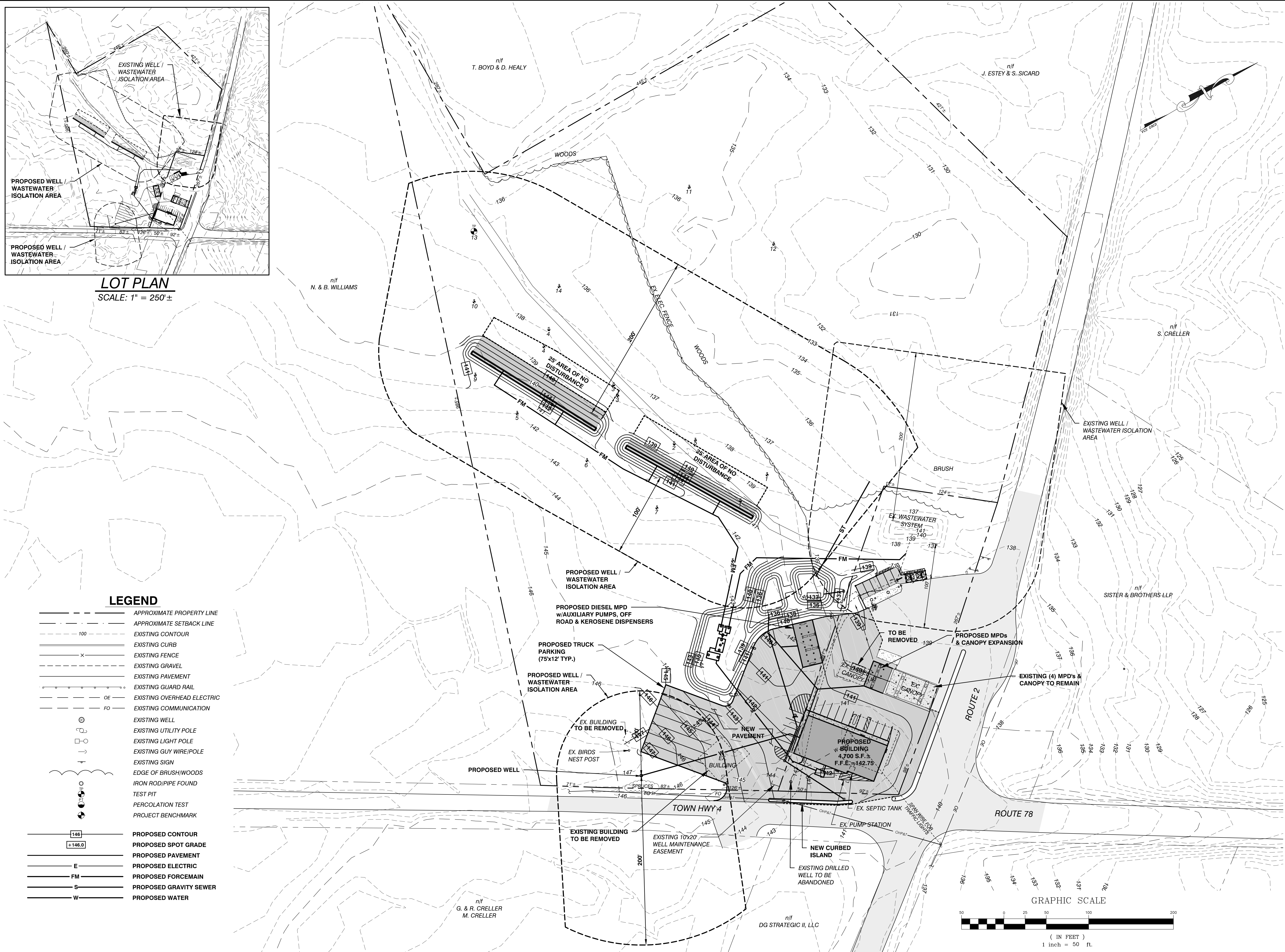
LEGEND

- APPROXIMATE PROPERTY LINE
- APPROXIMATE SETBACK LINE
- - - - - EXISTING CONTOUR
- ==== EXISTING CURB
- - - - - EXISTING FENCE
- EXISTING GRAVEL
- ==== EXISTING PAVEMENT
- EXISTING GUARD RAIL
- OE --- EXISTING OVERHEAD ELECTRIC
- FO --- EXISTING COMMUNICATION
- EXISTING WELL
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING GUY WIRE/POLE
- EXISTING SIGN
- ~ ~ ~ ~ ~ EDGE OF BRUSH/WOODS
- IRON ROD/PIPE FOUND
- TEST PIT
- PERCOLATION TEST
- PROJECT BENCHMARK





LOT PLAN
SCALE: 1" = 250' ±



LEGEND

- APPROXIMATE PROPERTY LINE
- APPROXIMATE SETBACK LINE
- 100' --- EXISTING CONTOUR
- EXISTING CURB
- X --- EXISTING FENCE
- EXISTING GRAVEL
- EXISTING PAVEMENT
- EXISTING GUARD RAIL
- OE --- EXISTING OVERHEAD ELECTRIC
- FO --- EXISTING COMMUNICATION
- EXISTING WELL
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING GUY WIRE/POLE
- EXISTING SIGN
- EDGE OF BRUSH/WOODS
- IRON ROD/PIPE FOUND
- TEST PIT
- PERCOLATION TEST
- PROJECT BENCHMARK
- 146 --- PROPOSED CONTOUR
- +146.0 --- PROPOSED SPOT GRADE
- PROPOSED PAVEMENT
- E --- PROPOSED ELECTRIC
- FM --- PROPOSED FORCEMAIN
- S --- PROPOSED GRAVITY SEWER
- W --- PROPOSED WATER

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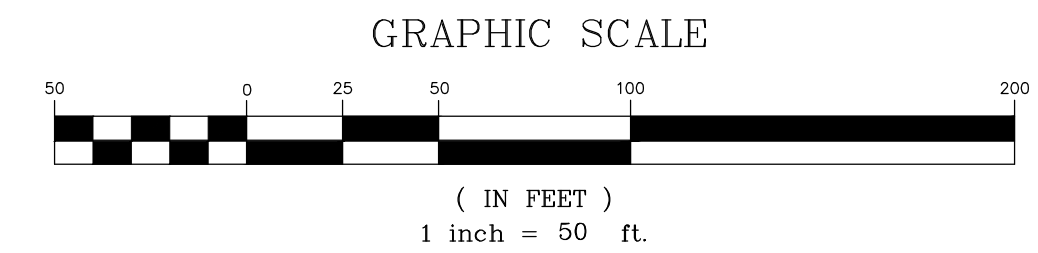
CROSSROADS MOBIL
VT ROUTE 78/U.S. ROUTE 2
ALBURGH, VT

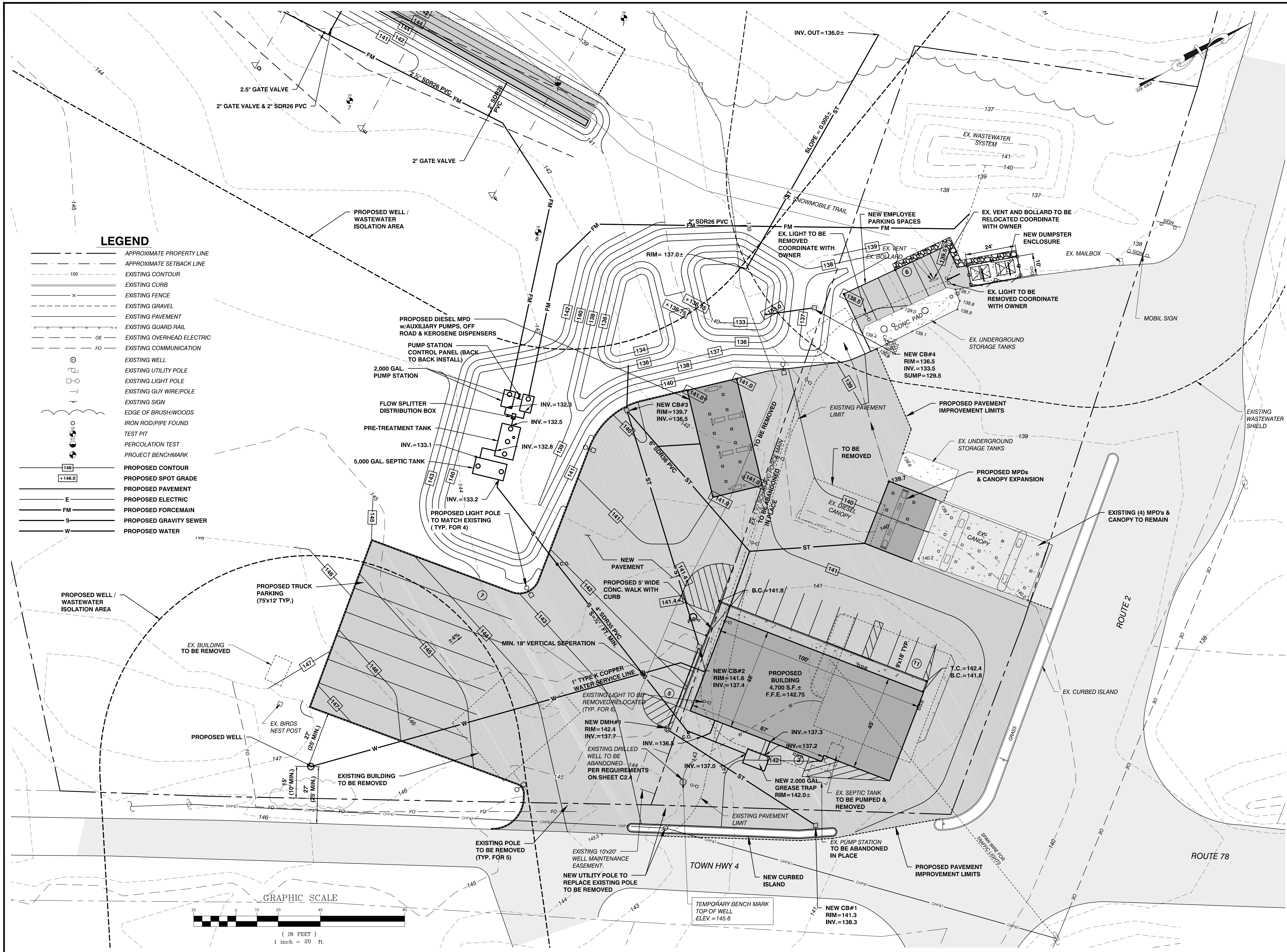
DATE	CHECKED	REVISION
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OVERALL PROPOSED CONDITIONS PLAN

DATE: 04/16/2021
SCALE: 1" = 50'
PROJ. NO: 17160.02

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PARTIAL PROPOSED CONDITIONS PLAN
BUILDING SITE

DATE
 04/16/2021
 SCALE
 1" = 20'
 PROJ. NO.
 17160.02

DRAWING NUMBER
C1.2

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WATER SYSTEM NOTES

1. Design Basis:

- A. Average Day Demand = 2,597 GPD
- B. Maximum Day Demand = 2,597/720 min = 3.607 GPM
- C. Instantaneous Peak Demand = 38 GPM

2. Design Intent: It is intended that the water storage and distribution system work in the following manner:

- A. Water shall be pumped from the existing well into the hydro-pneumatic tank to provide the appropriate pressure to the distribution system in the building.

3. Piping:

- A. From new well to existing water line: Shall be 2" Copper Type "K" pipe.
- B. From Hydro-pneumatic Tank and through-out the distribution system: Shall be 3/4" Copper Type "K" pipe.

11.8.2.4.13 Disinfection

- (a) Finished water storage structures shall be disinfected in accordance with correct AWWA Standard C652. Two or more successive sets of samples, taken at 24-hour intervals, shall indicate microbiologically satisfactory water before the facility is placed into operation;
- (b) disposal of heavily chlorinated water from the tank disinfection process shall not be discharged to groundwater or surface water; and
- (c) the disinfection procedure (AWWA chlorination method 3, section 4.3 C652) which allows use of the chlorinated water held in the storage tank for disinfection purposes is not recommended. When that procedure is used, it is required that the initial heavily chlorinated water be properly disposed in order to prevent release of water which may contain various chlorinated organic compounds into the distribution system.

- 5. Pressure Pump: Shall be suitable to pump to pressures ranging from 25 psi to 45 psi for the Hydro-pneumatic tank located in the basement of the building. Using a flow of 48 GPM and a total head of 45 psi with a TDH of 144 feet.

- 6. Pressure Tanks: A new pressure tank shall be sized to provide adequate minimum run time for pump. Use 22"Ø AMTROL WELL-X-TROL WX-252 or an approved equal.

7. Pump Controls: Shall include the following:

- A. Manual/Auto pump on/off switches for both the booster pump and the well pump.
- B. Visual and audible alarms to be triggered under the following conditions:

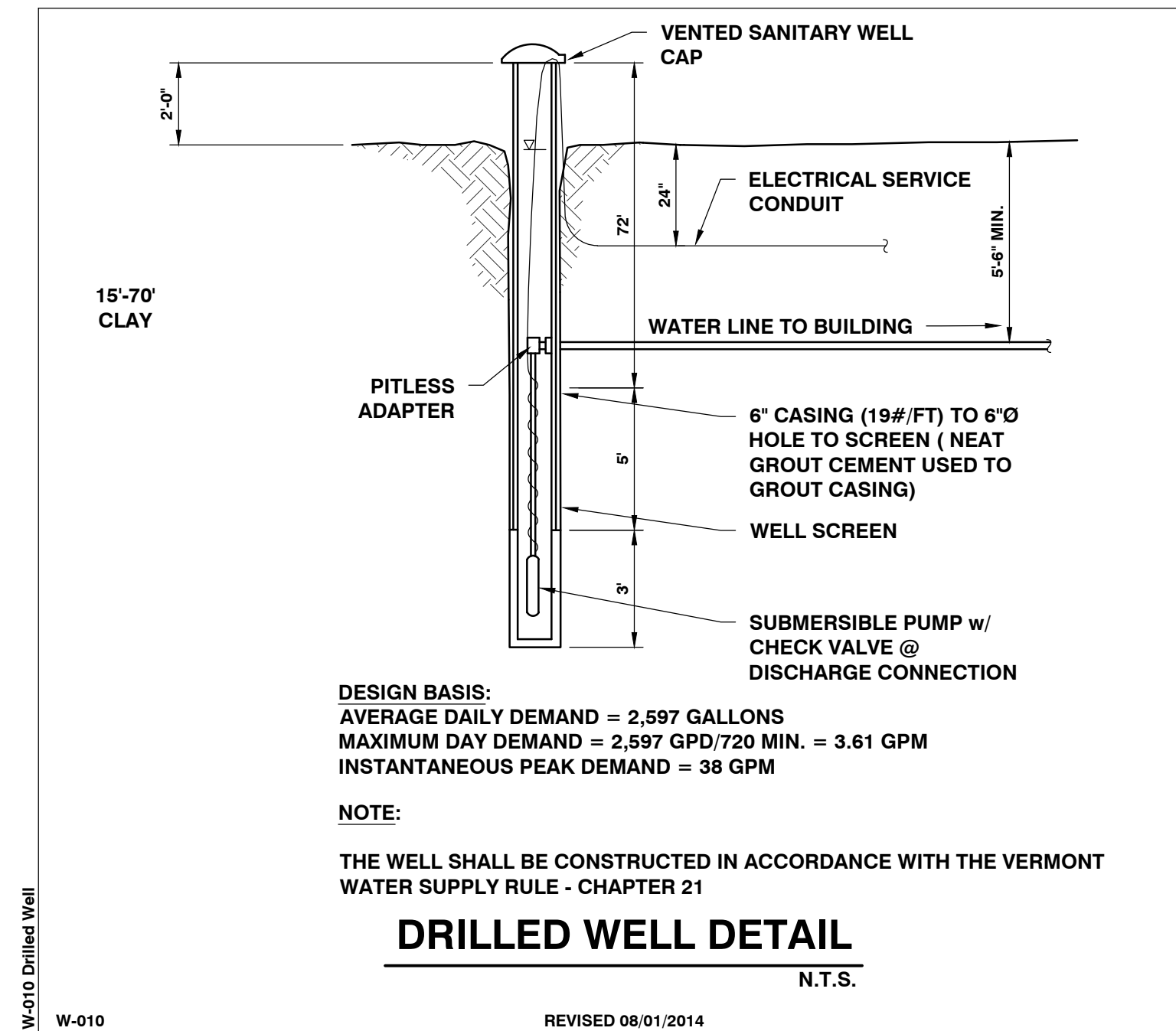
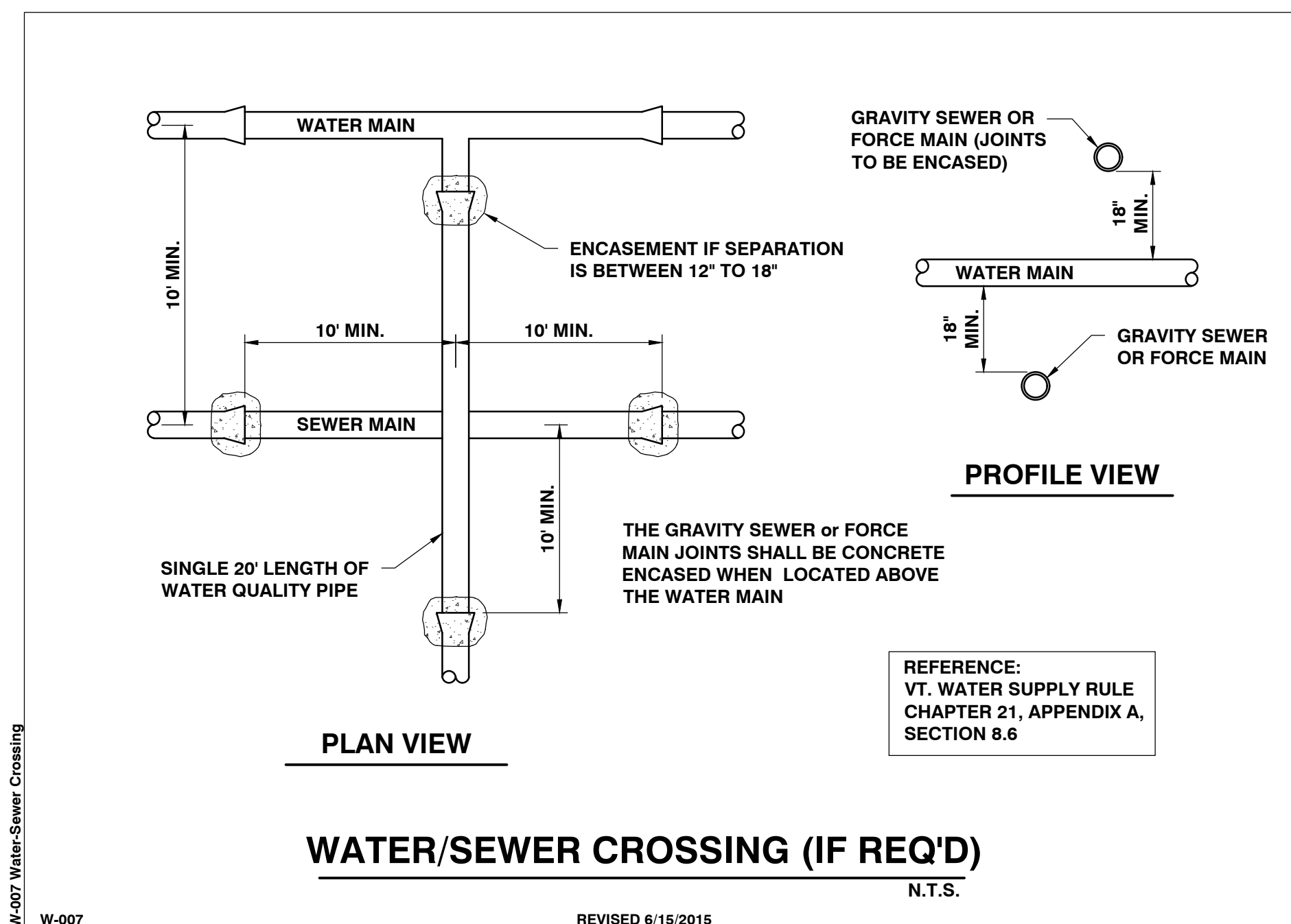
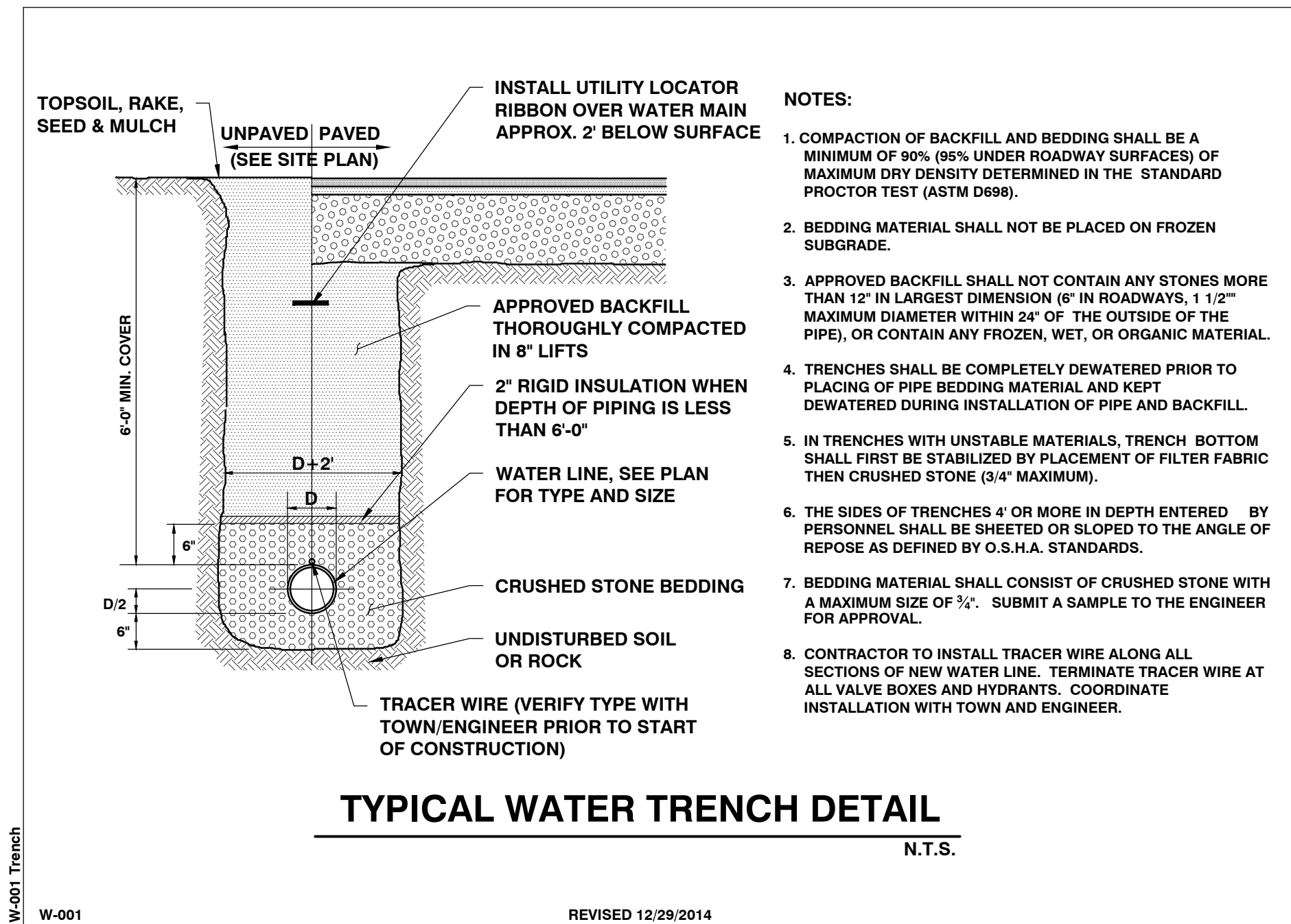
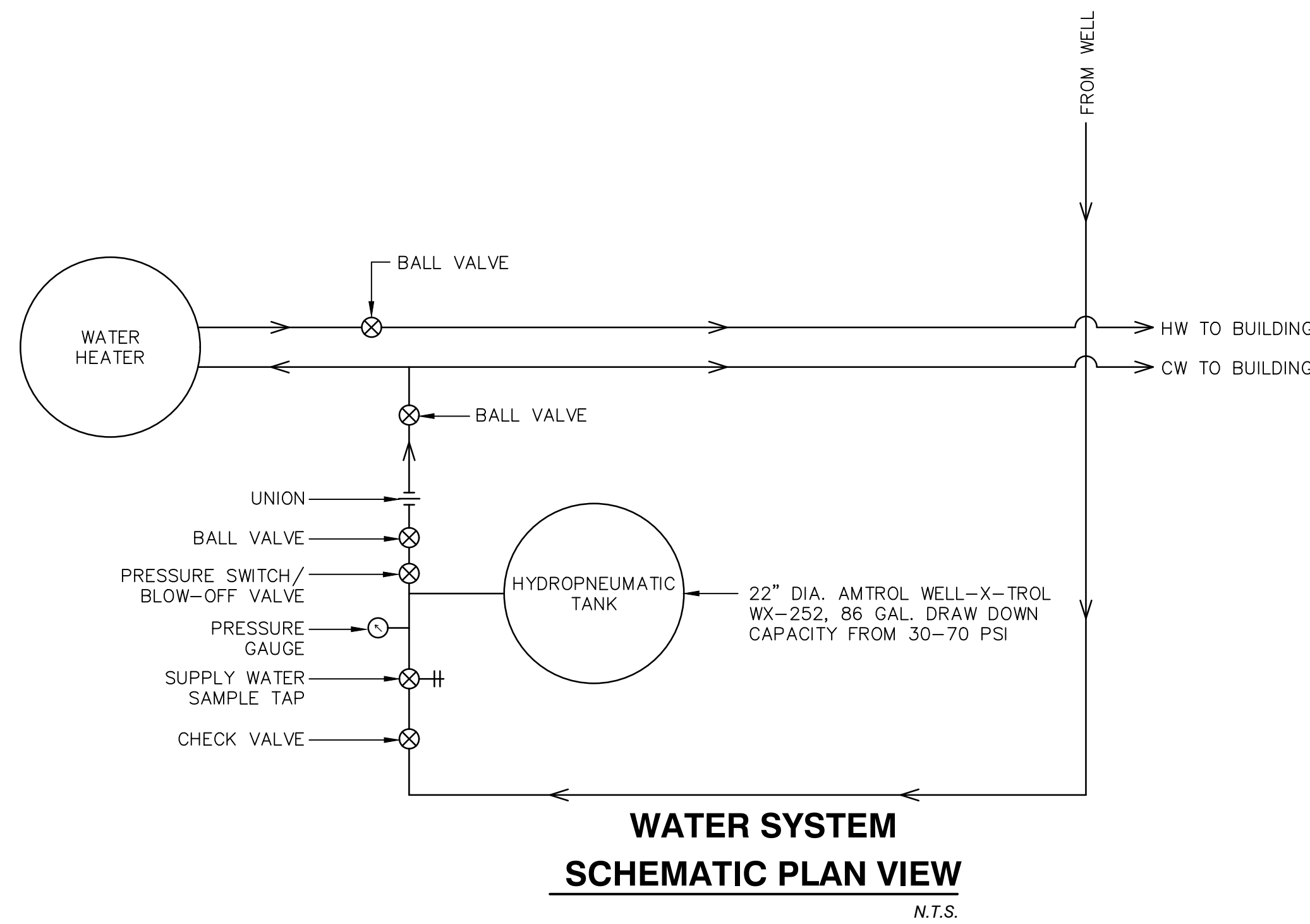
- 1) System pressure loss
- 2) Low water level in storage tank
- 3) High water level in storage tank

- C. An individual, labeled indicator light shall be provided for each of the above conditions.
- D. Low level shut-off for submersible pump shall be provided to protect the pump at the same level as the Low Water alarm.
- E. Low well level protection for the well pump.
- F. Level switches in storage tank shall be float type for use in potable water supplies.

8. Disinfection Prior to Use:

- A. All wells, pipes, tanks, and equipment which can convey or store potable water shall be disinfected in accordance with AWWA procedures
- B. Wells: Shall be disinfected in accordance with AWWA C654-87.
- C. Storage Tank: Shall be disinfected in accordance with AWWA C652-92
- D. Water Mains & Piping: Shall be disinfected in accordance with AWWA C651-92

- 9. All plumbing shall be performed by a licensed plumber in accordance with the National Plumbing Code.
- 10. All electrical work shall be performed by a licensed electrician in accordance with the National Electric Code.



Potential Source of Contamination and other Siting Limitations	Separation Distance
Roadway, Parking Lot (outer edge of shoulder)	25'
Driveway (less than 3 residences)	15'
Sewage System Disposal Fields	a.
Subsurface Wastewater Piping and Related Tanks	50'
Property Line	10'b
Limit of Herbicide Application on Utility R.O.W.	100'c
Surface Water	10'd
Flood ways	e.
Buildings	5'
Concentrated Livestock Holding Area & Manure Storage Systems	200'
Hazardous or Solid Waste Disposal Site	f.
Non-sewage Wastewater Disposal Fields	f.

a. See Table 11-2, FIG 11-1 of VT WATER SUPPLY RULE, CH. 21
b. Increased to 50' when adjacent to agricultural cropland.
c. Applies to rights-of-way (ROW) where herbicides have been applied in the past 12 months or may be applied in the future. This distance may be increased to 200' depending on the active ingredient in the herbicide according to Vermont Regulations for Control of Pesticides.
d. For Public water sources, see Appendix A, part 3, Subpart 3.3.8.
e. Water sources shall not be located in a flood way.
f. If a water source is potentially downgradient of a source of contamination, then the Agency shall apply the criteria in 11.4.2.2.

VERMONT WATER SUPPLY RULE - CHAPTER 21
TABLE A11-1 - REQUIRED MINIMUM SEPARATION DISTANCES

- (c) Closure of a groundwater potable water source that is equal to or greater than 20 feet deep shall be performed by a well driller
- (d) Closure of a groundwater potable water source shall be completed by taking the following steps:
 - (1) Clearing the potable water source of any pumps, wires, and piping.
 - (2) Removing the cover and all other materials that will interfere with effective closing.
 - (3) Sealing the potable water source to prevent exchange of water from one aquifer to another or out of the casing.
 - (4) For a potable water source that is equal to or greater than 20 feet deep, completely filling the casing and bore hole with the following grouting materials:
 - (A) For potable water sources located at solid waste disposal facilities, hazardous waste facilities, or contaminated sites, bentonite or Portland Type I or III Cement.
 - (B) For potable water sources at all other locations, acceptable sealing materials based on site specific conditions, such as:
 - (i) cement grout;
 - (ii) bentonite grout slurry (15 percent solids by volume);
 - (iii) bentonite chips;
 - (iv) a sealing material or other material to render the bore hole a simpering as the surrounding native material; or
 - (v) alternating 50-foot layers of clean stone, pea stone, or sand and 10-foot sections of bentonite with the last 10-foot layer to just below ground surface filled with neat cement.
 - (5) For a potable water source that is less than 20 feet deep, completely filling the well tile with soil or other material to ground surface.
 - (6) Cutting or removing the casing so that the remaining casing terminates below finished ground surface.

EXISTING WELL ABANDONMENT REQUIREMENTS

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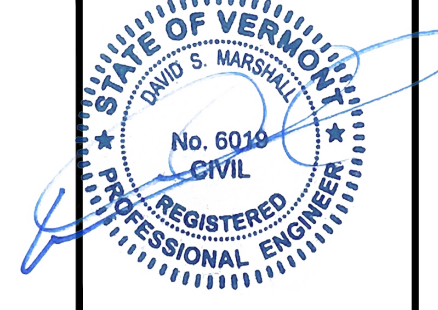
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PROJECT:

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ALBURGH, VT

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WATER DETAILS

DATE
04/16/2021

SCALE
AS SHOWN

PROJ. NO.
17160.02

DRAWING NUMBER

C2.4

PROJECT COORDINATION

PART 1 - GENERAL

1.01 MEETINGS & PROJECT ACCESS

- A. The Owner shall be notified five (5) days prior to commencement of Work by the Contractor.
B. The Contractor will coordinate with the Owner to arrange an on-site pre-construction meeting prior to commencement of any work.
C. The Contractor will coordinate all phases of the Work, so as not to interfere with the normal work procedures in the area.
D. The Contractor shall conduct his work in such a manner as to not interfere with or endanger work or traffic in areas adjacent to the construction area, except as permitted by the Owner.

1.02 LABOR

- A. The Contractor and subcontractors will employ mechanics skilled in their respective trades.
B. All labor will be performed in a neat and workmanlike manner.

1.03 PROTECTION OF PERSONS AND PROPERTY

- A. The Contractor shall be responsible for initiating, maintaining, and supervising all O.S.H.A. safety precautions in connection with the Work.
B. Fire Protection: The Contractor shall take all necessary precautions to prevent fires adjacent to the Work and shall provide adequate facilities for extinguishing fires.
C. Safety Precautions: Prior to commencement of Work, the Contractor shall be familiar with all safety regulations and practices applicable with construction operations.

1.04 CORRECTION OF WORK

- A. The Contractor shall promptly correct all Work rejected by the Owner as defective or as failing to conform to the Contract Documents. The Contractor shall bear all cost of correcting such rejected Work.

1.05 WEATHER CONDITIONS

- A. No Work shall be done when, in the opinion of the Owner, the weather is unsuitable. No concrete, earth backfill, embankment, or paving shall be placed upon frozen material.
B. Protection Against Water and Storm: The Contractor shall take all precautions to prevent damage to the Work by storms or by water entering the site of the Work directly or through the ground.

1.06 DISPOSAL OF DEBRIS

- A. All debris and excess materials, other than that which is authorized to be reused, become the property of the Contractor and shall be promptly removed from the property. The Contractor shall receive title to all debris and/or excess material.

1.07 PROJECT LAYOUT

- A. The Contractor shall be responsible for providing all necessary survey staking.
1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Establish a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.

1.08 TESTING

- A. The Contractor is responsible for obtaining testing and inspection services.

SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:

- 1. Remove surface debris.
2. Clear site of plant life and grass.
3. Remove trees and shrubs.
4. Remove root system of trees and shrubs.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PROTECTION

- A. Protect utilities that remain from damage.
B. Protect trees, plant growth, and features designated to remain as final landscaping.
C. Protect bench marks and existing structures from damage or displacement.
D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
E. Maintain access to the site at all times.

3.02 CLEARING

- A. Clear areas required for access to site and execution of Work.
B. Remove trees and shrubs within marked areas. Remove stumps, roots and tap roots and other projections 1" or greater in diameter to 2'-0" below the excavated surfaces in cut areas and 2'-0" below the exposed subgrade in fill areas.

3.03 REMOVAL

- A. Remove debris, rock, and extracted plant life from site unless otherwise noted on plans.

3.04 UTILITIES

- A. Coordinate with utility companies and agencies as required.

SITE EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:

- 1. All excavation (unless covered in other sections of these specifications), removal and stockpile of topsoil, stabilization fabric, and other miscellaneous and appurtenant works.
2. Site filling.
3. Roadway structural sections.

1.02 PROTECTION

- A. Protect bench marks and existing structures.
B. Protect above or below grade utilities which are to remain.

1.03 SUBMITTALS

- A. Testing laboratory reports indicating that material for backfill meets requirements of this Section.
B. Field density test reports of site fill in place.
C. Field density test reports for roadway structural sections in place.
D. Stabilization Fabric: Submit copies of manufacturer's specifications and installation instructions.

PART 2 - PRODUCTS

2.01 STRUCTURAL FILL - CRUSHED GRAVEL (AOT SPEC. 704.05, FINE)

- A. All materials shall be secured from approved sources. This gravel shall consist of angular and round fragments of hard durable rock of uniform quality throughout, reasonably free from thin elongated pieces, soft or disintegrated stone, dirt, organic or other objectionable matter. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent by Weight Passing Square Mesh Sieve. Rows include 2", 1 1/2", No. 4, No. 100, No. 200.

At least 50% by mass (weight) of the material coarser than the No. 4 sieve shall have at least one fractured face.

2.02 CRUSHED GRAVEL (AOT SPEC. 704.05, COARSE)

- A. All materials shall be secured from approved sources. This gravel shall consist of angular and round fragments of hard durable rock of uniform quality throughout, reasonably free from thin elongated pieces, soft or disintegrated stone, dirt, organic or other objectionable matter. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent by Weight Passing Square Mesh Sieve. Rows include 4", No. 4, No. 100, No. 200.

At least 50% by mass (weight) of the material coarser than the No. 4 sieve shall have at least one fractured face.

2.03 COMPACTED FILL/GRANULAR BORROW

- A. All materials shall be secured from approved sources. This gravel shall consist of angular and round fragments of hard durable rock of uniform quality throughout, reasonably free from thin elongated pieces, soft or disintegrated stone, dirt, organic matter. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent by Weight Passing Square Mesh Sieve. Rows include 3", 3/4", No. 4, No. 100, No. 200.

2.04 DRAINAGE COURSE (AOT SPEC. 704.16)

- A. All materials shall be secured from approved sources. Rock for drainage applications shall be produced from natural gravels or crushed quarried rock and shall consist of clean, hard, sound, and durable material. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent by Weight Passing Square Mesh Sieve. Rows include 1", 3/4", No. 4, No. 8.

2.05 DENSE GRADED CRUSHED STONE (AOT SPEC. 704.06)

- A. All materials shall be secured from approved sources. Dense Graded Crushed Stone shall consist of clean, hard, uniformly graded, crushed stone. It shall be sufficiently free from dirt, deleterious material, and pieces that are structurally weak. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent Finer by Weight. Rows include 3/4", 3", 2", 1", 1/2", No. 4, No. 200.

Source: This material shall be obtained from crushed quarried rock sources. The area from which this material is obtained shall be stripped and cleaned before blasting.

Not more than 30% by mass (weight) of the material coarser than the No. 4 sieve shall consist of thin and/or elongated pieces.

2.06 RECYCLED ASPHALT PAVEMENT (RAP) 1 1/2" MINUS CRUSHED ASPHALT

- A. All materials shall be secured from approved sources. This material shall be free of Portland Cement and approved by the engineer prior to installation. This material shall not be mixed with gravel and shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent by Weight Passing Square Mesh Sieve. Rows include 2", 1 1/2", No. 4, No. 100, No. 200.

2.07 SAND BORROW AND CUSHION (AOT SPEC. 703.03)

- A. All materials shall be secured from approved sources. Sand Borrow shall consist of material reasonably free from silt, loam, clay, or organic matter. This material shall meet the following grading requirements:

Table with 2 columns: Sieve Designation and Percent Finer by Weight. Rows include 2", 1 1/2", 1/2", No. 4, No. 100, No. 200.

2.08 GEOTEXTILE

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters, with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

- 1. Survivability: Class 3; AASHTO M 288.
2. Grab Tensile Strength: 120 lbf; ASTM D 4632.
3. Tear Strength: 50 lbf; ASTM D 4533.
4. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
5. Permittivity: 1.7 per second, minimum; ASTM D 4491.
6. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355.

- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

- 1. Survivability: Class 3; AASHTO M 288.
2. Grab Tensile Strength: 200 lbf; ASTM D 4632.
3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
4. Tear Strength: 75 lbf; ASTM D 4533.
5. Puncture Strength: 90 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
9. Weight: 4.0 oz./yd² minimum.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum.
B. Identify known below grade utilities. Stake and flag locations.
C. Maintain and protect existing utilities remaining which pass through work area.
D. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Engineer.

3.02 EROSION CONTROL

- A. Erosion control must be installed prior to beginning any earthwork operations.

3.03 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be excavated, re-landscaped or regraded and stockpile in areas designated on site or as directed by the Engineer.
B. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
1. Maintain stockpile free from debris and trash.
2. Keep the topsoil damp to prevent dust and drying out.

3.04 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be regraded in accordance with plans.
B. Excavate subsoil required to accommodate site structures, construction operations, roads, and parking areas.
C. Grade top perimeter of excavation to prevent surface water from draining into excavation.
D. Notify engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
E. Correct areas over-excavated by error as directed by the Engineer.

3.05 DITCHES

- A. Cut accurately to the cross-sections, grades, and elevations shown.
B. Maintain excavations free from detrimental quantities of leaves, sticks, trash, and other debris until completion of the work.
C. Dispose of excavated materials as shown on the drawings or directed by the Engineer; except do not, in any case, deposit materials less than three feet from the edge of a ditch.

3.06 ROADWAY EMBANKMENTS AND BERMS

- A. When embankments are to be made on a hillside, the slope of the original ground on which the embankments are to be constructed shall be stepped and properly drained as the fill is constructed so that adverse movements of the slopes do not occur.
B. Any excavated rock, ledge, boulders, and stone, except where required in the construction of other items or otherwise directed, shall be used in the construction of embankments to the extent of the project requirements and generally shall be placed so as to form the base of an embankment.
C. Frozen material shall not be used in the construction of embankments, nor shall the embankments or successive layers of the embankments be placed upon frozen material. Placement of material other than rock shall stop when the sustained air temperature, below 32 degrees Fahrenheit, prohibits the obtaining of the required compaction. If the material is otherwise acceptable, it shall be stockpiled and reserved for future use when its condition is acceptable for use in embankments.
D. When an embankment is to be constructed across a swamp, muck, or areas of unstable soils, the unsuitable material shall be excavated to reach soils of adequate bearing capacity and the embankment begun. Alternative methods, such as use of a stabilization fabric in place of excavation and backfill, may be utilized only after approval of same by the Engineer.

- E. Material being placed in embankments shall be placed in horizontal layers of uniform thickness across the full width of the embankment. Stumps, trees, rubbish, and other unsuitable material shall not be placed in embankments.
F. Embankment areas shall be placed in eight-inch maximum lifts. Effective spreading equipment shall be used on each layer to obtain uniform thickness prior to compaction. Each layer shall be kept crowned to shed water to the outside edge of embankment and continuous leveling and manipulating will be required to assure uniform density. The entire area of each layer shall be uniformly compacted to at least the required minimum density by use of compaction equipment consisting of rollers, compactors, or a combination thereof. Earth-moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment.

- G. All fill material shall be compacted at a moisture content suitable for obtaining the required density. In no case shall the moisture content in each layer under construction be more than three percent above the optimum moisture content and shall be less than that quantity that will cause the embankment to become unstable during compaction. Sponginess, shoving, or other displacement under heavy equipment shall be considered evidence for an engineering determination of lack of stability under this requirement, and further placement of material in the area affected shall be stopped or retarded to allow the material to stabilize.

- H. When the moisture content of the material in the layer under construction is less than the amount necessary to obtain satisfactory compaction by mechanical compaction methods, water shall be added by pressure distributors or other approved equipment. Water may also be added in excavation or borrow pits. The water shall be uniformly and thoroughly incorporated into the soil by disc, harrowing, blading, or by other approved methods. This manipulation may be omitted for sands and gravel. When the moisture content of the material is in excess of three percent above optimum moisture content, dry material shall be thoroughly incorporated into the wet material, or the wet material shall be aerated by disking, harrowing, blading, rotary mixing, or by other approved methods; or compaction of the layer of wet material shall be deferred until the layer has dried to the required moisture content by evaporation.

3.07 COMPACTION REQUIREMENTS

- A. All backfills and fills shall be compacted in even lifts (8" maximum) to attain the required densities as follows:

Table with 2 columns: Location and Modified Proctor ASTM D-1557. Rows include Subgrade and Gravel for Roads and Parking Lots (95%), General Embankments (90%).

UTILITY TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
1. Trench, backfill, and compact as specified herein and as needed for installation of underground utilities.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
C. Comply with all requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Fill and backfill materials:
1. Provide backfill materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension.
2. Fill material is subject to the approval of the Engineer, and is that material removed from excavations or imported from off-site borrow areas, predominantly granular, non-expansive soil free from roots and other deleterious matter.
3. Do not permit rocks having a dimension greater than 2" within 2' of the outside of pipe.
4. Cohesionless material used for backfill: Provide sand free from organic material and other foreign matter, and as approved by the Engineer.

PART 3 - EXECUTION

3.01 PROCEDURES

- A. Existing Utilities:
1. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.
2. When existing underground utilities, which are not scheduled for removal or abandonment, are encountered in the excavation, they shall be adequately supported and protected from damage. Any damage to utilities shall be repaired promptly at no additional cost to the Owner.
3. If the service is interrupted as a result of work under this section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this section, immediately notify the Engineer and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

- B. Protection of persons and property:
1. Barricade open holes and depressions occurring as part of the work, and post warning lights on properly adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this section.

- C. Dewatering: The Contractor, at all times, shall conduct his operations so as to prevent the accumulation of water, ice, and snow in excavations or in the vicinity of excavated areas, and to prevent water from interfering with the progress of quality of the work. Under no conditions shall water be allowed to rise in open trenches after pipe has been placed.

- D. Accumulated water, ice, and snow shall be promptly removed and disposed of by pumping or other approved means. Disposal shall be carried out in a manner which will not create a hazard to public health, nor cause injury to public or private property, work completed or in progress, or public streets, nor cause any interference in the use of streets and road by the public. Pipes under construction shall not be used for drainage of excavations.

- E. Maintain access to adjacent areas at all time.

3.02 TRENCHING

- A. Care shall be exercised by the Contractor to avoid disrupting the operation of existing facilities without prior written approval of the Engineer.
B. Provide sheeting and shoring necessary for protection of the work and for the safety of personnel.

SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.
10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
P: 802-864-2323 FAX: 802-864-2271 web: www.cca-vt.com

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DRAWN

MAB

CHECKED

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APPROVED

DSM



OWNER:

R.L. VALLEE, INC.

282 SOUTH MAIN STREET
P.O. BOX 192
ST. ALBANS
VERMONT 05478

PROJECT:

PROPOSED SITE IMPROVEMENTS

CROSSROADS MOBIL
VT ROUTE 78/U.S. ROUTE 2
ALBURGH, VT

DATE CHECKED REVISION

Table with 3 columns: DATE, CHECKED, REVISION. Contains multiple empty rows for tracking changes.

SPECIFICATIONS

DATE 04/16/2021

SCALE NTS

PROJ. NO. 17160.02

DRAWING NUMBER

C3.0

2.13 CONCRETE FOR THRUST BLOCKS

A. Concrete shall be Portland Cement concrete of 3,000 psi minimum 28 day compressive strength. ASTM C-94 specification for transit mixed concrete shall control the concrete quality. A maximum water cement ratio of 6 gallons per sack and a maximum slump of four inches (4") will be allowed.

2.14 FIRE HYDRANTS AND HYDRANT BRANCHES

A. Fire hydrants shall be Mueller Super Centurion 250, Figure A-423, Kennedy K-81 D, or Watertown Pacer Hydrant and shall conform to AWWA C502 with the following specifications:

1. Main Valve Opening: 5 1/4 inches
2. Nozzle Arrangement: Two 2 1/2 inch Hose Nozzles with National Standard Thread (NST)
3. One 4 1/2 inch Pumper Nozzle with National Standard Thread (NST)
4. Inlet Connection: 6 inch Mechanical Joint, "Mega-Lug" or equivalent retaining gland and concrete thrust block
5. Operating Nut: Standard 1 1/2 inch Pentagon
6. Direction of Opening: Counterclockwise
7. Depth of Bury: Six-foot cover. The hydrant shall have at least 15 inches and no more than 21 inches between the bottom of the steamer cap and the ground.
8. Drain: The hydrant shall be non-draining or have the drains permanently plugged.
9. Color: Red enamel
10. Other: Hydrants shall be compression type closing with the pressure. Hose and pumper nozzles shall be 1/4 turn type secured by stainless steel or corrosion resistant pins or screws. Pressure seals behind the nozzle flanges shall be "O" rings. A breakable coupling retained in place by stainless steel or corrosion resistant pins shall make the union between the upper and lower stems. The two-piece traffic flange shall be held in place by nuts and bolts. The upper barrel shall be able to rotate 360 degrees without removing any bolts. Hydrant flags shall be required and supplied for each hydrant. Wherever a traffic hazard appears to exist, curbing and/or bollards shall protect the hydrant.

B. For single-family house subdivisions, there will be at least one hydrant at each intersection and a maximum of five hundred feet (500') between hydrants with a minimum water flow of 500 gallons per minute (gpm) at the flow hydrant with a 20-psi residual pressure at the residual hydrant. Hydrants should be located immediately adjacent to street property lines. A 20' x 20' easement will be required around all hydrants. No structures or plantings are to be placed within a 20' x 20' area of any hydrant.

C. Where dead-end mains occur, they shall be provided with a fire hydrant if flow and pressure meet minimum requirements. If flows and pressure are not sufficient, then an approved flushing hydrant or blow off shall be installed for flushing purposes. Flushing devices should be sized to provide flows which will give a velocity of at least 2.5 feet per second in the water main being flushed. The open end of a blow off must be capped and terminate at least eighteen inches (18") above grade.

D. When set in lawn space between the curb and sidewalk, no portion of the hydrant or nozzle cap will be less than one foot off the gutter face of the curb and edge of the sidewalk. Hydrants shall be a minimum of four feet (4') and a maximum of six feet (6') from the edge of the sidewalk to the closest point on the hydrant when placed behind the sidewalk. In the absence of a curb or sidewalk, no hydrant shall be placed more than six feet (6') from the edge of pavement. Hydrants shall be located so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.

2.15 HYDRANT ASSEMBLIES

A. Hydrant assemblies shall consist of an anchor tee, a six inch (6") mechanical joint gate valve conforming to the above specifications, the appropriate length of six inch (6") Ductile Iron Cement Lined, Class 52 pipe, all necessary anchor couplings and approved restraining glands, the fire hydrant and appropriate thrust block.

B. Care shall be taken to prevent damage to hydrants and appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials; all debris and foreign material cleaned out of the hydrant bowl; all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. All hydrants shall be carefully incorporated in the water main and supported in their respective positions free from distortion and strain. Hydrants shall be set plumb. All hydrants shall be oriented to most efficiently allow fire truck access and connection for emergency purposes. They shall be installed away from the curb line at sufficient distance to avoid damage from or to vehicles. Traffic model hydrants shall be installed so the breakaway flange is not less than two inches (2"), nor more than six inches (6") above the established grade, according to manufacturer recommendations. Hydrant locations are subject to the approval of the Town Water Department and the appropriate municipality's fire department. Installation for fire hydrants can be found in AWWA Standard C600.

2.16 SERVICE CONNECTIONS

A. Service lines shall be installed so as to run perpendicular, in a straight line from the water main to the curb stop.

B. Each service shall consist of a corporation, curb stop, copper tubing and a curb box with a cast iron or stainless steel service rod. Service lines from three-quarter to two inch (3/4" to 2") shall be copper tubing from the corporation stop to the curb stop. Copper tubing shall be type "K", soft temper, conforming to ASTM B88. The name or trademark of the manufacturer and type shall be stamped at regular intervals along the pipe. Copper service pipe shall be one

piece from the corporation to the curb stop. The minimum service for a single-family residence shall be three-quarter inch (3/4"). The minimum service for a duplex shall be one inch (1").

C. Corporations shall be AY McDonald or Cambridge Brass Low-Lead and manufactured in accordance with AWWA C800. Corporations shall have threads per AWWA C800 Table 7 / Figure 2, at the inlet and a compression type fitting at the outlet. Both inlet and outlet shall be the same size. Three-quarter inch and one-inch corporations shall be directly tapped into ductile iron pipe six inches (6") and larger in diameter. Larger size corporations up to two inches (2") shall use a tapping saddle. Pipe less than six inches (6") shall require the use of a tapping saddle and corporation. Corporations shall be used for all taps up to two inches (2"). In no instance, except when a tapping sleeve and valve are used, shall a tap be made without a corporation. Corporations shall be Mueller 110 (3/4" - 1"), or Mueller H 15013 (1 1/2" - 2"). A connection made to a pipe that requires a tapping saddle or is not ductile iron will have a body with a suitable outlet, seal, and suitable means for attachment to the main. The body shall be made to conform to the outside configuration of the main. The service saddle shall be designed to provide a drip tight connection. The body shall be Teflon or Epoxy coated with stainless steel strap(s), bolts, nuts, and mechanism for attaching to the pipe barrel.

D. Curb stops shall be a ball valve type with a minimum allowable pressure rating of 300 psi and be manufactured in accordance with AWWA C800. The curb stop shall open left, have a positive stop, be full port, provide drip-tight shutoff in the closed position and be of the tee design or flat design. No curb stop shall have the ability to drain the service line. Both the inlet and outlet of the curb stop shall have compression type fittings. The tee head of the curb stop shall have the provision for the connection of a service rod. Curb stops shall be AY McDonald or Cambridge Brass Low-Lead, or approved equal. The curb stop shall rest on a four inch by eight inch by sixteen-inch (4" x 8" x 16") concrete block for support. Curb stops shall be installed just inside the municipality R.O.W.

E. Curb boxes shall be of sliding adjustable type capable of adjusting from five feet to six feet (5' - 6') (Erie Style). The base of the box shall be arch type so as to prevent the box from resting on the curb stop. The adjustable upper section shall be one inch (1") diameter for use with 3/4" and 1" curb stops. For larger curb stops, the upper section shall be 1 1/4" in diameter. Stationary rods affixed to the key of the curb stop with a brass pin shall be thirty inches (30") in length for 3/4" and 1" curb stops and twenty-four inches (24") for large curb stops. Curb box rods may be cast iron or stainless steel, as determined by the Town Water Department. The word "WATER" shall be inscribed on the cover of the box.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Contractors shall notify the Town Water Department and Dig Safe at least seven days prior to any work on the water system.

B. Skilled workers experienced in such work shall install all items. Tools shall be adequate for the work and in good condition so as to produce good, clean cut threads of the correct size, pitch, and taper.

C. Installation of all water lines shall be in accordance with the latest version of AWWA C600 or AWWA C605, as applicable, current edition.

D. Connection to an existing water main shall be done under the supervision of and with the approval of the Town Water Department. It is the applicant's, developer's, or owner of record's responsibility to secure ALL necessary connection permits and pay ALL applicable fees to make the connection, and to coordinate all parties involved in the process. The engineer and the Town Water Department shall be notified at least two working days in advance of the intended connection time. No existing valves, hydrants, curb stops, etc. shall be operated without prior approval of the Town Water Department. The Town Water Department shall operate all valves initially to ensure the integrity of the valve. The Town Water Department may then allow the contractor to operate those valves. Any damage occurring after the use of any valve operated by the contractor shall be the contractor's responsibility.

E. Core shall be taken to prevent damage to valves and other appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials; all debris and foreign matter cleaned out of valve openings, etc.; all operating mechanisms operated to check their proper functioning, and all other nuts and bolts checked for tightness. Valves and other equipment, which do not operate easily, or are otherwise defective, shall be replaced. All valves shall be carefully incorporated into the water main and supported in their respective positions free from all distortion and strain. Valves and valve boxes shall be set plumb. Valve boxes, besides being plumb, shall be centered directly over the valves.

F. All pipes showing cracks shall be rejected. If cracks occur in the pipe, the contractor may, at his own expense and after approval of the Town Water Department, cut off cracked portions at a point at least twice the pipe diameter from the visible limits of the crack and use the sound portion of the pipe.

G. All water mains shall have no less than six feet (6') of cover unless waived by the Town Water Department. The pipe shall be laid to conform to the lines and grades indicated on the Department. The Town Water Department may restrict work before November 15 and after April 1 during adverse weather conditions. The Town Water Department may not allow excavating for water mains during the winter months except by special permission for emergencies. Each pipe shall be laid so as to form a close joint with the next adjoining pipe and to bring the inverts continuously to the required grade. In no cases shall the waterline have less than four feet (4') of cover over the top of the pipe.

H. Temporary support, adequate protection, and maintenance of all underground structures, drains, sewers and other obstructions encountered in the progress of the work shall be

provided at all times. If utility service is interrupted as a result of work for the project, the contractor shall immediately restore service by repairing the damaged utility at the contractor's expense.

I. At all times, when pipe laying is not actually in progress, the open ends of the pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed. During construction, the contractor shall conduct operations so as to prevent the accumulation of water, ice, and snow in the vicinity of excavations or in the vicinity of excavated areas, and to prevent water from interfering with the progress and quality of the work.

J. Under no conditions shall water be allowed to rise in open trenches after pipe has been laid.

K. Accumulated water, ice, and snow shall be promptly removed and disposed of by pumping or other approved means. Disposal shall be carried out in a manner that will not create a hazard to public health, nor cause injury to public or private property, work completed or in progress, or public streets. Disposal shall not cause any interference in the use of streets and roads by the public. Pipes under construction shall not be used for drainage of excavations.

L. Any deflection of joints in pipe up to twelve-inch (12") diameter shall be within the limits specified by the manufacturer, but not to exceed five degrees or nineteen inches (19") per eighteen feet (18') of pipe length.

M. Concrete thrust blocks shall be installed on all hydrants, plugs, tees, and bends deflecting 11 1/4 degrees or more. Concrete thrust blocks shall be used in conjunction with "Mega-Lug" restraining glands or equivalent. Care shall be taken to ensure that concrete will not come into contact with flanges, joints, or bolts. The required area of thrust blocks shall be indicated on plan typicals and approved by the Town Water Department. Concrete shall be placed against undisturbed soil. Wooden side forms or equal shall be provided for thrust blocks. No backfilling shall be allowed until concrete masonry has set sufficiently. Where directed by the Town Water Department or engineer, concrete encasement of the waterline may be made for stream crossings and similar purposes. Where required on the plans or as directed by the Town Water Department or engineer, a concrete grade shall be used to bolster and strengthen the pipe. The Town Water Department or his designee shall inspect all thrust blocks prior to backfilling.

N. All trenching safety standards shall be in conformance with all applicable State and Federal guidelines. The contractor shall be solely responsible for any safety citations by State or Federal inspectors.

O. There shall be no physical connection between the distribution system and any pipes, pumps, hydrants, or tanks that are supplied with water that is, or may be, contaminated.

P. As necessary, temporary PVC markers shall be supplied at all gate valves, curb boxes, and at the end of water lines to a minimum of twelve inches (12") above finish grade until accepted by the Town Water Department.

Q. All surplus material and debris shall be removed as the project progresses, leaving all areas clean and presentable.

R. Unless otherwise required, all paving and sidewalks that may be damaged during construction shall be replaced with the same kind of material that previously existed.

S. The contractor shall be responsible for proper protection of persons and property on the project. The contractor shall barricade open holes and depressions occurring as part of the work, and post warning lights on adjacent property to or with public access.

T. Warning lights shall be operated during hours from dusk to dawn and as otherwise requested.

U. The contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by construction operations.

V. No water lines shall be installed after November 15 or before April 1 without prior approval of the Town Water Department.

3.02 WATER/SEWER SEPARATION

A. Water mains crossing sewers shall be laid to provide minimum vertical distance of eighteen inches (18") between the outside of the water main and the outside of the sewer line. This shall be the case where the water main is either above or below the sewer. At crossings, one full length of pipe shall be located so both joints will be as far from the sewer as possible. This vertical separation shall be maintained for that portion of the water main located within ten feet (10') horizontally of any sewer it crosses. Water mains must be laid at least five feet (5') horizontally from any existing or proposed storm sewer and ten feet (10') from any existing or proposed sanitary sewer.

B. When it is impossible to obtain horizontal and vertical separation on new installations, both the water main and sewer main shall be constructed of waterworks material with watertight joints and shall be pressure tested before backfilling. A PVC sleeve may be required for one or both mains in addition to the waterworks material. Lines may also be encased in concrete as required by the Retail Department. No water main shall pass through or come in contact with any part of a sewer manhole.

C. Distribution lines shall not be placed closer than fifty feet (50') horizontal distance from any septic tank or leach field unless approved by the VT Water Supply Rule Provisions under Chapter 21.8.6.4 or the Town Water Department.

D. Force main crossing shall be arranged so that at least one full length of sewer pipe is centered above or below the water line, with the sewer joints as far as possible from the water joints. The new force main line shall be constructed to water main standards for a minimum of twenty feet (20') on either side of the crossing. The section constructed to water main standards shall be pressure tested to maintain 50 psi for fifteen (15) minutes without leakage prior to backfilling. In those areas that proper cover cannot be provided, proper insulation shall be installed.

E. Sewer and waterline separation shall conform to all VT Water Supply Rule requirements, and installed in accordance with the latest edition of the "Ten States Standards - Recommended Standards for Water."

3.03 TESTING AND DISINFECTION

A. All water mains shall be constructed, tested and disinfected in accordance with AWWA Standards C-600, C-605, C651 and The Vermont Water Supply Rule. All tests shall be conducted by and at the expense of the Contractor.

1. The Contractor shall furnish all gauges, testing plugs, caps and all other necessary equipment and labor to perform leakage and pressure tests in sections of an approved length. Each valved section, including hydrant laterals, or a maximum length of 1,000 feet of pipe shall be tested. The Contractor shall provide at his own expense any additional taps to the water line necessary to perform the pressure and leakage test between valves. All disinfection/testing shall be completed by an independent third party unless otherwise approved by the Engineer or local municipality.

2. All water required for testing shall be potable. All testing shall be conducted in the presence of the Engineer.

3. The Contractor shall make the necessary provisions to tap the pipe at the high point to release all air and shall plug some after completing the test. Hydrants or blowoffs located at high points may be used for air release in lieu of taps if approved by the Engineer.

4. For the pressure test, the Contractor shall develop and maintain for two hours, 150% of the working pressure, or 200 psi, whichever is greater. Failure to hold within 5 psi of the designated pressure for the two hour period constitutes a failure of the section tested.

5. No pipe installation shall be accepted if the leakage is greater than that determined by the following. Maximum allowable leakage will be:

$$L = \frac{SD \sqrt{P}}{148,000} \quad \text{or} \quad L = \frac{ND \sqrt{P}}{7,400}$$

whichever is less

Where:

- L = allowable leakage, in gallons per hour
- S = length of pipe tested, in feet
- D = nominal diameter of the pipe, in inches
- P = average test pressure during the leakage test, in pounds per square inch (gauge).
- N = Number of joints in the pipeline tested

All testing shall be conducted in accordance with AWWA C600 (latest edition)

6. Should any section of pipe fail either the pressure or leakage test, the Contractor shall do everything necessary to locate and repair or replace the defective pipe, fittings, or joints at no cost to the Owner.

7. Disinfection: Disinfection of the pipeline shall be directed by the Engineer and at the Contractor's expense. AWWA Standard C-651 shall be used as a basis for the disinfection process.

B. The Engineer or Town Water Department will require as minimum:

1. Complete flushing of the pipeline to wash out all dirt, debris, etc. which may have accumulated in the pipeline during construction. A reducing agent shall be used at the point of flushing to eliminate the free chlorine residual per the direction of the Town Water Department.
2. Following flushing to clean clear water, the Contractor will add chlorine through continuous feed to the entire pipeline volume of water such that the water will have not less than 25 mg/L free chlorine, and let the mixture set for at least 24 hours.
3. After the 24-hour duration, the water in the pipeline shall be tested for residual free chlorine and must contain a minimum of 10 mg/L chlorine. If less than 10 mg/L are found, then the disinfection procedure shall be repeated until at least 10 mg/L chlorine residual is indicated by test.
4. Upon successful completion of step 3 above, the pipeline shall be flushed again until the chlorine concentration in the pipeline is no higher than that prevailing in the supply system. A reducing agent shall be used to eliminate the free chlorine residual in the flushing process per the direction of the Town Water Department.

C. After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main, and submitted to the Vermont Health Department for analysis. At least one set of samples shall be collected from every 1,000 feet of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall show the absence of coliform organisms and, if required, the presence of a chlorine residual (AWWA C651-99). If the initial disinfection fails to produce samples which pass the V.S.H.D. requirements for potable drinking water, then the new main shall be refushed and shall be resampled until satisfactory test results are obtained.

D. Upon satisfactory results by the Vermont State Health Department, the pipeline may be placed in service. All costs for water, materials, equipment and labor to perform the required testing, disinfection, and flushing of the pipeline shall be paid by the Contractor.

3.04 SUBMITTAL OF TEST RESULTS

A. The Applicant or Project Engineer shall be responsible for submittal of test results to the Town Water Department. The Applicant or Project Engineer shall also provide a letter to the Town Water Department certifying that the water system has passed all tests, is constructed in accordance with the approved plans, except as may have been modified by approved Change Order, and is in conformance to be placed in

service. Submittal of all test results shall be required prior to the water main being placed into service.

3.05 FINAL INSPECTION

A. For one year from the date the new system is placed into service, the applicant's developer/contractor will be responsible for any necessary repairs or corrections as part of the project warranty. At the end of a one-year period, an inspection will be performed by the Town Water Department prior to the system owner assuming ownership of any of the lines and appurtenances. The contractor shall correct any punch list items accumulated during the inspection after receipt of this list. Incomplete work on the system shall not be included in the initial inspection, but shall be inspected as the project continues. The contractor shall repair, replace, or retest promptly as directed by the Town Water Department and without further charges, all work equipment, materials or parts, which may fail during the one year warranty period.

B. A final walk-through inspection shall be conducted by the Town Water Department prior to the water system being accepted for ownership by the system owner. This inspection shall include but not be limited to:

1. Valves, hydrants, and curb stops operating properly.
2. Valve boxes and covers set plumb and at proper elevations.
3. Proper hydrant nozzle height above grade.
4. Proper hydrant opening direction, nozzle thread, and barrel color.
5. Proper distance from the face of the curb of hydrant nozzles.
6. Hydrant flags meeting Town Water Department specifications installed on each fire hydrant at the time of installation.
7. Static and residual hydrant pressures and flow rates.
8. Curb boxes inside ROW, set to grade, containing operating rod, and plumb.
9. Tie information and record drawings complete and submitted.
10. Material testing results, lab reports, manufacturers' certificates, and leakage test results complete and on file.
11. General appearance and restoration.
12. Submittal of O&M manuals in hard copy and Adobe Acrobat Reader (.pdf) format.
13. Submittal of As-Builts in hard copy format and Auto-CAD.DWG Version 2000 format or newer within 14 days of completion.

3.06 GENERAL INFORMATION

A. All persons taking water must keep the fixtures and service pipe within their own premises in good repair and fully protected from frost, and must prevent unnecessary leakage of water. The Town Water Department shall not be liable for leakage of hydrants, pipes or fixtures upon the premises of any consumer, nor for obstructions therein by freezing or otherwise, nor for damages resulting from any of the foregoing causes. All leaks that are on the building side of the curb stop will be the owner's responsibility and repaired at the owner's expense.

B. Water rates shall be collected for all water used until the water is shut off at the curb stop by the Town Water Department. No abatement of water rates will be allowed by reason of disuse, diminished use, or vacancy of premises without proper notice to the Town Water Department.

C. The Town Water Department or system owner shall not be liable for any injury, loss or damage of whatever nature occasioned by the failure to maintain a constant or uniform pressure in the water mains, or for damages occasioned by or growing out of a stoppage of said water by frost or other cause, or for damage occasioned by or growing out of an insufficient supply of the same, or for accident or damage of any kind caused by or growing out of the use or failure of said water.

D. No person shall open any hydrant or draw water there from except the Town Water Department personnel or persons under their direction, or the officers or designees of the municipal fire department and members of the fire companies under their direction for fire purposes, or those individuals who have been granted approval on a hydrant use application by the Town Water Department, in which case, all such usage shall be metered. Fines for unauthorized use of any hydrant or connection may be incurred, according to the Rules and Regulations of the Town Water Department.

E. One curb stop and one water meter shall be installed for each individual dwelling unit, condominium unit, apartment unit, commercial or office occupancy. Exceptions may be permitted in cases where a condominium association signs a binding agreement to be responsible for all collection of water bills. In cases where condominiums are converted into separate apartments, separate curb stops and water meters shall be installed for each unit. Town Water Department employees shall install all water meters. Under no circumstances are plumbers or persons other than those authorized by the Town Water Department permitted to turn water on or off at the curb stop. The water will not in any instance be turned on to any premise for use until the Town Water Department has suitably attached a meter.

F. The owner of the premises shall be responsible for all water payments. A change of tenants or premises will not relieve the owners from payment of a back bill.

STORM WATER PONDS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Construction of storm water detention pond.

SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.
10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
P: 802-864-2323 FAX: 802-864-2271 web: www.cca-vt.com

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DSM



OWNER:

R.L. VALLEE, INC.
282 SOUTH MAIN STREET
P.O. BOX 192
ST. ALBANS
VERMONT 05478

PROJECT:

PROPOSED SITE IMPROVEMENTS

CROSSROADS MOBIL
VT ROUTE 78/U.S. ROUTE 2
ALBURGH, VT

DATE	CHECKED	REVISION

SPECIFICATIONS

DATE	DRAWING NUMBER
04/16/2021	C3.4
SCALE	
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