East Hardwick Fire District #1

2024 Source Protection Plan Update

WSID VT0005038

Source Protection Plan Update Assistance from:

Vermont Rural Water Association

Bradley Roy *(**November 2024**)*

East Hardwick Fire District #1

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As the responsible person for this water system, I have reviewed this Source Protection Plan update and agree with its contents.

David M O'Brien

David O'Brien, EHFD #1 Chair

1/23/25

Date

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GENERAL

UPDATE SUMMARY

A Source Protection Area (SPA) field investigation and water system overview were performed on March 18th by David Gross (East Hardwick FD 1), Brad Roy (VRWA), Liz Royer (VRWA), and Paul Sestito (VRWA). The water system receives its water from four groundwater springs and serves approximately 111 customers in the Northeast Kingdom of Vermont on the Hardwick-Walden town line. This Source Protection Plan Update serves as a comprehensive re-write based on the systems submitted 2022 plan. This update includes the following new or revised items:

- Photos
- Source Protection Area Maps
- Potential Sources of Contamination (PSOC) Inventory and Risk Assessment
- Emergency use of an Unpermitted or Unauthorized Water Source Procedures
- Updated Emergency Contact Information
- Notification of Water System Users Procedures
- Water System Upgrade and Spring Rehabilitation Summary
- Shutdown/Start-up Procedures
- Action Items for Implementation
- 2024 Landowner List and Sample Letter

BACKGROUND AND PURPOSE

The purpose of a Source Protection Plan (SPP) update is to identify water system vulnerabilities and to suggest techniques and strategies to manage land uses and activities that potentially may contaminate a public water source. While naturally occurring contaminants can usually be controlled by treatment methods, potentially contaminating land uses can be managed by activities outlined in a Source Protection Plan. This Source Protection Plan update applies to four groundwater springs known locally as "Septic Spring (WL003), Worthless Spring (WL002), Green Spring (WL006), and New Spring (WL001)".

A Public Water System is defined as "any system(s) or combination of systems owned or controlled by a person, that provides drinking water through pipes or other constructed conveyances to the public and that has at least fifteen (15) service connections or serves an average of at least twenty-five (25) individuals daily for at least sixty (60) days out of the year" (Vermont Water Supply Rule, Chapter 21, Subchapter Section 2.2).

This plan update has been prepared with the assistance of the Vermont Rural Water Association. The objective of a Source Protection Plan is to identify potential contamination sources that occur within the Source Protection Area of this public water supply and to provide specific recommendations to manage these potential threats to maintain quality drinking water. This document has been prepared in accordance with the Vermont Water Supply Rule, Chapter 21, March 2020 Revision. Under the Rule, a Source Protection Plan consists of the following basic elements:

1. Source Protection Area Maps including:
    - Source identified by name and Drinking Water Groundwater Protection Division (DWGPD) source number
    - Associated landowners
    - Potential Sources of Contamination (PSOCs)
    - Source Protection Area Delineation approved by the Secretary
2. An inventory of PSOCs
3. An assessment of risks posed by these PSOCs
4. A management plan to minimize risks to the water source(s)
5. A contingency plan for responding to the loss of the water supply

A Source Protection Plan is a working document that will be reviewed at least annually and updated **every three years** to remain current, active, and viable. Actions taken by Water System personnel, landowners, and the larger community are key to achieving comprehensive protection.

DESCRIPTION OF WATER SYSTEM AND SOURCES

The system obtains its water from four active springs, all located on Ward Hill on the Hardwick-Walden town line in the Northeast Kingdom of Vermont. The system also owns two springs which are inactive and offline. All four active springs contribute to a 65,000-gallon cast-in-place concrete reservoir which serves the water supply needs of approximately 100 connections with excess. The system is completely gravity fed and has no pump or booster stations.

The water system employs a calcium hypochlorite tablet feed system (also known as an erosion chlorination feed system) for disinfection. Disinfection contact time is provided by the water system's storage tank, which is located within the Source Protection Area and downgradient of the four springs. Beginning July 1, 2022, the water system has been required to continuously disinfect the water within this system due to biological contamination due to flooding and root invasion of the springs, but these issues were rectified on April 17, 2024 with assistance from an outside contractor (see Appendix A).

Source ID	Name	Type	Construction Date	Active/Inactive	Yield
WL001	New	Spring	1995	Active	Approximately 30 GPM
WL002	Worthless	Spring	Early 1970's	Active	Unknown
WL003	Septic	Spring	Early 1970's	Active	Unknown
WL004*	Cook #1	Spring	1930	Inactive	N/A
WL005*	Cook #2	Spring	1930	Inactive	N/A
WL006	Green	Spring	2001	Active	Approximately 25 GPM

SOURCE PROTECTION AREA

SOURCE PROTECTION AREA DEFINED

A Source Protection Area (SPA) is defined as "the surface and subsurface area through which contaminants are likely to move toward and reach water supplies" (Vermont Water Supply Rule). The purpose of delineating a Source Protection Area is to determine the recharge area that supplies water to a public water source. The recharge area or Source Protection Area for a groundwater source is defined by the nature of subsurface flow and that induced by pumping. Within a Source Protection Area, land uses and/or naturally occurring materials may cause a public water system to be vulnerable to contamination. Source Protection Areas for Public Community Water Systems may be delineated using the following methods:

- Calculated fixed radius
- Simplified variable shapes
- Analytical methods
- Hydrogeologic mapping
- Flow models

The Source Protection Area of Public Community Water Systems is further classified into three Zones:

Zone 1 – 200 foot radius around well (isolation zone)
Zone 2 – Estimated zone of influence with "probable impacts"
Zone 3 – Remainder of recharge area (2 year travel time for sewage disposal)

Zone 1: is a 200-foot radius around the well, also known as the isolation zone. This is the area where impacts are likely to be immediate and certain. The isolation zone is the most critical area for protection and should be under the control of the water system. Only activities that are related to the water system should occur within the isolation zone.

Zone 2: Consists of contributions from the monitoring radius as established as part of the Source Interference Testing for new systems and outside Zone 1. This zone is based on criteria such as water usage and pump test rate and is the area where impacts are probable from potential sources of contamination.

Zone 3: Is the outer most boundary of the Source Protection Area. Zone 3 consists of the remaining recharge area not delineated in Zone 2 and is the area where possible impacts from potential sources of contamination may occur. This area may also be thought of as the area supplying recharge to the public source simply by natural groundwater flow.

A two-year travel time zone is used to identify a protection area to provide adequate protection from pathogen threats resulting from onsite disposal of sewage.

DESCRIPTION OF SOURCE PROTECTION AREA

The Source Protection Area for the system was delineated by the Water Supply Division of the Department of Environmental Conservation (now known as the "Drinking Water and Groundwater Protection Division"). Much of the approximately 125-acre SPA consists of mixed-forest types with only a few residential buildings.

Agricultural use does exist within the SPA but has been historically limited to hay production. Approximately 25 acres within the SPA was identified as hay field and/or pastureland using the Vermont ANR Natural Resource Atlas. These land-use areas do not encroach on any of the water systems' sources 200-foot isolation zones

Currently, livestock grazing occurs on the agricultural lands located within the SPA.
The entirety of the Source Protection Area lies within a very rural area with just a few residential properties and all dirt roads. No restricted potential sources of contamination were discovered within the 200-foot isolation zone of any of the system's four groundwater sources during the field investigation or subsequent remote investigation using the VT ANR Atlas.

INVENTORY OF POTENTIAL SOURCES OF CONTAMINATION AND ASSESSMENT OF RISK

POTENTIAL SOURCES OF CONTAMINATION

Each PSOC is assigned a risk level (Low, Medium, or High) based on several factors. To determine these risk levels the nature and quantity of the contaminants, the level of control the water system may have over the PSOC, the distance from the source, and the routes by which the PSOC could potentially reach the intakes were considered. Potential sources of contamination within the SPA for these sources were identified using the data available from the Vermont Natural Resources Atlas, field inspections, and interviews with Water System personnel to obtain local knowledge. The descriptions of individual PSOCs on pages 8 and 9 match the summary provided.

East Hardwick FD1 SPA Inventory & Risk Assessment Table				
PSOC	**Description**	**Property Type/Use**	**PSOCs**	**Risk**
1	**Agricultural Activities** Manure Spreading Soil Disturbance Agrochemicals Potential Leaking/Damaged Farm Equipment and Vehicles	**Agriculture**	**SOCs** **VOCs** **Bacteria** **Nitrates**	**Med**
2	**Road** Ward Hill Road	**Transportation**	**VOCs** **SOCs**	**Low**
3	**Residential Property** Septic System Heating Fuel Storage Parked/Leaking Vehicles Fertilizer/Pesticides Household Hazardous Waste	**Residential**	**VOCs** **SOCs** **Bacteria** **Nitrates**	**Low**
4	**Recreation** Abandoned Railroad/Current Rail Trail	**Recreation**	**Bacteria** **VOC's** **SOC's** **PFAS/ PFOA**	**Low**

PSOC INVENTORY DESCRIPTION

PSOC 1 – Agricultural Activities

Agricultural activities occur on several parcels within the SPA and could contribute contamination from bacteria in manures and fertilizers, petroleum and hazardous waste from leaking and damaged farm equipment and vehicles, and others. However, the agriculture use located within the SPA is very small-scale and historically has utilized properly composted manure spread with best practices to ensure limited potential for contamination. The agricultural use is also located outside of the 200-foot isolation zones for each active source.

Continued outreach to the landowners should ensure a mutual understanding of the critical importance of maintaining and following good farm practices as they relate to source water protection. For further information, Vermont's "Required Agricultural Practices" may be found at: https://agriculture.vermont.gov/rap.

For these reasons a **MEDIUM-**risk rating has been assigned.

PSOC 2 – Ward Hill Road

Roadways can be a source of contamination from accidental spills or leaks of petroleum and hazardous wastes from automobiles. Sodium and chloride from road salting is not a concern as the road located within the SPA is gravel and not treated with those chemicals. However, contaminating substances could potentially run off roads, driveways, and parking areas and flow into culverts or seep into the ground.

Because the road is outside of the 200-foot isolation zone (only just barely entering the SPA for approximately 1200 ft) combined with the fact that it is largely downgradient from the sources, it has been assigned a **LOW** risk rating.

PSOC 3 - Residential Property

For the purposes of this plan, it is assumed that all residences use onsite septic systems and have heating oil storage. Fortunately, new homes or converted seasonal homes are required to have an approved septic system; however, this does not eliminate the concern. Fertilizers and pesticides may be applied to lawns and gardens, potentially leaching into the groundwater or running off into surface water ditches. In addition, petroleum and fluid spills are possible from vehicle and lawn care maintenance.

Based on their proximity and the unlikely chance of contamination reaching the source, these properties have been assigned a **LOW**-risk rating.

PSOC 4- Recreation

The Lamoille Valley Rail Trail is a four-season, multi-purpose recreation and transportation corridor for walking, hiking, cycling, horseback riding, snowshoeing, cross-country skiing, dogsledding, and snowmobiling. Recreational activity is limited to the trail itself but has the possibility of introducing bacteria through human and animal excrement if not properly disposed of, as well as leaking fluids and grease from snowmobiles or PFAS/PFOA compounds from ski waxes and other consumer products. More information about the LVRT can be found at https://railtrails.vermont.gov/trails/lamoille-valley-rail-trail/.

Due to the proximity of the trail to the sources, and the maintenance of the trail, this PSOC has been assigned a **LOW**-risk rating.

MANAGEMENT OF RISK

CURRENT SOURCE PROTECTION MANAGEMENT ACTIVITY

- ✓ The water system adheres to all source water monitoring requirements.
- ✓ The water system will conduct semi-annual (or more frequent) inspections of the SPA to identify potential land use changes or changes in the status of the PSOCs.
- ✓ Much of the forested land within the SPA is owned by the water system.
- ✓ Any potential future logging or land clearing operations taking place on system-owned properties will be at the discretion of the water system and should follow Vermont Acceptable Management Practices (AMP's). Further information on AMP's may be found at https://fpr.vermont.gov/forest/managing-your-woodlands/acceptable-management-practices.
- ✓ Every three years, a letter will be sent to the owners and occupants of properties within the SPA notifying them that they are located within the designated Source Protection Area for the water system. This will also be done when a new landowner is known to move into the SPA. An example of the letter and landowner list is contained in **Appendix C**.
- ✓ Outreach information may be included in the annual water bill. This material will focus on septic care and maintenance, "green" solutions to common commercial cleaning and fertilizing products, and/or other applicable handouts/brochures.
- ✓ Water system personnel spend time in the SPA very frequently to perform regular maintenance tasks and monitor activities taking place that may impact water quality.
- ✓ The water system has taken both reactive and proactive measures to address contamination issues caused by root intrusion and deferred maintenance. See Appendix A for further details.

ACTION ITEMS FOR IMPLEMENTATION

- ✓ Continue to adhere to the Drinking Water and Groundwater Protection Division's (DWGPD) monitoring schedule for source water quality.
- ✓ Continue to promote water quality protection through educational programs and collaboration with agencies and organizations. Communication and education is key for source water protection.
- ✓ Continue to diligently monitor SPA activities and/or changes.
- ✓ Have a copy of this source protection plan available at the town office or website for the public to review and reference.
- ✓ Distribute informational letter to SPA landowners identified on the landowner list in **Appendix C.** This letter is intended to inform landowners about the SPA and to educate individuals that their actions can directly affect the quality of the drinking water in their community. A copy of the SPA map and the SepticSmart brochure may be included with the letter.
- ✓ Work with local officials to get information on Source Protection Areas included in the next town plan, as well as the location of the Source Protection Area included on the town plan's maps.
- ✓ Consider installing signage near PSOCs within the SPA to inform people about the SPA.
- ✓ Consider working on land acquisition within the SPA that is not currently owned by the water system.
- ✓ A Leak Detection Survey was conducted on the distribution system by McKim & Creed Water Asset Management on August 21, 2024. It identified a leak of more than 14,000 gpd with no surface expression. The EHFD#1 plans to locate and repair this leak in the spring of 2025. This repair will significantly improve the water loss of the system, thus improving source protection efforts.
- ✓ Follow up on recommendations made by consultants' Preliminary Engineering Report and Forester's Forest Management Plan .

SOURCE WATER PROTECTION PLAN UPDATES

Water system personnel will oversee the implementation of the measures outlined in this Source Protection Plan. System representatives may also comment on development proposals that are located within the Source Protection Area. **The Water system personnel will perform a detailed survey and inspection of the SPAs at a minimum of every three years** to confirm that all parties are following best management practices, and to identify any changes in land uses or property owners. See **Appendix D** for information on updating the plan. The Water System reserves the right to amend or update this plan before the three-year submittal cycle has been completed.

CONTINGENCY PLAN

EMERGENCY USE OF AN UNPERMITTED OR UNAUTHORIZED WATER SOURCE

In the event of an emergency situation requiring the water system to use an unpermitted or unauthorized water source, including the emergency use of unpermitted wells, springs, surface water, designated emergency sources, hauled or bulk water, or bottled water, the water system must contact the Drinking Water and Groundwater Protection Division and follow these steps:

1. The Operator or designated representative will notify the Drinking Water and Groundwater Protection Division prior to utilizing the unpermitted or unauthorized source as soon as possible but no later than 12 hours of the connection/use.
2. The Operator or designated representative will provide all public notice as recommended by the Division, which may include issuing a Boil Water, Do Not Drink, or Do Not Use Notification to all users of the water system. Notifications shall be provided within twelve hours of receiving the Division's recommendation or as otherwise directed by the Division in writing.
3. The water system will follow all actions and provide all documentation as requested by the Division.
4. The unpermitted and/or unauthorized source shall be used for no more than 90 cumulative days unless the water system has submitted a written request to the Secretary for an extension and the Secretary has determined that there is good cause for granting an extension.

EMERGENCY CONTACTS	
Vermont Drinking Water & Groundwater Protection Division JANELLE WILBUR: 802 585- 4898 janelle.wilbur@vermont.gov DAVID LOVE: 802 585-4902 david.love@vermont.gov JEFF GIRARD: 802 585-0314 jeff.girard@vermont.gov	**802-828-1535**
VT Department of Emergency Management Duty Officer	**800-347-0488**
National Response Center 24-HR HazMat Hotline	**800-424-8802**
VT Waste Management and Prevention Division	**802-828-1138**
24-HR HazMat Hotline	**800-641-5005**
Health Officer - Chair of the Selectboard **Hardwick – Eric Remick**	**802-472-5971**
Town Clerk – Tonia Chase	**802-472-5971**
Fire Department – Chief Tom Fadden	**802-472-5482**
Police Department - Chief Michael Henry	**802-472-5475**
Chief Treatment Plant Operator – Lance Perlee	**802-244-7420**
Water Plant Operator – Ryan Cotnoir, SOS	**802-624-3427**
Clerk/Treasurer – John Mandeville	**802-472-8902**

NOTIFICATION OF WATER SYSTEM USERS

During any type of emergency, either water quality or water quantity, the Water System should notify water users so that they will be informed of the emergency. In the case of contamination of the water supply, the water system users should be notified by the quickest and most reliable means. This includes public notice to its users prior to any use of or connection to an unpermitted source. The Water System operator will issue a Boil Water Notice or a Do Not Drink notification when applicable and at the direction of the DWGP Division. User notification will occur in accordance with the Agency's public notification requirements. Notification methods include: social media, local television, as well as appropriate printed methods.

Water System users' notification should include the following information:

- An explanation of what has happened.
- How the emergency is being handled.
- What the customer must do.
- How long the measures are anticipated to last.
- Who they can contact for additional information.

SHORT-TERM SOLUTIONS

In the event of a short-term loss of water, the system relies on its 65,000-gallon storage tank to provide service for an estimated 2.6 days based on its average production of 25,000 gallons per day. This supply may last even longer if water conservation measures were implemented. The current storage capacity should give the system ample time to remedy any short-term supply interruptions and resume production in a timely fashion.

Bulk water hauling and supplemental bottled water distribution may be implemented should the system need more time to address the cause of water loss (See "Bulk and Bottled Water Providers" on the next page). Water may also be hauled in from a neighboring system if necessary and mutually agreed upon.

Bottled Water Providers		
Misty Meadows	Rutland, VT	802 775 1172
Vermont Heritage	Newport, VT	802 334 2528
Crystal Rock	Williston, VT	800-201-6218
JMJ Beverages/Vermont Pure	Sandwich, MA	508-833-7873
Monadnock Mountain Spring Water	Wilton, NH	603-654-2728
Reinhart Foods	Essex, VT	800-272-5302 802 288 5000
Vermont Natural Water (PEPSI)	Brattleboro, VT	802-254-6093

Bulk Water Haulers					
Name	**Phone #**	**Alternate**	**Website**	**Capacity**	**Water Source**
Fresh Water Hauler (Underhill)	802-658-2223	802 355 4321	www.freshwaterhaulers.com	4600 gallon	Stowe Water District
Pristine Mountain Springs (Stockbridge)	802-746-8186	802-236-3989 cell	https://pristine-mountain-springs.business.site/	8000 gallon (4)	Colton Springs Water Supply
Lynde Well Drilling (Guilford)	802-254-2250	800 242-5516	https://lyndewelldrilling.com	4200 gallon 5300 gallon	Brattleboro
A-1 Water Delivery (St Albans)	802-355-4892	gwright@surfglobal.net	http://a1waterdeliveryvt.com/	4250 gallon	Purchase from Municipality
H2O Express Transport, LLC (Schuylerville, NY)	518-791-2484		www.h2oexpress.com	6200 gallon	City of Troy

LONG-TERM SOLUTIONS

In the event of catastrophic loss or contamination of a single source, the system would likely rely on its remaining sources for production. The options to install new drilled wells or implement surface water treatment are possible but would be costly and time consuming to address.
The Hardwick Town Water System (WSID VT0005039) is approximately three miles from the East Hardwick Water System, making connection a possibility, but likely not feasible due to cost constraints.

WATER SYSTEM SHUTDOWN AND START-UP PROCEDURES

Because the water system relies solely on gravity for both collection and distribution, as well as an erosion-style chlorination system, start up and shut down procedures are very simple and should be performed as follows:

If contamination requires that the system be shut down for an emergency, the operators should follow the procedures outlined below.

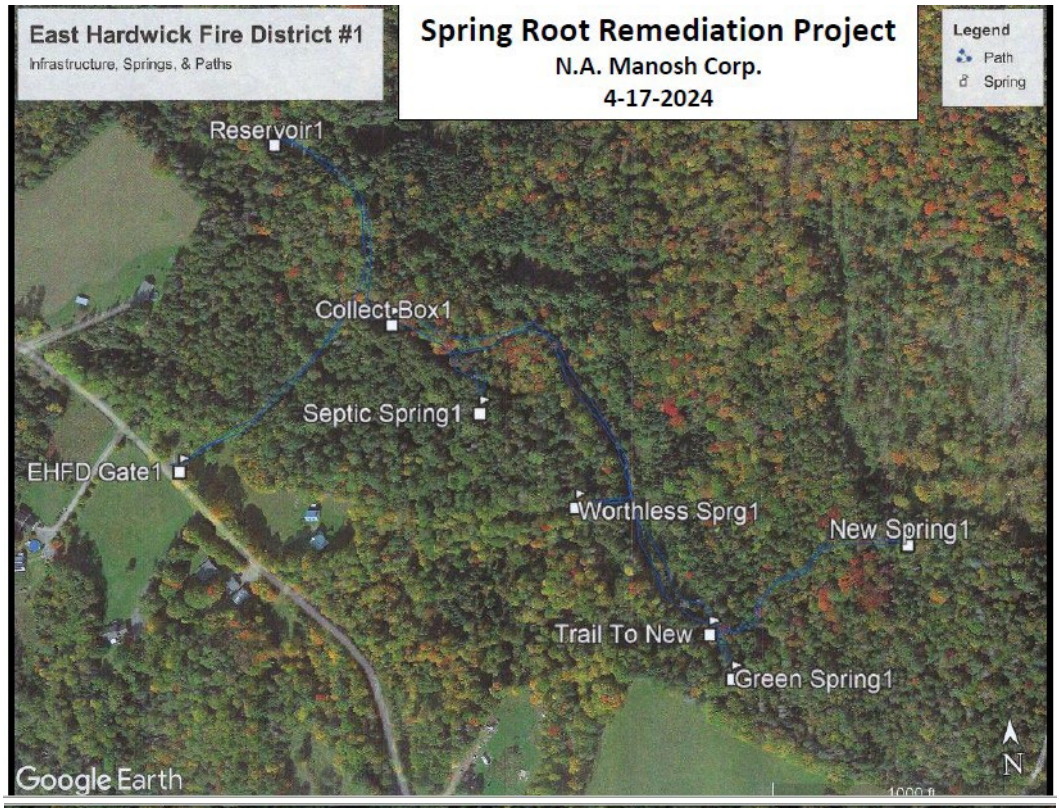
Shut Down

1. Close the valve to the reservoir from the collection box.
2. Close other valves as necessary to facilitate repairs.
3. Remove the erosion chlorination system's chlorine tablet tubes to prevent over-chlorination of the water stored in the reservoir.

Start Up

1. Replace the erosion chlorination system tubes prior to opening valves to ensure all water entering the storage reservoir is properly disinfected.
2. Open the valves from the springs to allow the reservoir to fill.
3. Open the valve to allow water to enter the distribution system.
4. Restore other valve settings to the distribution system.

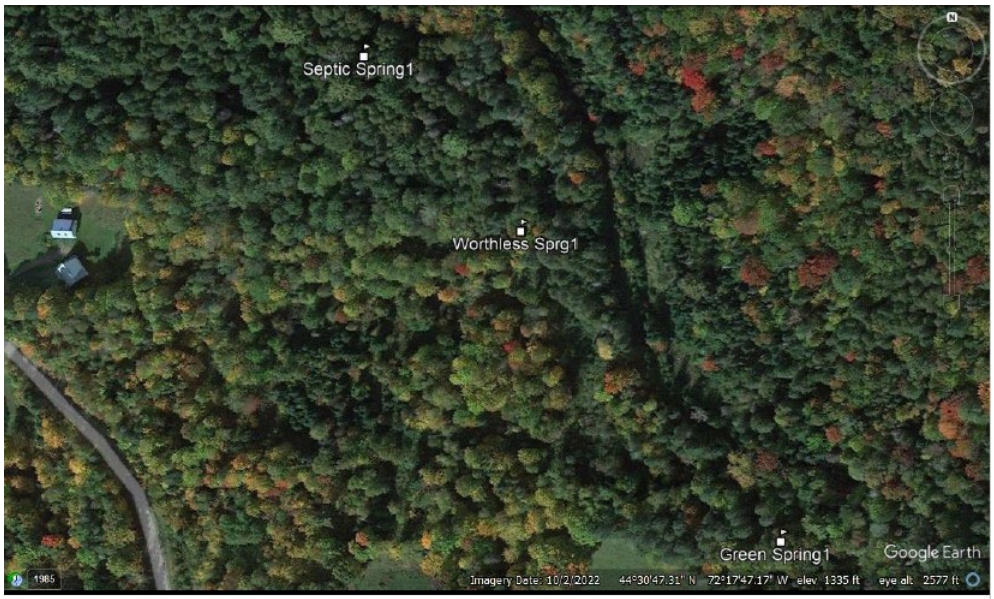
Appendix A
Water System and Spring Rehabilitation Photos



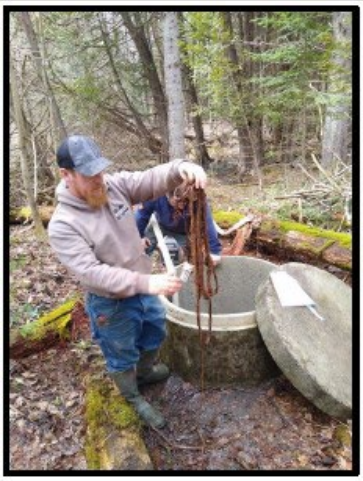
Green Spring


New Spring1
Green Spring1
Google Earth
1985
Imagery Date: 10/2/2022 44°30'46.93" N 72°17'34.81" W elev 1381 ft eye alt 2577 ft

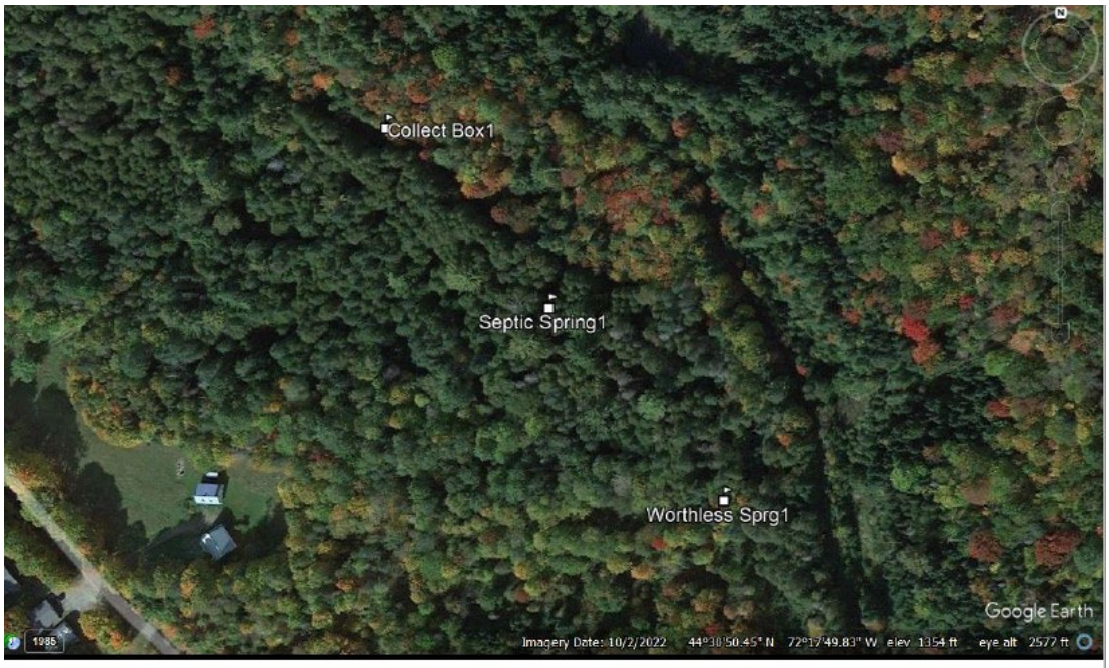
New Spring



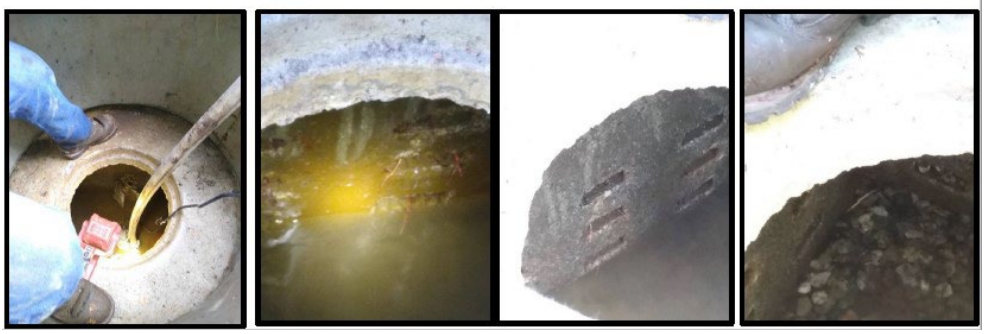
Worthless Spring





Septic Spring



The Manosh Corporation

April 26, 2024

East Hardwick Fire District

On April, 17, 2024 the N.A. Manosh Corp was on site to clean all 4 springs for the Fire District.

We noticed that there was a lot of roots that had grown in as well as a lot of sediment.

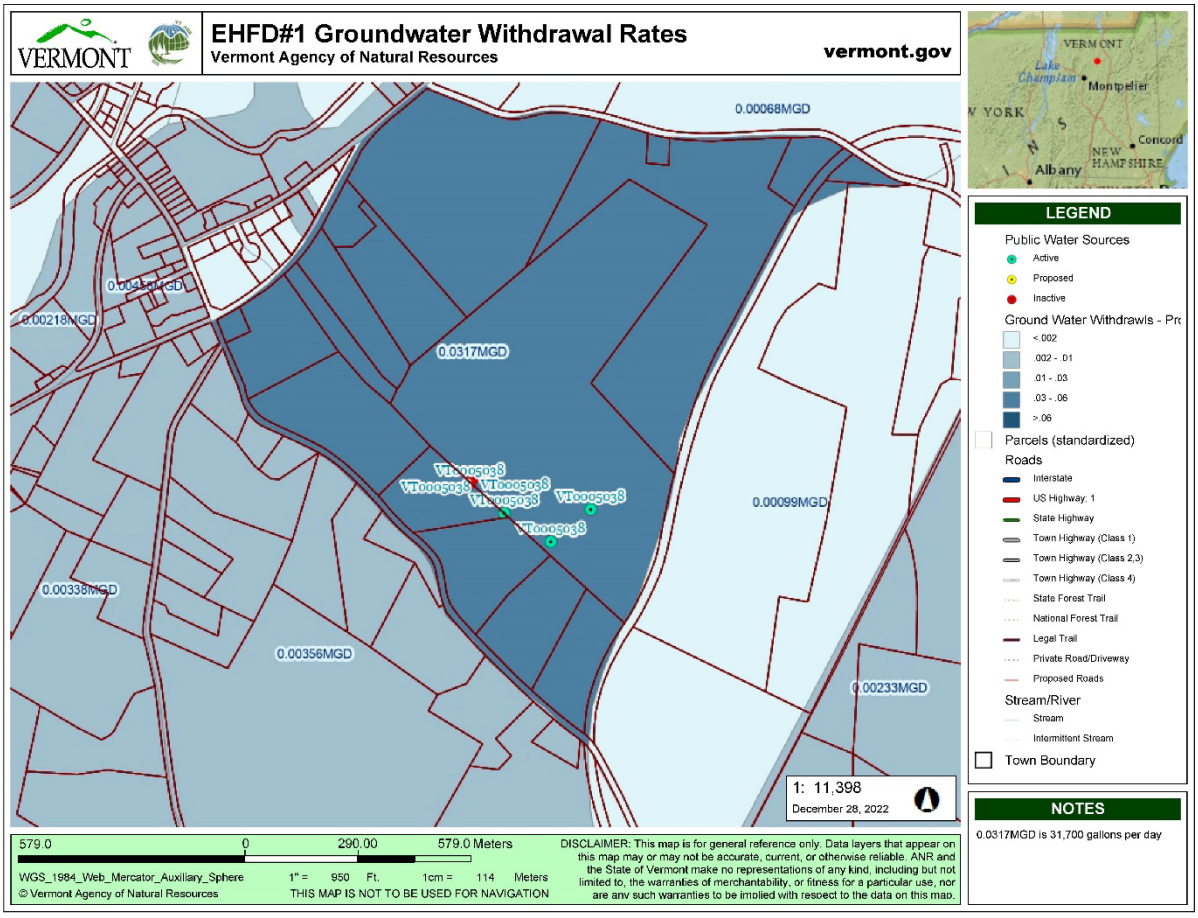
We cut out roots, shoveled out sediment, and inspected as well as scrubbed and cleaned all 4 springs.

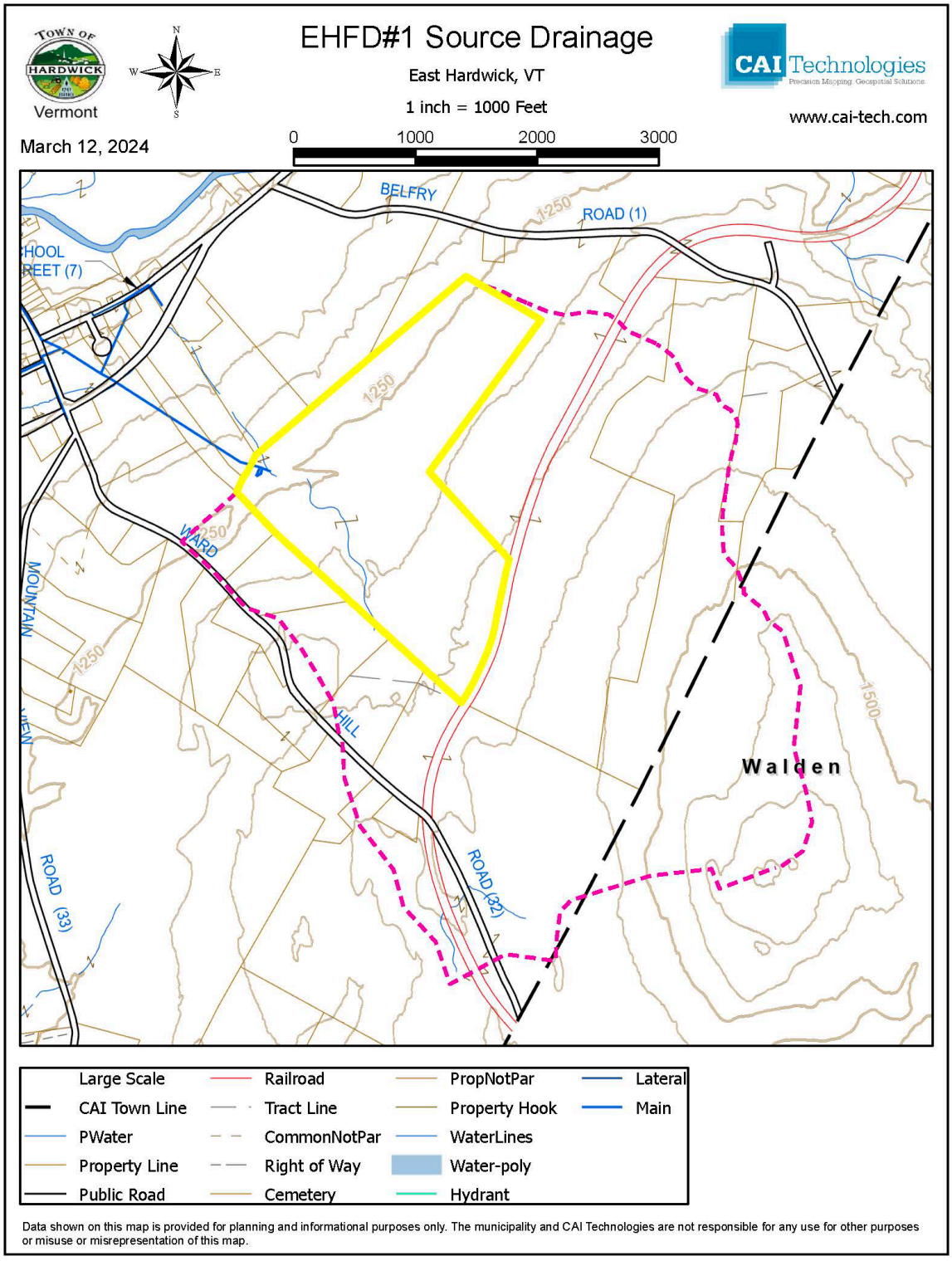
The inspection on all springs were good – no cracks or no deuteriations

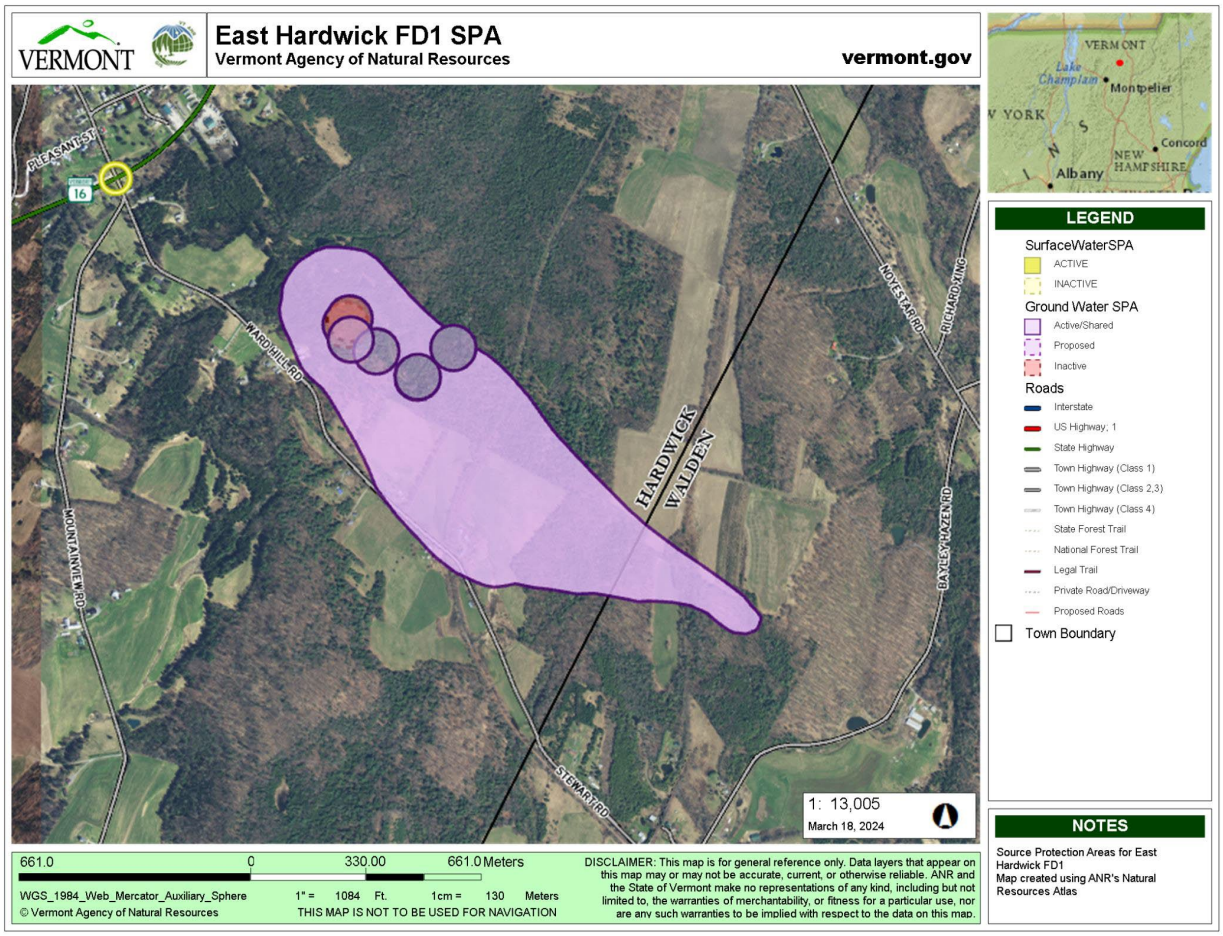
All are clean and look in very good shape.

N.A. Manosh Corp
Don Bolio
Service Manager
802-888-5722
don@manosh.com

Appendix B
Water System Maps


VERMONT
EHFD#1 Groundwater Withdrawal Rates
Vermont Agency of Natural Resources
vermont.gov
0.00068MGD
0.00218MGD
0.0317MGD
0.00099MGD
0.00338MGD
0.00356MGD
0.00233MGD
VT0005038
1: 11,398
December 28, 2022
579.0 0 290.00 579.0 Meters
WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 950 Ft. 1cm = 114 Meters
© Vermont Agency of Natural Resources
THIS MAP IS NOT TO BE USED FOR NAVIGATION
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.
VERMONT
Lake Champlain
Montpelier
NEW HAMPSHIRE
Concord
Albany
LEGEND
Public Water Sources
Active
Proposed
Inactive
Ground Water Withdrawls - Pr
< .002
.002 - .01
.01 - .03
.03 - .06
> .06
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
Town Boundary
NOTES
0.0317MGD is 31,700 gallons per day


EHFD#1 Source Drainage
East Hardwick, VT
1 inch = 1000 Feet
0
1000
2000
3000
March 12, 2024
TOWN OF HARDWICK Vermont
CAI Technologies
Precision Mapping. Geospatial Solutions.
www.cai-tech.com
BELFRY
ROAD (1)
1250
HOOL
REET (7)
WARD
MOUNTAIN
HILL
ROAD (33)
ROAD (32)
1500
Walden
Large Scale
CAI Town Line
PWater
Property Line
Public Road
Railroad
Tract Line
CommonNotPar
Right of Way
Cemetery
PropNotPar
Property Hook
WaterLines
Water-poly
Hydrant
Lateral
Main
Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.


VERMONT
East Hardwick FD1 SPA
Vermont Agency of Natural Resources
vermont.gov
PLEASANT ST
16
WARD HILL RD
MOUNTAIN VIEW RD
HARDWICK
WALDEN
LOVE STAR RD
RICHARDSON
BAYLEY HAZEN RD
STEWART RD
1: 13,005
March 18, 2024
VERMONT
Lake Champlain
Montpelier
NEW YORK
Concord
NEW HAMPSHIRE
Albany
LEGEND
SurfaceWaterSPA
ACTIVE
INACTIVE
Ground Water SPA
Active/Shared
Proposed
Inactive
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
Town Boundary
NOTES
Source Protection Areas for East Hardwick FD1
Map created using ANR's Natural Resources Atlas
661.0 0 330.00 661.0 Meters
WGS_1984_Web_Mercator_Auxiliary_Sphere
1" = 1084 Ft. 1cm = 130 Meters
© Vermont Agency of Natural Resources
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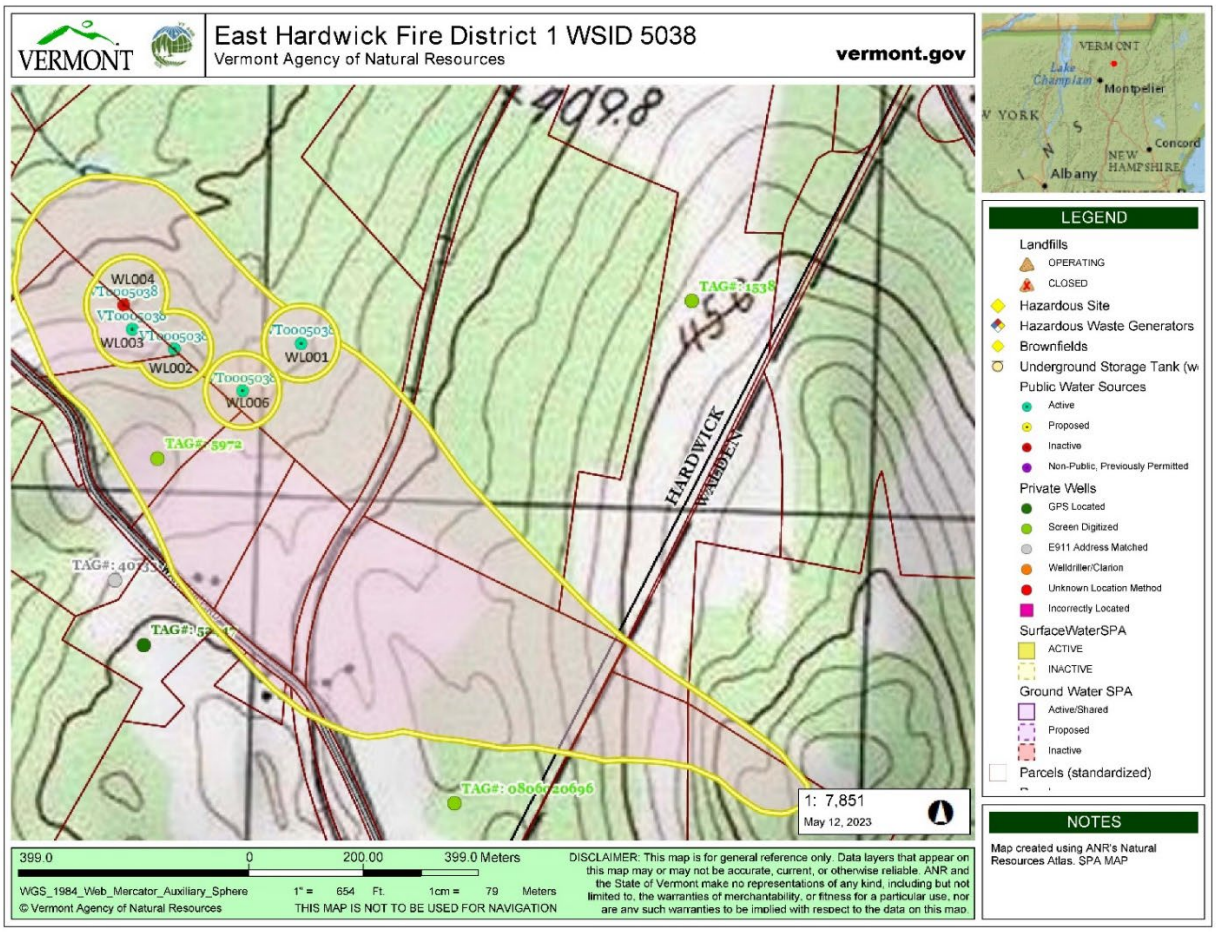
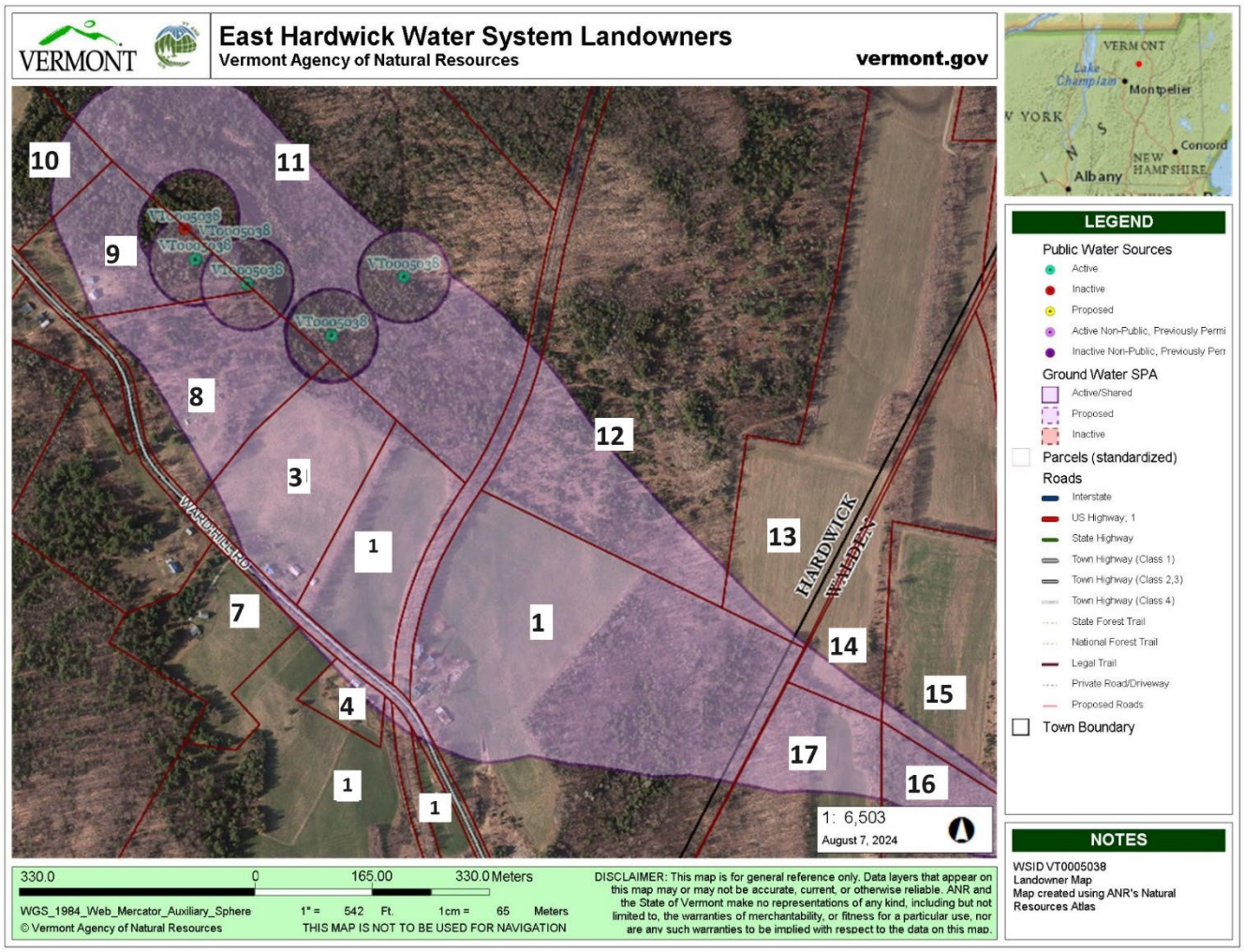

VERMONT
East Hardwick Fire District 1 WSID 5038
Vermont Agency of Natural Resources
vermont.gov
WL004
WL003
WL002
WL001
WL006
HARDWICK
WALDEN
LEGEND
Landfills
OPERATING
CLOSED
Hazardous Site
Hazardous Waste Generators
Brownfields
Underground Storage Tank (w
Public Water Sources
Active
Proposed
Inactive
Non-Public, Previously Permitted
Private Wells
GPS Located
Screen Digitized
E911 Address Matched
Welldriller/Clarion
Unknown Location Method
Incorrectly Located
SurfaceWaterSPA
ACTIVE
INACTIVE
Ground Water SPA
Active/Shared
Proposed
Inactive
Parcels (standardized)
NOTES
Map created using ANR's Natural Resources Atlas: SPA MAP
1: 7,851
May 12, 2023
399.0 0 200.00 399.0 Meters
WGS_1984_Web_Mercator_Auxiliary_Sphere
© Vermont Agency of Natural Resources
1" = 654 Ft. 1cm = 79 Meters
THIS MAP IS NOT TO BE USED FOR NAVIGATION
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.



Parcel Number	SPAN	E911 Address	Mailing Address	Owner Name
1	282-089-10974	3881 Ward Hill	3881 Ward Hill Rd, East Hardwick VT 05836	Macleod, Robert R
2	282-089-11400	3842 Ward Hill	3842 Ward Hill Rd, East Hardwick VT 05836	Love, Robert F
3	282-089-11837	3614 Ward Hill	3614 Ward Hill Rd, East Hardwick VT 05836	Scarlott, Katherine E
4	282-089-10225	3717 Ward Hill	3717 Ward Hill Rd, East Hardwick VT 05836	Burnor, Katherine M
5	282-089-10710	3569 Ward Hill	PO Box 52, East Hardwick VT 05836	Parker, Stephen C
6	282-089-11268	3435 Ward Hill	3435 Ward Hill Rd, East Hardwick VT 05836	Clark, Stephen W
7	282-089-11634	3277 Ward Hill	3277 Ward Hill Rd, East Hardwick VT 05836	Young, Caulene A LE
8	282-089-11686	Ward Hill	PO Box 22, East Hardwick VT 05836	East Hardwick Fire District #1
9	282-089-10374	419 Belfry Rd	589 Hardwick Farm Rd, East Hardwick VT 05836	Laggis Farm LLC
10	282-089-11808	420 Belfry Rd	589 Hardwick Farm Rd, East Hardwick VT 05836	Laggis Farm LLC
11	678-215-10712	Belfry Rd	589 Hardwick Farm Rd, East Hardwick VT 05836	Laggis Farm LLC
12	678-215-10074	2667 Bayley-Hazen Rd	524 Dusty Swamp Rd, Hardwick VT 05843	Hoffman, Danielle
13	678-215-10248	2067 Bayley-Hazen Rd	2067 Bayley-Hazen Rd, East Hardwick VT 05836	Fox, Roger
14	678-215-10457	Stewart Rd	3881 Ward Hill Rd, East Hardwick VT 05836	Macleod, Robert

Appendix D
Landowner List and Landowner Letter

Parcel Number	SPAN	E911 Address	Mailing Address	Owner Name
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14	678-215-10457	Stewart Rd	3881 Ward Hill Rd, East Hardwick VT 05836	Macleod, Robert

Dear Landowner,

The East Hardwick Fire District #1 public water system has developed an updated Source Protection Plan for their water system. The purpose of a Source Protection Plan is to identify vulnerabilities and to outline strategies to manage land uses and activities that potentially may contaminate a public water source. A copy of the plan is located at the town office or from the water system upon request.

Attached is a map of the Source Protection Area (SPA) and an informational brochure about maintaining your septic system. The SPA defines the land surface area that is believed to contribute groundwater to our source wells. Your land is located in the source protection area, and you may have already received letters previously.

Within a source protection area, human land uses and naturally occurring materials may cause a public water system to become vulnerable to contamination. Land use activities that occur within a Source Protection Area have the ability to negatively impact a water source.

For example, activities such as improperly disposing of household hazardous wastes and motor oil; septic system failures; pesticide/fertilizer/herbicide application; and spillage of gasoline or home heating fuel all have the potential to contaminate a water source. Many of the negative impacts associated with these activities can be avoided with good management. Property owners are often able to manage their land uses to further lower the risk of contamination.

Please feel free to contact me with any questions or concerns.

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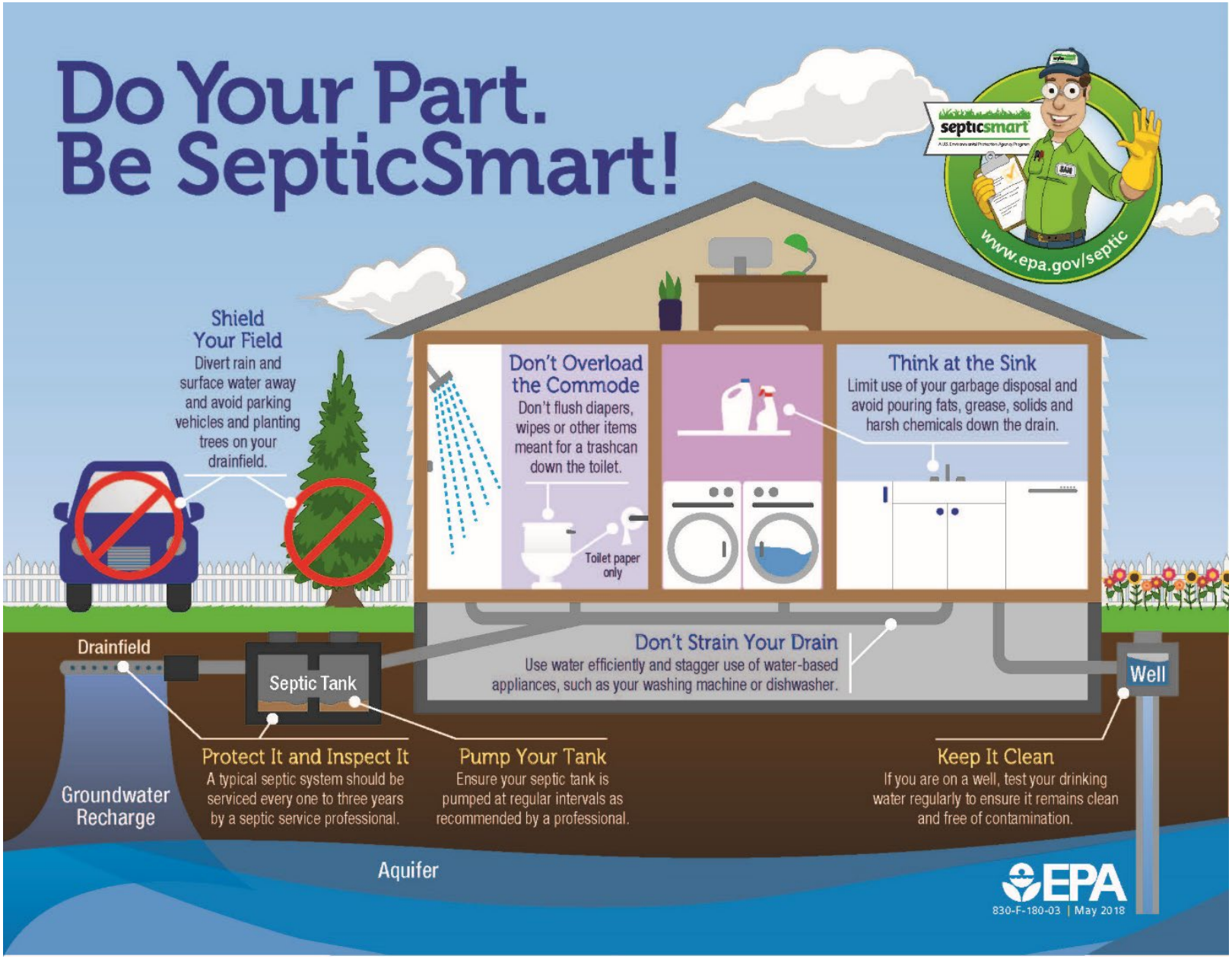
Water System Representative Date


Do Your Part.
Be SepticSmart!
septicsmart
www.epa.gov/septic
Shield Your Field
Divert rain and surface water away and avoid parking vehicles and planting trees on your drainfield.
Don't Overload the Commode
Don't flush diapers, wipes or other items meant for a trashcan down the toilet.
Toilet paper only
Think at the Sink
Limit use of your garbage disposal and avoid pouring fats, grease, solids and harsh chemicals down the drain.
Don't Strain Your Drain
Use water efficiently and stagger use of water-based appliances, such as your washing machine or dishwasher.
Drainfield
Septic Tank
Well
Protect It and Inspect It
A typical septic system should be serviced every one to three years by a septic service professional.
Pump Your Tank
Ensure your septic tank is pumped at regular intervals as recommended by a professional.
Keep It Clean
If you are on a well, test your drinking water regularly to ensure it remains clean and free of contamination.
Groundwater Recharge
Aquifer
EPA
830-F-180-03 | May 2018

Appendix E
Source Protection Plan Update Instructions

PREPARING A SOURCE PROTECTION PLAN UPDATE

Guidance for Public Community and Non-Transient-Non Community Water Systems

With the adoption of the new Water Supply Rule on December 29, 2000, all public community and non-transient, non-community water systems must update their approved Source Protection Plans *every three years*. Prior to this Rule, the updates were required annually. Source Protection Plan (SPP) Updates are also required for all water systems applying for Phase II/V monitoring waivers and waiver renewals. This information sheet gives guidance on how to prepare a Source Protection Plan Update.

Summary of Steps for Updating a Source Protection Plan

- ✔ Inspect the Source Protection Area and Update PSOC Maps and Inventory
- ✔ Weigh Risks from New PSOCs and Identify Risk Management Measures
- ✔ Update Landowner List
- ✔ Communicate with Relevant Landowners and Town/County/State Officials
- ✔ Make sure your Contingency Plan Information is Current
- ✔ Summarize Progress in Reducing Threats to your Source

Inspect the Source Protection Area and Update Your PSOC Maps and Inventory
Visually inspect the Source Protection Area and review the potential sources of contamination (PSOCs) identified in your original Source Protection Plan or most recent SPP Update. Note any key changes. Is the local farmer still using the same pesticides and fertilizers on crop land? Check for any evidence of new land uses or activities that may threaten the water source. Has a new residence been constructed? If so, does it have a septic system? What fuel is used for heating the home? Discuss any important changes you have discovered. Modify your PSOC Inventory and PSOC map to reflect your observations.

Weigh the Risks from New PSOCs and Identify Risk Management Measures
Determine the risk level posed by any new potential source of contamination you have found. Then outline the management measure you intend to use to reduce the risk. In many cases the management measure can be as simple as communicating with the landowner and asking for assistance in protecting the water supply. If you think of a new way to manage the risk from a previously identified PSOC, take the time to outline your ideas and plans in the update.

Update Your Landowner List
Visit your town clerk-s office to determine whether any land or land rights within your Source Protection Area have changed hands. Add any new landowners to your list and remove anyone that no longer owns property in your SPA.

Communicate with Relevant Landowners and Town/County/State Officials
Send out letters to regulatory agencies to remind them that you are concerned about land use activities in your SPA. Also, send letters to newly identified landowners who may not know about your water source. Although not required, it=s a good idea to contact the other landowners within your SPA with a positive message about actions they can take to help protect your supply, and to thank them for any efforts they have made since your last letter.

Make Sure Your Contingency Plan Information is Current
Check the emergency contact information in your contingency plan and make sure all of the information is up-to-date. Make sure any new water system personnel have the information they need to make good decisions in an emergency situation.

Summarize Progress in Reducing Threats to Your Source
Look back over the last three years and think about what actions you have taken to make your source of water less vulnerable to contamination. Have you worked with a local farmer to reduce pesticide and fertilizer use in your SPA? Have you purchased development rights for land in your SPA? Have you posted signs at key locations to notify people when they enter your SPA? Have you responded swiftly and appropriately to an emergency situation? Use the SPP Update as an opportunity to boast about the progress you have made.

Source Protection Plan Update Checklist~

Your SPP Update may be as simple as a detailed short letter or it may be a comprehensive revision or rewrite of your original SPP. The format you choose will depend on what you discovered in the steps outlined above. However, regardless of the format, please be sure you have included the relevant items from the following checklist when you submit the SPP Update:

_____ Text describing your PSOC inspection and any changes and additions you are making to the Source Protection Plan. If there are no changes, please state clearly that you have performed an SPA inspection and found no changes in land use, land ownership, risk levels, etc. Provide date of inspection.
_____ Text describing the progress you have made in implementing risk management measures since your original SPP (or last update) was prepared.
_____ Updated PSOC Inventory (if applicable)
_____ Updated PSOC Map (if applicable)
_____ Updated Management Plan (if applicable)
_____ Updated Landowner List (if applicable)
_____ Updated Contingency Plan information (if applicable)
_____ Copy of letter sent to ongoing SPA landowners (optional)
_____ Copy of letter sent to new SPA landowners (if applicable)
_____ Copy of letter to town/county/state officials

Please send your Source Protection Plan Update to:

Water Resources Section
VT-DEC, Drinking Water & Groundwater Protection Division
1 National Life Drive, Davis 4, Montpelier, VT 05620-3521

VERMONT
ENVIRONMENTAL CONSERVATION

GUIDANCE

Drinking Water and Groundwater Protection Division

Source Protection Plan Required Information
(to be used in conjunction with the SPP Checklist)

I. If a consultant or someone other than the water system responsible person prepares the plan, an acknowledgement letter from the responsible person with a signature and date needs to be included.

II. There should be a brief description of the water system. Include such things as what the source is, its construction details, storage, if any, exist, population served, connections, setting (urban, rural, etc). There should also be a discussion of how the source protection area was delineated- include the calculations if necessary. The well log should also be included, if available.

III. Inventory the Potential Sources of Contamination (PSOCs) to your water source(s). This list should include sources of contamination that are potential and actual. They can include septic systems, gas stations, farms, parking lots, etc. There then needs to be a risk rating given to each PSOC (high, moderate or low). This rating is based on proximity of PSOC to source, amount of contamination, well construction, etc. Please note that all PSOCs within Zone 1 of the Source Protection Area are High risk. PSOCs that are just outside of the SPA, but are considered by you to be risk to the source may be included in your discussion. You may opt to summarize the PSOCs in a table at the end of their discussion. Please be sure to include past, present and *future* land uses.

IV. The source protection plan needs to have a strategic plan (risk management plan) for dealing with the potential sources of contamination and future needs of the water system. This part should include a list of landowners, and local, regional and state officials with their contact information (most importantly, mailing address). There should be sample letters to the affected parties. This section should outline the specific steps the water system will take to mitigate the threat from the PSOCs. This section should also include future plans the water system may have in the realm of source protection (purchasing land, development rights, etc.).

V. The source protection plan also needs to include a contingency plan in case the water system has an unexpected emergency. This is to include a list of who in the water system should be contacted (operator and/or responsible person) and which local, regional and state officials who need immediate contact and those who can wait until the situation is under control. Plans for short and long term emergencies are to be discussed here. A brief shut down/start up description should be included as well.

VI. Maps are an integral part of your source protection plan. There needs to be enough maps to convey a sense of the nature of the area. Meaning, the source and source protection area should be located on a USGS Topographic map (preferably 1:24,000). Either an orthophotographic or topographic base map, showing the source location and source protection area along with the potential sources of contamination; may be 1:12000 or smaller. A map with the tax base also needs to be included. This can be represented as an individual map or on the orthophotographic base with PSOCs. All maps need to include the following information; scale, legend, north arrow, water system name, WSID number, town, date of map creation, person making the map and source of map information. The Drinking Water and Groundwater Protection Division is available to provide technical assistance.

VII. Some other items you may wish to include in your plan are photographs of the water source and surrounding area, commitment to update the plan every three years (the plan needs to be updated every three years regardless of a commitment to do so), and excerpts from town plans or ordinances highlighting source protection efforts.

This guidance sheet and related environmental information are available electronically at:
www.dec.vermont.gov/water
Drinking Water and Groundwater Protection Division
1 National Life Drive, Davis 4, Montpelier, VT 05620-3521
Phone: 802-828-1535; Fax: 802-828-1541

One National Life Drive - Davis 4 [phone] 802-828-1535
Montpelier, VT 05620-3521 [fax] 802-828-1541
www.dec.vermont.gov/water

(this pertains to municipal water systems primarily and is for both existing SPA and likely proposed new SPA). Other Agency programs restrict or prohibit certain activities in Class I and Class II groundwater areas. It also raises public awareness of the groundwater resource and groundwater protection by recognizing its importance at an elevated level.

5. The water system will draft specific letters targeting the identified potential contaminants and send them to those land owners in the Source Protection Area (for example: targeted letters to specific land uses, provide more explanation regarding the relationship of land use activity and groundwater flow/recharge to the water supply).
6. Describe in detail the enhanced surveillance activities the water system will take, including frequency (for example: visiting with the owner/manager of high and moderate risk activities bi-yearly, walk or drive the SPA to observe what is happening every other week), and incorporate changes found into the SPP.
7. Purchase land or land use easements (i.e. development rights) within the Source Protection Area to have control over land use activities in sensitive areas. (for example: use the DWSRF loan set-asides for land purchase, fund a targeted land purchase/development rights acquisition account).
8. Incorporate and discuss how the bedrock and surficial materials base maps derived from the new State Geologic Maps, specific to the SPA, relate to specific source protection activities. This can be the basis for reevaluating risk assessments and determining more effective protection activities or assigning zoning districts.
9. Coordinate with DWGPD staff, depending on their workload, to accompanying water system personnel on a "windshield survey" or walk through the SPA to help identify unrecognized Potential Sources of Contamination (PSOC) or reevaluate existing ones, and understand their significance if released into the recharge area.
10. Coordinate with DWGPD staff, depending on their workload, to assist in priority ranking the identified risks in the SPA (as High, Medium, or Low) to improve
targeting the water system's protection activities. This could be done in conjunction with discussing the geologic surficial materials/bedrock type maps, the topography, the concentration/volume of contaminant, etc.).
11. Attend specific source protection training opportunities that are presented at various trainings and meetings (for example: Vermont Rural Water Association (VRWA) annual meeting, as a component of Operator Training. (VRWA is a partner with the Division in Operator Training and Source Protection).
12. Discuss other deterrent measures to contamination or vandalism that will be installed or implemented (for example: signage, fencing, volunteer activities for education, surveillance).
13. Other actionable activities.

B. Specifically address the water system's control of 200-foot isolation zone 1, and if not owned or controlled by the system, the water system's plan to manage it.

C. Commitment to update the SPP every year for changes/additions of PSOCs and landowners, and every three years to submit an updated SPP to the Division for review and approval.

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Vermont Department of Environmental Conservation *Agency of Natural Resources*
Drinking Water and Groundwater Protection Division
One National Life Drive - Davis 4 [phone] 802-828-1535
Montpelier, VT 05620-3521 [fax] 802-828-1541
www.dec.vermont.gov/water

D. Include copies of educational letters to be mailed to Town officials, and landowners and businesses within the SPA. These letters can involve education about proper septic tank use and cleaning, requests to reduce pesticide/herbicide/fertilizer use, reduce salting of roads, and other educational efforts specific to the PSOC, such as health effects or consequences of contamination of the source.

IV. Contingency Plan

A. Identify alternate drinking water supplies in the event of source contamination or disruption. Contingency plans address both short- and long-term needs, i.e., bottled water, hauled water, boiling water, drilling a new well, purchasing water from another water system, etc.

B. Emergency procedures for non-scheduled sequenced system shutdown and start-up. This information may be found in the Operation and Maintenance Manual for the water system.

C. List name and telephone numbers of people to contact in case of emergencies, spills, discharges, etc. (i.e. Fire Department, Police Department, Drinking Water & Groundwater Protection Division, Hazardous Material Spills (1-800-641-5005), etc.).

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www.dec.vermont.gov/water

WSID # _____
Water System Name _____ **Date** __
Reviewer _____

SOURCE PROTECTION PLAN CHECKLIST

Note: Not all sections may be applicable to all water systems.

YES
NO

IA. Orthophoto or USGS topographical maps with Source Protection Area delineation showing Source Location and:

_____1. Zone I, 200 foot radius isolation zone
_____2. Zone II
_____3. Zone III
_____4. two year time of travel delineation

IB. Tax maps with the following information identified and labeled:

_____1. Name of water system and WSID #.
_____2. Town name, scale, legend.
_____3. Groundwater sources (wells, springs)
_____4. Surface water inlets
_____5. Source Protection Area delineation
_____6. Potential Sources of Contamination (septic systems/leach fields, businesses, agriculture, forestry, USTs, ASTs, etc.) within the SPA
_____7. Landowner parcels and buildings within the SPA

II. Inventory of PSOCs and Assessment

_____**A**. Inventory and description of PSOCs (septic systems/leach fields, businesses, agriculture, forestry, USTs, ASTs, etc.) present and past.
_____**B**. A list of the land parcels within the SPA cross-indexed with the landowner and the PSOCs.
_____**C**. Assessment and ranking (whether PSOCs are high, moderate, or low risk)

III. Management Plan

_____**A**1. Educational activities to be performed.
_____ 2. Zoning changes to be enacted.
_____ 3. Zoning overlays to be incorporated.
_____ 4. Groundwater reclassification to Class II petition to be submitted.
_____ 5. Targeted PSOC letters to be developed and sent.
_____ 6. Enhanced surveillance activities to be implemented.
_____ 7. Land or easements to be purchased.
_____ 8. Enhance geologic understanding of aquifer.
_____ 9. Enhance PSOC identification.
_____10. Enhance PSOC ranking.
_____11. Attend source protection training.
_____12. Enhance Deterrent measures to contamination or vandalism.
_____13. Other, describe _____

_____**B**. Zone 1 management: Management techniques to be used, i.e., land purchase within SPA, posting signs, purchase of development rights, local ordinances, public educational efforts, other _____
_____**C**. Commitment to update the SPP every three years

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www.dec.vermont.gov/water

_____**D**. Copy of letter sent to businesses/landowners within SPA and copy of letter sent to town, county, and state officials.

IV. Contingency Plan

_____A. Alternate water supply made available, both long- and short-term solutions, with list of suppliers and phone numbers.

_____**B**. Emergency procedure for non-scheduled sequenced system shut down and startup.

_____**C**. A plan for notifying key contact people, including names, functions, and phone numbers.