

PROCTOR WATER DEPARTMENT

Proctor, Vermont

WSID #5228

Public Water Source Protection Areas and Source Protection Plan



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Proctor Water Department Source Protection Plan

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Review Annually and Update Every 3 Years

Date Reviewed	Reviewer	Changes or Comments

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Introduction

The development of Source Protection Plans (**SPPs**) are recommended for all public water systems and are required under the Vermont Water Supply Rule for all public community systems. A Public Community 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 used by year-round residents or regularly serves at least twenty five (25) year-round residents. (Vermont Water Supply Rule, Chapter 21, Subchapter Section 2.2) The purpose of a SPP is to identify water system vulnerabilities and to suggest techniques to manage land uses and activities that potentially may contaminate a public water source. SPPs are required for public water systems wishing to qualify for reduced monitoring or waivers from monitoring. Equally important, this data can serve as a planning tool to assist the water system in protecting its valuable water sources.

The goal of a SPP is to reduce, to the extent practicable, the risk of contamination to public water sources. This is done by first defining approximate risk zones around a source within which contamination might migrate to the source. For groundwater sources, these zones, the Public Water Source Protection Area (**SPA**), are established by a qualified hydrogeologist using existing data and hydrogeologic models appropriate for the source. For surface water sources, the SPA zones are determined by the watershed or drainage basin supplying recharge waters to the source. The SPP then becomes the management document that is used to monitor existing potential sources of contamination (**PSOC**) and/or evaluate new land uses that may pose a risk to the water source. The SPP can be used to more effectively manage appropriate, sustainable community development.

Inevitably, the establishment of “protection areas”, for any purpose, raises the concern of conflicting land uses and the “taking” of property rights. However, one must appreciate that the SPP does not alter the flow of water to the source; it only attempts to document what already exists. If a potential source of contamination exists in a SPA, then it poses a risk whether or not a SPP exists. The SPP is a benefit to both the affected landowners and the water system owner since contamination of a source can lead to health effects, costly clean-up, litigation and property devaluation. With few exceptions, prevention of contamination is far less expensive than ongoing treatment or replacement of the source(s).

A SPP also serves as a guide in the event of both short-term and long-term water quality emergencies. Because of the importance of drinking water and fire protection, a SPP must be a dynamic document, reviewed regularly and updated at least every three years or as appropriate. Like any planning tool, the SPP is only as effective as those who are responsible to use and maintain it.

Existing Sources and Infrastructure

The Proctor Public Drinking Water System (the System) is municipally owned and is regulated by the Vermont Water Supply Division as a Public Community Water System, WSID#5228. The System serves a population of 1,900, has 720 connections and is located in the town of Proctor, Vermont.

Table 1. Proctor Public Drinking Water System Key Facts

Public System Type	Community Water System
Number of Connections	720
Population Served	1,900
Average Daily Demand	410,000 gallons per day
Type(s) of Treatment	Hypochlorination; pH; sand filtration; coagulation; lime soda ash
GWUDI? (Under Influence of Surface Water)	No (MPA Testing 1993 & 1994)
Permit Expiration Date	June 2, 2009
Last Sanitary Survey	April 20, 2005
Monitoring Waivers	IOC/Cyanide 2005-2014 *Will apply for SOC waiver for Well once SPP is approved
Basin/Watershed	3 - Otter Creek
Recent Violations	THM and HAA5 MCL Exceeded
System Contacts	Operators – Todd Blow, John Corliss Responsible Person – Richard Norris Administrative Assistant – Steffanie Bourque

Sources: The System receives its water supply from two surface water intakes and one well. The primary source (Source 001) is a surface water intake located on Kiln Brook, a tributary of Furnace Brook. The secondary surface water intake (Source 003) is located west of the primary intake on Furnace Brook, upstream of its confluence with Kiln Brook. Both of these intakes are located in the Town of Chittenden, Rutland County, and the Otter Creek Basin (HUC #02010002). The Kiln Brook and Furnace Brook intakes were utilized as early as 1903 as this is the year that the “Chittenden Water Pipe Line” was constructed.

Unlike the surface water intakes, located in the Town of Chittenden, the municipal groundwater source (Source 002) is located in Proctor. The Field Street well was developed in gravel to a depth of 147 feet, in June 1960. System improvements necessary to utilize this source as a municipal water supply were completed in 1961, including construction of a pump house and installation of a 50 hp pump. Based on microscopic particulate analysis (MPA) testing conducted in 1993 and 1994, the Water Supply Division has determined that the Field Street well is not under the direct influence of surface waters and is exempt from further MPA testing (see Appendix A). System improvements necessary to provide stand-by disinfection and 20 minutes of chlorine contact time prior to the first service connection were completed in 2005.

Table 2. Source Information for Proctor Public Drinking Water System

Source #	Source Name	Type	Depth	Construction Date	Casing	Yield (gpm)
001	Kiln Brook	Perm Full Time	N/A	1903	N/A	390 (est.)
002	Field Street Well	Perm Full Time	147 ft	1961	125' steel	385 (est.)
003	Furnace Brook	Perm Seasonal	N/A	1903	N/A	undetermined

Filter Plant: The surface water collected on Kiln Brook and Furnace Brook is routed via cast iron main to the municipal water filtration facility (filter plant), located adjacent to the Pittsford National Fish Hatchery in Chittenden.

Figure 1. Proctor Filter Plant



The filter plant was constructed in the 1920s with essentially its current footprint. Uniquely, the filter plant was constructed entirely by Town personnel. Its design anticipated the use of coagulation although chemical coagulants were not commonly used until the 1990s. The filter plant consists of a variety of stages and elements to produce its high quality effluent. Stages include 1) inlet mixing, 2) baffled flocculation and coagulation, and 3) filtration. Because the plant has no conventional flocculation and sedimentation stages, facility operation is believed by the Water Supply Division to be a hybrid between direct and conventional filtration, although the facility is rated as a direct filtration plant. That being said, it is recognized in the facility's CPE, performed in March 2002, that the baffled contact chamber and coagulation basin do serve as an interim treatment step prior to filtration, based upon the bi-annual necessity for coagulant sludge removal.

For a detailed discussion of each facility element and the optimization goals for surface water treatment against which plant performance is compared reference the Proctor Filter Plant Planning Study in Appendix F of the Proctor Public Drinking Water System Operation and Maintenance Manual.

Since its construction in the 1920s there have been two large-scale modifications to the filter plant. The first, in 1965, included filter media replacement, gas chlorination, new drain piping, inlet piping and valving. The work performed is memorialized on a record plan entitled, "Village of Proctor, Rutland County, Vermont, Water Filtration Plant, Plan of Building Addition & Repair Work", J. Kenneth Fraser & Associates, Rensselaer, N.Y., 1965. The second, in 1995, included conversion from gas chlorination to sodium hypochlorite (liquid), installation of new chlorine residual monitoring and recording equipment, provision of an emergency generator, and relocation of all other existing chemical systems into a new chemical room addition to the original treatment facility. The new disinfection facilities were designed to treat an average daily flow of 457,000 gallons per day. An operation and maintenance manual, dated May 1996, and authored by DuBois & King, summarizes the work performed.

Figure 2. Proctor Backwash Effluent Treatment System



In addition, a third large-scale modification to address the untreated discharge of the filter backwash to Furnace Brook was completed in November 2005. Specifically, 1272 Order No. 3-1374 issued by the Wastewater Management Division required the municipality to construct a treatment system to achieve compliance with chlorine and turbidity effluent limitations as set forth in our discharge permit.

Distribution System: From the filter plant, finished water travels via 6-inch cast iron main for 6 miles through the towns of Chittenden and Pittsford before reaching the town of Proctor. Entering the Town, water main size generally increases towards two local distribution points: a steel water storage tank located south of Olympus Road (east side tank) and a water storage tank bounded by Market, School and North Streets (west side tank). The east side tank was installed in 1954 and holds approximately 100,000 gallons of water. The west side tank was replaced in 1995 with a 628,000 gallon glass-fused, bolted steel storage facility on a concrete foundation. The new

water storage tank replaced an existing 275,000 gallon welded steel tank, which was taken out of service and dismantled.

The water distribution system consists of approximately 68,710 feet (13+/- miles) of predominately cast-iron water pipe. Distribution system mapping was completed in December 2000. The system includes approximately 70 fire hydrants. The majority of the lines are 4 inch and 6 inch, some installed in the late 1800s. More recent improvements include:

- 10 inch ductile iron main replacement on portion of West Street in 1977
- 10 inch ductile iron main replacement on West Street Extension in 1977
- 12 inch ductile iron main replacement on Cross Street in 1977
- 12 inch ductile iron main replacement on portion of School Street in 1977
- 10 inch ductile iron main replacement on Gibbs Street in 1977
- 8 inch ductile iron main replacement along portions of Ormsbee Avenue, Warner Avenue, Olympus Road, Chatterton Park, and Park Street in 1980s
- 10 inch ductile iron main replacement from the east side tank to the end of Chatterton Park Extension in 1984
- 10 inch ductile iron main replacement from the bottom of Cain Street to the fire hydrant at the Cain/Center Street intersection in 2006
- 6 inch ductile iron main replacement on Cain Street in 2006
- 4 inch ductile iron main replacement on upper Cain Street in 2006
- 4 inch ductile iron main replacement on McGarry Street in 2006
- 4 inch ductile iron main extension on upper Center Street in 2006

Also completed in 2006, was the installation of a booster pump station on Cain Street to increase the water pressure in this general service area to comply with state requirements for maintaining a minimum 20 psi at ground level at all points in the distribution system under all conditions of flow.

Source Protection Areas

The Vermont Agency of Natural Resources defines a Public Water Source Protection Area (**SPA**) as “the surface and subsurface area from or through which contaminants are reasonably likely to reach a water system source”. The purpose of delineating a SPA is to determine the recharge area that supplies water to a public water source. Within a SPA, land uses and/or naturally occurring materials may cause a public water system to be vulnerable to contamination. 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 (**SPP**). A SPP identifies water system vulnerabilities and enumerates techniques to manage potentially contaminating land uses.

The SPA for public community water systems may be delineated using a calculated fixed radius, simplified variable shapes, analytical methods, hydrogeologic mapping, and/or flow models. Generally, a SPA is subdivided into three zones as follows:

Zone 1: The area impacts are likely to be **immediate** and **certain**. It is constructed of a circle with a 200 foot radius centered at the source (well or intake). It must be free of all sources of contamination and must be under the direct control or ownership of the water system.

Zone 2: This is the area outside of Zone 1 where there will be **probable** impacts from sources of contamination.

Zone 3: This is the remaining recharge area, topographically defined from Zone 2, where there may be **possible** impacts from potential sources of contamination. Activities in Zone 3 are remote from the source of supply; therefore, a lower level of risk is normally assessed for land use in this zone.

More specifically, for surface water sources, the delineation of a SPA includes the following zones:

Zone 1: an area 200 feet in radius around the intake.

Zone 2: areas within the watershed located within 200 feet of perennial surface water and limited to 17,000 acres.

Zone 3: the remaining watershed area beyond Zones 1 and 2 (may be reduced based on the size of the watershed and the likelihood of source contamination).

For groundwater sources, the SPA should include:

Zone 1: The source isolation zone shall be a water system controlled 200 foot radius around the source unless approved otherwise based on site specific considerations. Control of land use activities within the source isolation zone should be achieved by ownership of the land or through easements with restrictive covenants.

Zone 2: Shall consist of the contributions from the monitoring radius (1,000 ft to 3,000 ft) and outside the Zone 1 Isolation Zone. This zone should be delineated in a manner that reflects the hydrogeologic setting.

Zone 3: Shall consist of remaining recharge area(s) or area of contribution to the source not delineated as Zone 2. Source protection areas shall be delineated using existing geologic and hydrogeologic data, and pumping test data.

2YTT: Two year travel time (2YTT) zone shall be used to identify a protection area to provide adequate protection from pathogen threats resulting from onsite disposal of sewage.

Source 002 - Field Street Well SPA: The State of Vermont Department of Health delineated an Aquifer Protection Area (APA) in 1977 for Source 002 - Field Street Well. The SPA consists of three zones. Zone 1 consists of a 200-foot radius around the well. Zone 2 is defined as the primary boundary of the APA and Zone 3 is defined as the secondary boundary of the APA. This delineation is described in the “Aquifer Protection Area (APA) Project Land-Use Survey” included in Appendix B. The SPA is located in the Towns of Proctor, Rutland, and Pittsford, and lies within Rutland County and the Otter Creek Watershed.

Figure 3. Field Street Wellhead



Figure 4. Field Street Well House



Source 001 - Kiln Brook SPA: The State of Vermont Department of Health delineated the Source Protection Area in 1977 for Source 001 - Kiln Brook. The SPA consists of three zones. Zone 1 consists of a 200-foot radius around the water intake on Kiln Brook. Zone 2 consists of a 200-foot isolation zone surrounding the brook and its tributaries. Zone 3 consists of the remaining land areas located within the watershed. The SPA lies within the Town of Chittenden, Rutland County and the Otter Creek Watershed.

Figure 5. Kiln Brook Intake



Figure 6. Kiln Brook Upstream Look



Source 003 - Furnace Brook SPA: The State of Vermont Water Supply Division delineated the Source Protection Area in 2005 for Source 003 - Furnace Brook. The SPA consists of three zones. Zone 1 consists of a 200-foot radius around the water intake on Furnace Brook. Zone 2 consists of a 200-foot isolation zone surrounding the brook and its tributaries. Zone 3 consists of the remaining land areas located within the watershed. The SPA lies within the Towns of Chittenden and Goshen in Rutland and

Addison Counties. The Furnace Brook SPA is located on the eastern boundary of the Otter Creek Watershed.

Figure 7. Furnace Brook Intake



Figure 8. Furnace Brook Upstream Look



A map depicting the location of all three sources and SPAs is presented in Appendix C. A topographic map of the Field Street Well SPA is presented in Appendix D. A topographic map of the Kiln Brook and Furnace Brook SPAs is presented in Appendix E. An orthophoto map of the Field Street Well SPA is presented in Appendix F. An orthophoto map of the Kiln Brook and Furnace Brook SPAs is presented in Appendix G.

Investigation of Land Use Activity within the Source Protection Areas

Geology and Soils: The hilly, mountainous areas of Proctor, which form the eastern and western borders of the town and much of its entire land area, include slopes of from 3 to 50 percent and a loamy soil underlain by bedrock. A flat loamy soil association constitutes the flood plain of Otter Creek, one useful only for farming and forestry.

The surficial geology of the Field Street Well SPA includes recent stream alluvium, lacustrine sands and gravels, and ice contact gravel. Both the lacustrine sands and gravels and ice contact gravel have high water potential below the water table. The Furnace Brook and Kiln Brook watersheds are composed primarily of glacial till which is generally thin over bedrock and poorly drained with a bouldery surface.

In Chittenden, the Furnace Brook and Kiln Brook SPAs have bedrock geology from the Cambrian Camel's Hump group along with the Precambrian Mt. Holly complex in the southern sections of the SPAs. The bedrock geology of the Field Street Well SPA in Proctor includes Winooski dolomite, St Catherine formation, and Trenton group.

Source 002 - Field Street Well SPA: Site investigations of the SPA were made in 1977 by the State of Vermont for the APA Project Land-Use Survey. The SPA encompasses 581 acres and lies within the towns of Proctor, Pittsford, and Rutland. Current uses identified within all zones of the SPA include single family and multifamily residential development, municipal (wastewater treatment plant and pump station, solid waste transfer station), mining (gravel pit), woodland (undeveloped lots), agriculture (hay fields), and traffic (road) corridors. Former activities include commercial (petrochemical storage) and municipal (landfill) uses.

A table of each property owner and land use within the Field Street Well SPA is presented in Appendix H. This table is arranged first by town, then parcel number.

Based on information from the **Proctor** property tax maps, there are 111 parcels within the SPA in Proctor. In accordance with the Town of Proctor's current land use ordinance, adopted in March 2005, Zone 1 is zoned residential; Zone 2 is primarily residential with some agricultural and forest districts; and Zone 3 is primarily zoned agricultural and forest. Actual land uses in Zone 1 include residential and municipal – a municipal wastewater pump station is located approximately 150 feet northeast of the well. All residential development is sewered and several homes use heating oil with the tanks in the basement. Actual land uses in Zone 2 are almost exclusively residential with road corridors, including Route 3. All residential development is sewered with some heating oil use. There is also an inactive gravel pit and a former petrochemical storage site located in Zone 2. The petrochemical storage site is designated on the map in Appendix K as a hazardous waste site. The activity ceased and the storage facilities were removed in 1993. The northwestern portion of Zone 2 in Proctor is a wetland area in an agricultural zoning district held by Omya, Inc. Actual land uses in Zone 3 include municipal, forest, and undeveloped lots zoned agricultural. Municipal uses include a wastewater treatment facility in the northwest lobe of Zone 3. The remaining two lots in this lobe of Zone 3 are undeveloped wetlands held by Omya, Inc. The southeastern lobe of Zone 3 in Proctor is exclusively wooded, undeveloped land held by Omya, Inc.

Based on information from the **Pittsford** Town Clerk, there are four parcels within the SPA in Pittsford. In accordance with the Town of Pittsford's current land use ordinance, adopted in December 2005, a very small portion of Zone 2 extending into Pittsford is zoned rural and the larger portion of Zone 3 extending into Pittsford is zoned rural and rural commercial. Actual land uses in Zone 2 include a wetland area held by Omya, Inc. Actual land uses in Zone 3 include commercial and agricultural. Municipal uses include the Proctor wastewater treatment facility and Proctor Dump.

Based on information from the **Town of Rutland** Town Clerk, there are three parcels within the SPA in Rutland Town. A significant portion of southeastern Zone 3 lobe extends into the Town of Rutland. The Town of Rutland currently does not have zoning bylaws in place. Actual land uses in Zone 3 include wooded, undeveloped land and residential.

Source 001 - Kiln Brook SPA: The Kiln Brook SPA encompasses 1,562 acres in the town of Chittenden. Current uses identified within all zones of the SPA include single family residential development, camps, and woodland (municipal watershed and Green Mountain National Forest). Over 90% of the SPA is public lands.

A table of each property owner and land use within the Kiln Brook SPA is presented in Appendix I.

Based on information from the **Chittenden** Town Clerk, there are 10 parcels within the SPA in Chittenden. The Town of Chittenden currently does not have zoning bylaws in place. Actual land uses in all zones include residential, camp, municipal watershed, and woodland.

Source 003 - Furnace Brook SPA: The Furnace Brook SPA encompasses 7,390 acres in the towns of Chittenden and Goshen. Current uses identified within all zones of the SPA include single family residential development, camps, and woodland (private land holdings and Green Mountain National Forest). Approximately 60% of the Furnace Brook SPA is composed of public land.

A table of each property owner and land use within the Furnace Brook SPA is presented in Appendix J. This table is arranged first by town, then parcel number.

Based on information from the **Chittenden** Town Clerk, there are 79 parcels within the SPA in Chittenden. The Town of Chittenden currently does not have zoning bylaws in place. Actual land uses in Zone 1 include a mowed field and a wooded lot. Zone 2 is mostly forested, but also includes residential land and several road crossings. In Zone 3, land uses include woodland (majority is in the Green Mountain National Forest), recreation, residential (primary homes and camps), traffic (road) corridors, and wetlands along the tributaries to Furnace Brook. There does not appear to be any real agriculture in the source protection area beyond several hobby farms with a minimum number of animals and several hayfields.

Based on information from the **Goshen** Town Clerk, there are four parcels within the SPA in Goshen. All parcels are within Zone 3 and the Forest/Conservation Land Use District. The Town of Goshen approved zoning bylaws during April 1986. Actual land uses in Zone 3 include national and town forest and two seasonal camps.

Identification of Potential Sources of Contamination

From the investigation of land use activity previously discussed comes the identification of potential sources of contamination (PSOC) and the risk associated. The following types of current or former PSOC pertinent to the Proctor SPAs have been identified as listed below.

Source 002 - Field Street Well SPA: There are 118 parcels located in the Field Street Well SPA, three in the Town of Rutland, four in Pittsford, and 111 in Proctor. There are wetland areas and two small tributaries to Otter Creek located within the SPA while Otter Creek itself forms the northwest boundary of the SPA. The primary PSOC located within the Field Street Well SPA are summarized in Table 3. The map in Appendix K presents the location of these PSOC.

Table 3. Field Street Well SPA Primary PSOC

PSOC #	PSOC	SPA Zone	Risk
1	Municipal landfill – former Proctor Dump	3	High
2	Former Welch Property	2	High
3	Proctor Transfer Station	3	Medium
4	Municipal Wastewater Treatment Plant	3	Medium
5	Sewer lines	1,2,3	Medium
6	Heating oil tanks	1,2,3	Medium
7	Roadways – spills/de-icing salts	2,3	Low
8	Lawn and garden chemicals	2,3	Low
9	Household hazardous waste	2,3	Low
10	Mining – Omya, Inc. gravel pit	2	Low

Source 001 - Kiln Brook SPA: There are ten parcels located in the Kiln Brook SPA, all within the Town of Chittenden. Kiln Brook and one tributary are the only surface waters in the SPA. The State of Vermont does not list any permitted underground storage tanks, hazardous waste facilities or hazardous sites within the Kiln Brook SPA. The primary PSOC located within the Kiln Brook SPA are summarized in Table 4. The map in Appendix L presents the location of these PSOC.

Table 4. Kiln Brook SPA Primary PSOC

PSOC #	PSOC	SPA Zone	Risk
1	Septic tanks and leachfields	3	Medium
2	Heating oil tanks	3	Medium
3	Lawn and garden chemicals	3	Low
4	Household hazardous waste	3	Low
5	Logging	2,3	Low
6	Recreation – motorized in municipal & GMNF	2,3	Low

Source 003 - Furnace Brook SPA: Within the Furnace Brook SPA, there are 79 parcels in the Town of Chittenden and approximately four parcels in the Town of Goshen. Furnace Brook, along with the tributaries of Kettle Brook, Puss and Kill Brook, Steam Mill Brook, and Baker Brook are located in the SPA, in addition to several small wetland areas along the streams. The State of Vermont does not list any permitted underground storage tanks, hazardous waste facilities or hazardous sites within the Furnace Brook SPA. The primary PSOC located within the Furnace Brook SPA are summarized in Table 5. The map in Appendix M presents the location of these PSOC.

Table 5. Furnace Brook SPA Primary PSOC

PSOC #	PSOC	SPA Zone	Risk
1	Septic tanks and leachfields	3	Medium
2	Heating oil tanks	3	Medium
3	Home-based businesses	3	Medium
4	Roadways – spills/de-icing salts	2,3	Medium
5	Development – roadways and residential construction	2,3	Low
6	Lawn and garden chemicals	3	Low
7	Household hazardous waste	3	Low
8	Logging – localized in GMNF	2,3	Low
9	Recreation – motorized in GMNF	2,3	Low

Assessment of Threats

In order to assess current and future impacts from land uses in the SPAs, past land use was reviewed, planning options were examined, and a review of current property owners and their associated land uses was conducted. Windshield surveys were conducted by the System and Vermont Rural Water Association staff during the summer of 2006. In addition, all past source protection plans and system reports were examined. This information has been combined for the current inventories of PSOC for the Proctor Water Department.

After the PSOC inventories were completed, PSOC were ranked “Low”, “Medium” or “High” based upon factors such as: distance to source, toxicity of element, elevation, and geology. High risk PSOC include those sites of known contamination and prohibited uses within Zone 1.

Source 002 - Field Street Well SPA: There are ten PSOC identified in the Field Street Well SPA. These PSOC are listed in Table 3 and depicted on the map in Appendix K. Two have been ranked as a “High” threat, four have been ranked as “Medium” threats and four have been ranked as “Low” threats. The former Proctor Dump and former Welch property pose a high risk, while the municipal wastewater treatment plant, sewer lines, transfer station, and heating oil tanks are moderate threats. Low threats include roadways, residential use, and a gravel pit. An assessment of threats posed by the primary PSOC located within the Field Street Well SPA is presented here.

Municipal Landfill – former Proctor Dump: The Proctor Dump property is located along John Deere Road. The property was formerly occupied by the Vermont Marble Company and is currently occupied by the Proctor Dump, which is operated as a transfer station and stump and brush burning area.

The former dump area is located on portions of two properties identified on Pittsford Tax Assessor’s Map No. 11. The northern portion of the dump is located on a portion of Lot No. VT3-96 and is depicted in Figure 1 as a hazardous waste site. The southern portion of the dump is located on land that was formerly part of Lot No. VT3-98 (owned by OMYA, Inc.). On May 30, 1997, OMYA, Inc. deeded the Proctor Dump portion of Lot No. VT3-98 to the Town of Proctor.

Land use prior to 1930 is unknown. The Proctor Dump property accepted municipal solid waste from the Town of Proctor from approximately the 1930s to 1981. The Town of Pittsford also disposed of municipal solid waste at the property from approximately 1965 to 1971. Prior to the 1970s, municipal solid waste was burned in a burning dump on the property. In 1967, this original burning dump area was closed and capped with silty sands, forming an approximately 67,000 square foot lobe of the dump. In 1967, the Town of Proctor established a second lobe of the dump, downslope of the first lobe. Operations reportedly included carrying out proper compaction and capping. The second lobe is approximately 148,000 square feet. Municipal solid waste is the only type of waste documented to be disposed of at the Proctor Dump. There is no record of hazardous waste disposal on the property; however, a 1987 Preliminary Assessment report indicated that disposal of metal shavings and solvent-containing debris may have occurred in the 1940s.

Due to the location of the Proctor Dump within the Field Street Well SPA, and complaints regarding municipal solid waste floating in the adjacent wetland, the Proctor Dump was not given State approval to operate as a dump and was closed as such in 1981.

During the investigation of the Proctor Dump property during the late 1990’s, groundwater sampling was not performed. There is no record of a release of hazardous substances to the groundwater beneath the

Proctor Dump. The Final Site Inspection (submitted July 10, 1998) reports that the Field Street well had not shown contamination from this property and was assumed to be upgradient from the former Dump.

Former Welch Property: On April 12, 1993, one 550 gallon fuel oil underground storage tank (UST) was removed from the former Welch Property located at 48 East Street in Proctor. This property is located in Zone 2 of the Field Street Well SPA. Soil contamination was observed during the UST removal; groundwater was not encountered during excavation. Petroleum contamination was observed in monitoring wells during 1993, but groundwater sampled on July 13, 1993 and April 19, 1994 was not found to contain any detectable levels of the petroleum compounds. The basement of the onsite building was the only receptor which was determined to have the potential to be adversely impacted by the contamination onsite. This site was designated as having all management activities complete (SMAC) on July 1, 1994.

Proctor Transfer Station: The Proctor Transfer Station on Deer Road follows practices to prevent contamination of groundwater and surface water. The Transfer Station is open once a week and accepts the following items:

1 Plastic Bottles, #2 Plastic Bottles, Aluminum, Construction & Demolition Waste, Corrugated Cardboard, Glass Containers, HHW (Seasonal), Magazines, Metal Cans, Mixed Paper, Newspaper, Phone Books, Scrap Metal, Tires, Trash, and Yard Waste. There are generally two household hazardous waste days held per year, one in the summer and one in the fall.

Municipal Wastewater Treatment Plant & Sewer Lines: The Town of Proctor's sanitary wastewater treatment system, located on Patch Street, consists of headworks, a two-cell lagoon, and ultraviolet (UV) disinfection. A Reconnaissance Inspection conducted by the Wastewater Management Division on December 1, 2005 concluded that, on the day of the inspection, the facility appeared to be very well maintained and all of the equipment was fully operational. The overall inspection rating for the facility for the period November 2004 through October 2005 was "Excellent".

The Field Street wastewater pump station is located at the end of Field Street, adjacent to the Field Street well house. The force main from this station and other lines in the sanitary sewage collection system are found throughout zones 1 and 2. Leaks in these pipes are a potential source of bacteria, viruses, and protozoa which can cause gastrointestinal illness, cholera, hepatitis A, or typhoid if consumed. The Town's Wastewater Department routinely monitors and inspects these system components for leaks and other problems that may compromise the Field Street Well.

Roadways: There are multiple roads found in the Field Street Well SPA, mostly paved. Route 3 is a paved State numbered road that receives a moderate amount of traffic. Other town paved roads include Williams Street, Patch Street, Oak Street, Warner Avenue, and others. Roads are potential contamination sources because of de-icing materials and automotive chemicals such as MTBE and other volatile organic compounds. Salt use is kept to a minimum within the source protection area; however, alternative de-icing methods should be explored. Both sodium and chloride can quickly reach groundwater and may be harmful in drinking water for those sensitive to salt.

Residential PSOC: There are approximately 104 residences within the Field Street Well SPA. There are several additional landowners whose properties intersect with the SPA. All of the homes within the SPA are on the public water and sewer systems. Contamination from private wells and/or septic systems is not a concern at this time. Potential contamination sources associated with residential land use include residential fuel oil storage, household hazardous waste disposal and lawn care.

Heating fuel spills are a source of volatile organic chemicals. Exposure to fuel oil is not known to cause cancer in humans. However, long-term exposure to benzene, the most toxic component of fuel oil, is known to cause leukemia. Several homes in the SPA use fuel oil for heating. These homeowners will be provided with information regarding proper tank maintenance and what to do in case of a spill.

Improper disposal of household hazardous waste has the potential to threaten ground water and drinking water sources. These toxic substances should not be poured down the drain, into the toilet, or onto the ground. The best choice for hazardous waste disposal is the annual Household Hazardous Waste Collection Days at the Proctor Transfer Station on Deere Road. Information will be distributed to homeowners regarding which substances need to be properly disposed and what to do with hazardous substances during the winter.

Mining - Omya, Inc. gravel pit: The gravel pit is presently inactive. It is used intermittently for non-commercial purposes. There is no equipment or fuel storage on-site.

Source 001 - Kiln Brook SPA: There are six PSOC identified in the Kiln Brook SPA. These PSOC are listed in Table 4 and depicted on the map in Appendix L. Two have been ranked as “Medium” threats and four have been ranked as “Low” threats. The residential septic and heating oil tanks pose moderate threats while low threats include household hazardous waste, lawn chemicals, logging and recreation. An assessment of threats posed by the primary PSOC located within the Kiln Brook SPA is presented here.

Residential PSOC: There are ten parcels within the Kiln Brook SPA, with seven residences. Of these, there are three residential properties with primary single family homes and four seasonal camps. All of the homes within the SPA have private wells, but contamination is not a concern because the Kiln Brook public water source is surface water. Potential contamination sources associated with residential land use include septic systems, residential fuel oil storage, lawn and gardening chemicals, and household hazardous waste. One homeowner also operates a greenhouse, which is of particular concern.

All of the homes within the SPA use septic systems. There are no public wastewater systems in the nearby vicinity. Septic systems are potential sources of bacteria, viruses, and protozoa which can cause gastrointestinal illness, cholera, hepatitis A, or typhoid if consumed. Failing systems may also contribute contaminants such as nitrates and sodium to ground and surface water. Septic systems should be maintained regularly by pumping out wastes every 3-5 years.

Heating fuel spills are a source of volatile organic chemicals. Components of fuel oil are known to cause negative health impacts such as leukemia. Several homes in the SPA use fuel oil for heating. These homeowners will be provided with information regarding proper tank maintenance and what to do in case of a spill.

Recreation & Logging: Public forest lands in the Kiln Brook SPA include the Proctor Municipal Watershed, Green Mountain National Forest and Mount Carmel State Forest. PSOC in forested areas include activities such as recreation and logging. Recreation in these areas can be both motorized and non-motorized. Snowmobiles along the VAST trails could leak or spill fuel which may cause contamination from volatile organic compounds. All logging in the area should follow best management practices, especially for activities such as building temporary roads and stream crossings.

Source 003 - Furnace Brook SPA: There are nine PSOC identified in the Furnace Brook SPA. These PSOC are listed in Table 5 and depicted on the map in Appendix M. Four have been ranked as “Medium” threats and five have been ranked as “Low” threats. The residential septic, heating oil tanks,

home businesses, and roadways pose moderate threats while low threats include construction activities, household hazardous waste, lawn chemicals, logging and recreation. An assessment of threats posed by the primary PSOC located within the Furnace Brook SPA is presented here.

Residential PSOC: There are 79 parcels within the Furnace Brook SPA, with 55 residences. Of these, there are 33 residential properties with primary single family homes and 22 seasonal camps or cabins. All of the homes within the SPA have private wells, but contamination is not a concern because the Furnace Brook public water source is surface water. Potential contamination sources associated with residential land use include septic systems, residential fuel oil storage, lawn and gardening chemicals, and household hazardous waste. There is no commercial land use listed in the property descriptions, but some activities of concern were spotted during windshield surveys.

All of the homes within the SPA use septic systems. There are no public wastewater systems in the nearby vicinity. Septic systems are potential sources of bacteria, viruses, and protozoa which can cause gastrointestinal illness, cholera, hepatitis A, or typhoid if consumed. Failing systems may also contribute contaminants such as nitrates and sodium to ground and surface water. Septic systems should be maintained regularly by pumping out wastes every 3-5 years. Homeowners within Zone 2 should be extra vigilant in inspecting and maintaining their septic on a yearly basis.

Improper disposal of household hazardous waste – especially from home businesses – has the potential to threaten drinking water sources. These toxic substances should not be poured down the drain, into the toilet, or onto the ground. Hazardous waste should be disposed at the Rutland Regional collection site. One property on Middle Road is of particular concern – over 40 junk cars were parked around the yard of the home and it may be functioning as a salvage yard.

Roadways: There are four roads found in the Furnace Brook SPA, all unpaved. River Road and Middle Road are Class 3 Town gravel roads that run north-south in the SPA. Lead Mine Road is Class 3 for 0.38 miles and then changes to a “discontinued” road. Baker Brook Trail is officially considered a “legal trail.” Middle Road also becomes a “legal trail” north of Lead Mine Road. Roads are potential contamination sources because of de-icing materials and automotive chemicals such as MTBE and other volatile organic compounds. Sand may be applied to the roads during plowing but should not contain salt. Both sodium and chloride can be harmful to aquatic life. Legal trails and discontinued roads are not maintained in the winter.

Development: While conducting windshield surveys, several areas of development were noticed along Middle Road in Zone 3. It was not clear whether these sites were following best management practices for reducing runoff which can pollute streams. Sediment can increase turbidity in surface waters while other contaminants can be picked up and carried across land during precipitation events. After discussions with the appropriate landowners, it has been determined that there is no development potential in Zone 1 along Furnace Brook. The Smith Farm Homeowners Association owns the parcel along the western shore of Furnace Brook and has written into their covenant that no development or construction will take place on this 23-acre community-owned lot. Land use includes minimal recreation (some hiking) and no maintenance of the land. Across the stream, the Waddington Zone 1 property is a mowed field with a riparian buffer, and no chemicals are applied to the land.

Recreation & Logging: Public forest lands in the Furnace Brook SPA include Chittenden Municipal Land, Pittsford Municipal Watershed, and Green Mountain National Forest. PSOC in forested areas include activities such as recreation and logging. Recreation in these areas can be both motorized and non-motorized. Snowmobiles along the VAST trails could leak or spill fuel which may cause

contamination from volatile organic compounds. All logging in the area should follow best management practices, especially for activities such as building temporary roads and stream crossings.

Risk Management Plan

After reviewing the PSOC inventory for each of the sources, the System developed a list of management priorities. These activities are discussed more specifically in the summaries below.

Education and Outreach: The Proctor Water Department and its partners will begin implementing an education and outreach campaign. Public education and outreach are central to the plan because increased awareness leads to better management of contamination risks within the SPAs.

A letter and copy of the SPP will be sent to local and regional planning boards and state agencies to notify them of the location of the public water sources and the source protection areas. A copy of an example letter is presented in Appendix N. This letter will be sent out within three months of receiving state approval of this plan. The mailing addresses are presented in Appendix O.

A letter and map of the source protection area will be sent to all property owners located within a SPA, to notify them that their property is located within a SPA for a public water system. The mailing addresses for each property owner are provided in Appendix P. A copy of educational materials regarding relevant topics such as septic system maintenance and the proper disposal of hazardous materials will be sent with each notice. A sample letter is found in Appendix Q.

Additional activities may include educational programs such as system tours for students, Drinking Water Week activities, and displays at community events. Press releases should be sent to local newspapers regarding the new source protection area and suggested activities for keeping drinking water safe.

Planning and Coordination with Other Entities: Since the SPAs for all sources are found at least partly outside of the Town of Proctor, this plan presents a unique challenge for coordination of management projects that will help protect the Field Street Well, Kiln Brook and Furnace Brook from potential contamination. All of the towns involved will be contacted and encouraged to participate in the planning and management process.

The Proctor Public Drinking Water System and the Vermont Rural Water Association (VRWA) will work with town select boards, planning commissions, or conservation commissions to discuss options for municipal protection of each SPA. VRWA has been discussing source protection and town planning with the Rutland Regional Planning Commission. The Commission has also been provided with sample language to use in promoting zoning and overlay districts for source protection areas.

In addition, the Vermont DEC Water Quality Division has initiated basin planning in the watershed encompassing Kiln and Furnace Brooks. The Watershed Coordinator will be contacted regarding the inclusion of the source protection areas in the Basin Plan. The Green Mountain National Forest will be contacted and advised to include the location of the SPAs and best management practices in their forest plan.

Transportation: Letters may be sent to the town road foremen to request that best management practices for road maintenance and minimum salt use be used within the SPAs. The sand applied to unpaved town roads should be salt-free. The paved roads in the Field Street Well SPA should be considered as possibly becoming low salt areas. At this time, few salt alternatives are feasible because of cost and/or de-icing effectiveness. Once more information becomes available, the alternatives should be re-evaluated.

Emergency Response and Security: The Proctor Water Department will continue discussing ways to increase security throughout the water system. The System is aware of the need for security and emergency response measures. The buildings, intakes, and Zone 1 areas should be inspected to determine if there are any low-cost ways to prevent tampering or possible contamination of the water supply. Signs that are available from the Vermont Rural Water Association include “Source Water Protection Area” and “Federal Offense for Tampering with this Facility.”

The System has their Operations and Maintenance Manual, with an Emergency Response Plan, on hand at each site. These plans and manuals should be reviewed annually to continue to be most effective.

Land Use – Development and Construction: The operator and town representatives should continue to monitor all development and construction within the SPAs. Zoning updates may also be reviewed. Towns may want to notify the System of all development hearing for land near the surface water intakes. In addition, towns should ensure that the septic applications have the source protection area designation with the Vermont Wastewater Management Division. No official approval is necessary for construction within the SPA, but should take place with the best management practices for water quality.

It is of utmost concern to monitor the potential development near the Furnace Brook and Kiln Brook intakes, since these sources are in remote areas outside of the water system. The current landowners have all stated that no development is planned near these intakes and the properties are maintained as to have minimal impacts on the water source. Immediate contact will be made if there is any change in land ownership near either surface water intake.

Source Water Protection Plan Updates: The Proctor Public Drinking Water System Responsible Person will oversee implementation of the measures outlined in this SPP. After the management activities in this plan have been implemented, a designated representative should review the plan once per year. The system operator and/or responsible person will perform an inspection of each SPA every three years to confirm that all parties are following best management practices, and to identify any changes in land uses or property owners. Updates indicating any changes in land use or PSOC will be submitted to the Water Supply Division. The updates may simply consist of a letter, which describes any changes to the original SPP or a letter stating that there have been no changes. See Appendix R for information on updating the plan.

The Proctor Water Department reserves the right to amend or update this plan before the three-year submittal cycle has been completed.

Contingency Plan

The Contingency Plan outlines the steps that the System may take in the event their water sources (Field Street well, Kiln Brook, and/or Furnace Brook) become contaminated, are at imminent risk of becoming contaminated (e.g., due to hazardous contaminant spill in the vicinity of the source) or declines if there are mechanical problems with the water system. A detailed account of emergency procedures is presented in the Proctor Public Drinking Water System Operation and Maintenance Manual.

The above possible situations may result in a loss of water supply for the System for a number of hours, days, weeks, or even permanently. The Contingency Plan specifies emergency response procedures including names and phone numbers of key people/officials that may be needed to solve a particular problem. The System will need to identify the appropriate people to call for each situation. In addition, short-term and long-term water supply alternatives are outlined. Being prepared for potential emergency situations will greatly improve the System’s ability to address problems.

Water Supply Disruption Response Procedures: If an emergency occurs, such as a contaminant spill in the SPA or if a regulated compound is detected in the water supply above acceptable levels, the following notification procedure should be implemented.

Step 1: The person discovering the emergency situation will call the water system operator and/or the responsible person. The System contacts are summarized in Table 6.

Table 6. Proctor Water System Contacts

Title	Name	Contact Information
Water System Operator	Todd Blow	(802) 250-3404 (pager) (802) 459-2777 (home)
Responsible Person	Richard Norris	(802) 773-8707 (work) (802) 353-0165 (cell) (802) 459-0081 (home)
Administrative Assistant	Steffanie Bourque	(802) 459-2502 (work)

Step 2: The responsible person, operator and/ or Administrative Assistant will then be responsible for notifying the following officials, depending on the nature of the situation. The officials are summarized in Table 7.

Table 7. Emergency, Town, and Service/Repair Contacts

Emergency Contacts	
Statewide Emergency Services	911
Vermont State Police – Rutland Station	(802) 773-9101
Rutland County Sheriff	(802)775-8002
Regional Ambulance Service	(802) 773-1700
Proctor Fire Department	911
Vermont Water Supply Division	(800) 823-6500 (802) 241-3400
Vermont DEC Hazardous Materials Spills Hotline	(800) 641-5005
Vermont Department of Health	(800) 439-8550
VTrans Rutland– Maintenance District #3	(802) 786-5826
Town Contacts	
Proctor Town Clerk, Mary Dahlin	(802) 459-3333

Proctor Health Officer, Richard Kelleway	(802) 459-2909
Service/Repair Contacts	
Local Electrician – Mark Mason, CDP	(802) 483-2121
Electric Utility – Barry Donovan, Vermont Marble Power Division	(802) 770-7444
Local Plumber – Bernie Webster, Bernie’s Plumbing & Heating	(802) 775-2893
Water Testing Lab – SciTest	(802) 728-6313
Vermont Department of Health Laboratory	(802) 863-7335 (800) 660-9997

It will be Richard Norris’s responsibility to determine who should be called on this list. If Mr. Norris is not available, the Administrative Assistant will assume this responsibility. Actions that may be considered include:

- Seeking advice from a consultant or the Water Supply Division at the State of Vermont,
- Providing an alternate water source (bottled water, hauled water),
- Ordering repair equipment, or contracting for repair,
- Remediating or cleanup related to a hazardous materials spill,
- Providing water system treatment, and
- Implementing water conservation measures.

Short-Term Contingency Options: Water contamination or disruption of supply may require that the water system get water from an alternate source to meet basic community needs. All public water systems should plan ahead to provide alternative safe water during an emergency, if feasible. It is important to evaluate potential alternative water supplies ahead of time to ensure the water is safe and the supply is available.

Short-term water supply alternatives include bottled water delivery or bulk water delivery to fill the tanks. Bottled water is available from the suppliers listed in Table 8.

Table 8. Bottled Water Suppliers

Company Name	Location	Contact Information
Vermont Pure	Randolph, VT	1-800-525-0070
Vermont Heritage	Newport, VT	802-334-2528
Booth Brothers Dairy	Barre, VT	802-476-6605

A short-term supply of water can be provided by filling one or more of the water tanks. A number of bulk water suppliers can provide 4,000 to 6,000 gallon loads. A water use restriction should be put in place to conserve supply in the event of water hauling. Sanitary tank truck delivery can be provided from the suppliers listed in Table 9.

Table 9. Bulk Water Suppliers

Company Name	Location	Contact Information
Willie’s Water Hauler	Stowe, VT	802-253-8552
Stowe Waterworks	Moscow, VT	802-253-7431
Fresh Water Haulers	Burlington, VT	802-658-2223
Booth Brothers Dairy	Barre, VT	802-476-6605

Long-Term Water Supply Alternatives: If the source becomes continuously unavailable due to quantity or quality issues, the system will initiate a program to determine future necessary steps. Decisions will be made to determine if, in the case of contamination, water can be treated until contamination is no longer present, or if the contaminated source will need to be abandoned.

If an existing source must be abandoned or permanently modified, long-term options include using only one source, drilling one or more new wells, and installing an appropriate modified system of water treatment at the existing plant.

Water System Shut Down/ Start Up Procedures: In the event part or all of the System must be shut down for an emergency situation, personnel should contact the water system operator. The water system operator will follow the Emergency Response Plan, as presented here and in the Proctor Public Drinking Water System Operation and Maintenance Manual.

Shut Down/Start Up Procedure for Source 002 – Field Street Well: The Field Street Well is currently used as a back up water supply. The well is typically not in service. In the event the Field Street Well must be utilized for an emergency situation, the following start up procedure should be employed:

1. To turn on the well pump, turn the dial on the Arrow-Hart motor control center from the “Off” position, to the “Hand” position. The power switch is inside the pump house on the west wall, straight ahead as you enter the door.

To shut down the well, the following procedure should be employed:

1. To turn off the well pump, turn the dial on the Arrow-Hart motor control center from the “Hand” position, to the “Off” position.

Shut Down/Start Up Procedure for Source 001 – Kiln Brook: The Kiln Brook Intake is the primary water source for the System. The intake is typically always in service. In the event the Kiln Brook Intake must be shut down for an emergency situation, the following shut down procedure should be employed:

1. Close the 6-inch gate valve on the feed line to filter plant at the Kiln Brook Intake.
2. Lift the screens out of the screening chamber.

To restore service at the Kiln Brook Intake, the following procedure should be employed:

1. Lower the screens into the screening chamber.
2. Open the 6-inch gate valve on the feed line to filter plant at the Kiln Brook Intake.

Shut Down/Start Up Procedure for Source 001 – Furnace Brook: The Furnace Brook Intake has historically been used only as a seasonal supplement to the Kiln Brook Intake. The intake is typically not in service. In the event the Furnace Brook Intake must be utilized for an emergency situation, the following start up procedure should be employed:

1. It is not possible to utilize this intake without first having cleaned it out. Clean out procedures are:
 - a. Set up the Honda WX10 gas powered pump with ¾” garden hose.
 - b. Pull screens out of building.

- c. Suction line by slip plate.
 - d. Wash down chamber and screens.
 - e. Open drain to brook.
 - f. Open slip plate at intake window.
 - g. Run raw water through the chamber until clean.
2. Once cleaned, the switch over from the Kiln Brook Intake to the Furnace Brook Intake takes approximately five (5) hours to complete. To utilize the Furnace Brook Intake:
 - a. Turn the 6" gate valve on the feed line to filter plant at the Kiln Brook Intake to the closed position.
 - b. Open the slip plate at the Furnace Brook Intake. Slip plate is outside on the upstream side of the building.
 - c. Close the drain valve to the brook at the Furnace Brook Intake. The drain valve is located straight ahead as you enter the door.
 - d. Open the valve to the Furnace Brook feed line to the filter plant. The valve is located immediately to your right as you enter the door.
 - e. The operator must return to the filter plant and run the facility in accordance with operating procedures detailed in Appendix A, Section F of the Proctor Public Drinking Water System Operation and Maintenance Manual.

To shut down the Furnace Brook Intake, the following procedure should be employed:

1. Restore service at the Kiln Brook Intake (see above).
2. Close the Furnace Brook feed line to the filter plant.
3. Open the drain to the brook at the Furnace Brook Intake.
4. Close the slip plate at the Furnace Brook Intake.