



# Source Water Assessment Program (SWAP) Report for Swift River Elementary School

## What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

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**Table 1: Public Water System (PWS) Information**

<i>PWS Name</i>	Swift River Elementary School
<i>PWS Address</i>	201 Wendell Road
<i>City/Town</i>	New Salem, Massachusetts
<i>PWS ID Number</i>	1204001
<i>Local Contact</i>	Mr. Keith Fiske
<i>Phone Number</i>	978-544-6926

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in, feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1204001-01G	161	457	Moderate

## Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

### The Well

Swift River Elementary School is a rural, elementary school located on the south side of Wendell Road in New Salem. The school student and staff population is approximately 200 people per day and is served by a single potable supply well (Well #1) located in the boiler room of the school.

The well has a Zone I protective radius of 161 feet and an Interim Wellhead Protection Area (IWPA) radius of 457 feet based on reported metered, maximum water usage. Although there is no record of well yield from the well installation, the pump has a rated

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

capacity of approximately 20 gpm. Well #1 is a 6-inch diameter well drilled to a depth of approximately 210 feet below ground. There is no known driller's log describing the construction of the well or materials encountered during drilling. However, it is known that the well pump is set at approximately 190 feet below ground. Bedrock outcrops are observed on-site indicating little or no overburden. The bedrock in the area is mapped as the Fourmile Gneiss, a layered massive, biotite-feldspar gneiss. Wells constructed in bedrock aquifers under these conditions are considered to have high vulnerability due to the lack of a barrier to prevent surface contaminants from migrating into the bedrock aquifer. Currently, the only treatment of the water is the addition of potassium carbonate to raise the pH preventing the leaching of copper and lead from the distribution pipes in the school. You may request additional information regarding the quality of the water, from the local contact listed in Table 1.

Please refer to the attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information.

## 2. Discussion of Land Uses in the Protection Areas

During the assessment, it was noted the few land uses and activities within the drinking water supply protection areas are potential sources of contamination.

### Key issues include:

1. **Non-conforming activities within Zone I**
2. **Septic System components in the IWPA**
3. **Floor drain in boiler room**

The well is located in an aquifer with a high vulnerability to contamination due to the absence of a significant hydrogeologic barrier to prevent contaminant migration. The overall ranking of susceptibility to contamination for the well is high, based on the presence of the presence of several moderate threat land use or activity in the IWPA, as seen in Table 2.

### 1. Non-conforming activities within Zone I

Currently, the well does not meet DEP's restrictions that allow only water supply related activities in Zone I. The facility's Zone I contains school buildings, roads, parking areas, and septic system components. The public water supplier does not own all land encompassed by the Zone I and therefore has no control over some of the activities. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or

**Table 2: Table of Activities within the Water Supply Protection Areas**

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Above Ground oil tank	Yes	No	Moderate	Secondary containment and line protection in place.
Septic System components (leachfield)	No	Yes	Moderate	Refer to attached septic system fact sheet.
Floor Drain in the boiler room to septic system	No	Yes	Moderate	Develop a policy and plan for protecting the floor drain during maintenance
Parking, storm water and road way	Yes	Yes	Moderate	Manage, monitor and maintain system.
Passive Recreation	No	Yes	Low	Athletic Fields

- -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

modifying systems.

### Recommendations:

- ✓ Do not conduct any new activities within Zone I.
- ✓ Do not use or store pesticides, fertilizers or deicing materials within the Zone I.
- ✓ If the existing threats cannot be mitigated, and pose increased threat, consider investigating an alternative site for a new well.

2. **Septic systems** - The septic system leach field is located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems or discharge from the boiler room are also potential sources of contamination to the water supply.

### Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator.
- ✓ Refer to the appendices for more information regarding septic systems. The school is currently not registered as a generator of hazardous waste or waste oil. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" to determine regulatory requirements.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis.

3. **Floor drain in the boiler room** – Floor drains may be required in boiler rooms to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials to flow accidentally into the floor drain, however, preventive measures should be taken. Floor drains in an area that contains hazardous materials must be discharged to a sewer or a tight tank. The boiler room at the Swift River Elementary School has a floor drain that discharges to the septic system. Oil lines from the tank to the boiler are sleeved and have a negative pressure so that so that any drop in pressure would cause the oil to drain back to the tank therefore minimal oil could leak to the boiler room in the event of an accident.

### Recommendations:

- ✓ A written policy and plan should be in place during maintenance operations, especially when oil filters are changed. Request that your boiler maintenance contractor use containment, protect the drain and have absorbent materials onhand to prevent accidental leaks while conducting routine maintenance. Please note that boiler blow down generated during routine maintenance cannot be discharged through the floor drain and must be disposed of off site.

Other activities that were noted during the assessment were stormwater from the parking area and the road and some agricultural activities. As flowing storm water travels, it picks up debris and contaminants from parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, or accidents.

Pollutants are actually not removed from most catch basins until they are cleaned out. Regular maintenance is required to reduce the risk of resuspension of sediments and contaminants during

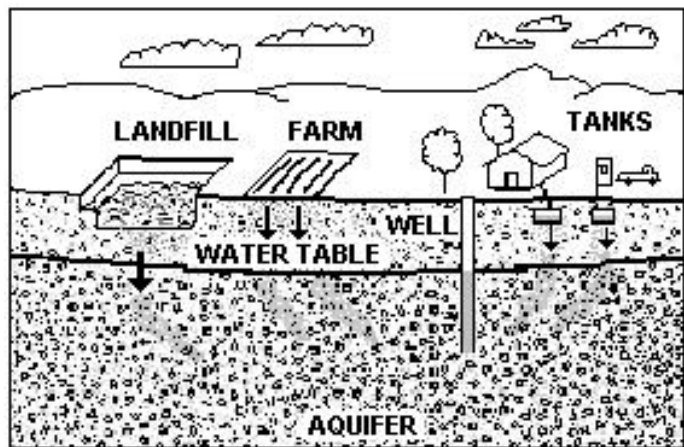


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

[www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/)

### Additional Documents:

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

large storm events. Maintenance is essential for the proper operation of catch basins and the sediment/water quality basin. Due to the shallow bedrock contaminant discharged through the basin may impact the bedrock aquifer. If you do not have a storm water maintenance plan, work with the Town to develop one. Maintenance plans should include an inspection and maintenance schedule for inlets and outlets. Look for color, turbidity, odor, oil sheen etc. at the outlet. All observations should be recorded and action taken if evidence of a release of hazardous materials such as petroleum products has been observed. Inspect parking areas periodically for evidence of leaks or accidental spills.

Encourage local farmers to contact the Department of Food and Agriculture or National Soil Conservation Service to obtain and follow a Farm Plan through Natural Resource Conservation Service. Alternatively, farmers may complete and follow their own plan developed through the publication *On Farm Strategies to Protect Water Quality: An Assessment and Planning Tool for Best Management Practice*. Information on funding and resources is available through the Massachusetts Department of Food and Agriculture.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Swift River Elementary School staff is commended for current protection measures.

Please review and adopt the key recommendations listed above and as follows:

### Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I. Look for evidence of unauthorized access.
- ✓ Monitor activities and if there is evidence of increased activity or access, consider gating the wellhead.
- ✓ Post drinking water supply signs key location such along the access road and in the parking area.
- ✓ Provide information to staff about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Do not use fertilizers and pesticides in Zone I.
- ✓ Use Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides and household hazardous waste.

### Training and Education:

- ✓ Incorporate groundwater education into school curriculum (K-6 curricula available; contact DEP for copies).
- ✓ Inform all staff regarding proper use and disposal of household hazardous materials.

### Facilities Management:

- ✓ Concrete or earthen collars around the wellhead should slope away from well.
- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator.
- ✓ Refer to the appendices for more information regarding septic systems. The school is currently not registered as a

generator of hazardous waste or waste oil. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" to determine regulatory requirements.

**Planning:**

- ✓ Work with local officials in Warwick to include the school well's IWPA in an Aquifer Protection District Bylaws and to assist you in securing protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

**Funding:**

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at

<http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

**4. Attachments**

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Healthy Schools Fact Sheet
- Grant Program Fact Sheet
- Source Protection Sign Order Form
- Very Small Quantity Generator (VSQG) information