Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Mohawk Trail Regional High 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

Date Prepared
January 8, 2004

Table 1: Public Water System (PWS) Information

PWS Name	**Mohawk Trail Regional High School**
PWS Address	**Ashfield Road**
City/Town	**Buckland, Massachusetts**
PWS ID Number	**1047000**
Local Contact	**Mr. Douglas Mollison**
Phone Number	**413-625-0192 x42**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1047000-01G	251	626	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources 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 Mohawk Trail Regional High School (the school) is located in the northeast corner of Buckland, Massachusetts. Buckland is a small, rural agricultural town in northwestern Massachusetts on the eastern slope of the Berkshire foothills. The facility consists of various building wings located adjacent to each other serving the region's seventh through twelfth grade students and the regional school system administration building. The total school system student and staff population is approximately 900 people per day. There is no municipal water system in the vicinity of the school, therefore water is supplied to the school through a single, on-site well. However, since 1998, the wastewater from the school is discharge through a sewer to the municipal wastewater treatment facility.

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.

Well #1 (01G) is located approximately 75 feet west of the school within a brick and cement block structure that extends approximately three feet below and three feet above grade and is secured with a bulkhead door. The well casing terminates below grade, but about two feet above the floor of the pit. Well #1 is a nominal 8-inch diameter, 400-feet deep bedrock well with approximately 135 feet of casing set into sound rock and an approved withdrawal rate of approximately 7 gallons per minute.

The Zone I protection area for a well is the area immediately around the well where only activities associated with supplying water or other non-threatening activities are allowed to occur. The Interim Wellhead Protection Area (IWPA) is a larger area that potentially contributes water to the well. The IWPA is only an interim protection area until an actual Zone II contribution area is delineated; the actual area of contribution to the wellhead may be larger or smaller then the IWPA. In the mid-1990s, the school was reconstructed and expanded. Due to site constraints, the facility was allowed to expand and utilize the existing well following testing under the New Source Approval Process an providing upgrades to the facility to enhance protection of the source. The school well has a Zone I protective radius of 251 feet and an IWPA protective radius of 626 feet based on an approved withdrawal rate of 7 gallons per minute (10,159 gallons per day). Although the well is approved for approximately 10,159 gpd, actual usage is less than 6,000 gallons per day. Please refer to the attached map that shows the Zone I and IWPA. Although much of the school facility is within the Zone I, the school converted to propane for fuel, removed a gasoline storage tank, connected to the municipal sewer and located the main parking areas outside of the Zone I.

The school is located in the Deerfield River valley north of Route 112 and south of the river. Geologic mapping indicates sand and gravel deposits between 50 and 100 feet deep, however, information from the school indicates 135 feet of casing in the well. The sand and gravel deposits in the river valley are stratified drift deposited during the

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

Potential Sources of Contaminants	Zone I	IWPA	Threat	Comments
Non-conforming Zone I	-	-	-	Contact DEP prior to conducting any work in the Zone I or expanding the system/facility.
Transportation corridor/parking	Yes	Yes	Moderate	Limit road-deicing usage, monitor parking areas and control stormwater.
Athletic fields	Yes	Yes	Moderate	Prohibit the use of pesticides/fertilizers on school fields in Zone Is. Utilize an IPM for athletic fields.
School (Middle and High Schools)	Yes	Yes	Moderate	Use BMPs for hazardous materials.
Hazardous materials (VSQG)	Yes	Yes	Moderate	Use BMPs for maintenance hazardous materials and laboratory materials.
Transformers	Yes	Yes	Low	Monitor transformers for potential leaks

-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/.

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 II. 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.

recession of the glaciers some 18,000 years ago. Recent rivers have reworked the stratified drift and deposited additional alluvium in the valley. The bedrock geology in this area is a complex. The bedrock in the immediate area of the school is mapped as granite biotite gneiss, Collinsville Formation, part of the Shelburne Falls Dome.

There is no evidence of a continuous, protective confining layer such as thick clay or till in the vicinity of the wells. Wells drilled in these conditions are considered highly vulnerable to potential contamination from activities on the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the aquifer. The water from the wells is not treated prior to distribution. Water suppliers are required to regularly monitor the quality of the water. You may request additional information regarding the current water quality from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone I and IWPA and Table 2 for additional assessment information.

2. Discussion of Land Uses in the Protection Areas

During the assessment, several land uses and activities were identified within the drinking water supply protection areas and in close proximity to the protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming Zone I;**
2. **School facilities and athletic fields;**
3. **Transportation corridors/parking; and**
4. **Hazardous materials.**

There are several activities within the Zone Is and IWPAs that pose a potential threat to the water supply. The overall ranking of susceptibility to contamination for the well is moderate based on at least one moderate threat activity within the protection areas. Please refer to Table 2.

1. Non-conforming Zone I – Although the water supplier does own or have control of the entire Zone I area through a Conservation Restriction, there are numerous activities within the Zone I that are non-conforming. The entire school facility is within the Zone I of the well. Systems not meeting DEP Zone I requirements for ownership or control or non-conforming activities within Zone I must receive DEP approval and address Zone I issues prior to increasing water use or modifying systems/facilities.

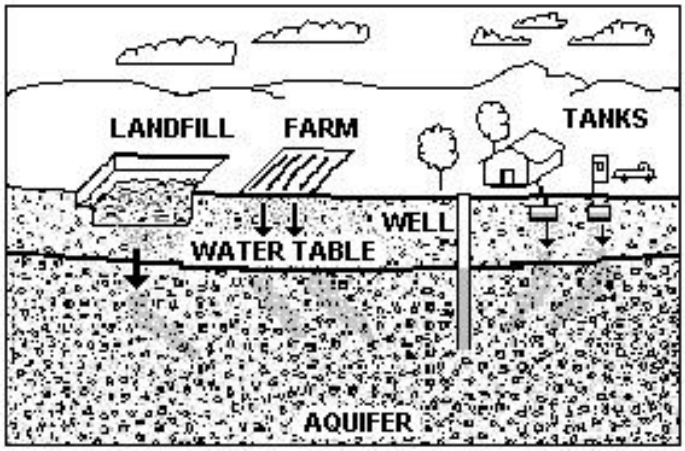

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Zone I Recommendations:

- Prohibit any new non-water supply activities within Zone I and, where feasible, remove non-conforming activities within the Zone I areas.
- Do not use or store pesticides or fertilizers in Zone I.
- Inspect the well regularly to ensure the cap is secure, there is no standing water near the well and to ensure that the bulkhead is secure.
- Relocate the well if it cannot be secured or if water quality is impaired by activities near the wells.
- Monitor all activities associated with petroleum products within the Zone Is.

2. School facilities and athletic fields – All of the school's facilities are located within the Zone I and/or IWPA of the wells. Middle schools generally use only

household type hazardous materials. Although high school laboratory and photo labs can use potentially harmful materials, the potential threat from disposal of these materials is somewhat minimized because the school is connected to the municipal sewer. All of the floor drains and laboratory facilities discharge their wastewater through the sewer. The school is presently registered as an inactive hazardous waste generator and has established procedures in place for the use and management of potentially hazardous materials in the laboratories and studios. There are state and federal regulations controlling some of the activities and products used at schools to promote "healthy schools". According to the facilities manager pesticides and fertilizers are not used on the athletic fields.

Recommendations:

- Continue the use of Best Management Practices for all activities at the school and at the athletic fields. Consider drought resistant grasses and/or low release nutrient fertilizers in the IWPA.
- Investigate Integrated Pest Management and Best Management Practices within the Zone I and IWPA.
- Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store pesticides or fertilizers within Zone I.
- Review your emergency response plan regarding to accidental releases within the area. Ensure that emergency responders in town are aware of the locations of your resource areas.
- For additional information, refer to the Massachusetts Public Health Association's Healthy Schools website online at http://www.mphaweb.org/pol_schools.html.

3. Transportation corridor/parking – The school's internal transportation corridors and parking are located partially within the Zone I and within the IWPA. Accidents and normal use and maintenance of corridors and parking areas may pose a potential threat to water quality. Catch basins transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, accidental spills as well as, waste from wildlife and pets.

Recommendations:

- Prepare an Emergency Response Plan that includes coordination between the emergency responders to be sure they area aware of the location of your well.
- Limit access to the Zone I areas and direct runoff away from the wells.

4. Hazardous Materials Storage and Use – The school utilizes hazardous materials for maintenance and in the laboratories and although the school is a registered generator of hazardous waste and waste oil, the status is "inactive". Hazardous materials such as paint, thinners, petroleum products, etc. should be kept in containment and used with caution. Cleaning and disposal of non-hazardous materials may be through the sewer. Spill kits and signs designating areas of storage should be available. If hazardous materials are improperly stored, used, or disposed, they become potential sources of contamination. Hazardous materials should never be allowed to enter a catch basin, or floor drain leading directly to the ground. Review the attached fact sheet for additional information regarding the thresholds for triggering a very small quantity hazardous waste generator.

Hazardous Materials Storage and Use Recommendations:

- Continue current management of hazardous materials on site and consider relocation of the well to minimize any potential threat from an accidental release at the site.
- Continue to use BMPs for fuel oil storage, hazardous material handling, storage, disposal, and emergency response planning.
- Ensure that management plans are up to date and staff review BMPs for the handling of hazardous materials.

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).

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/

Additional Documents:

To help with source protection efforts, more information is available by request or online at 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 and town boards.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further reduce the well's susceptibility to contamination. The DEP commends the school District for upgrading the facilities to protect the water supply well during the renovation and expansion of the school. The Department encourages continued diligence in management of activities near the wells.

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

Priority Recommendations:

- Inspect the well regularly and ensure the bulkhead is secured to prevent access to the well.

Zone I and IWPA:

- Prohibit any new non-water supply activities from Zone I.
- Conduct regular inspections of the Zone I and IWPA and the well.
- Post drinking water supply signs in key location such as along the access road and in the parking areas but away from the well.
- Provide information to staff and pertinent school organizations about the potential hazards of household chemicals, lab chemicals, lawn care chemicals and fertilizers.
- Use Best Management Practices (BMPs) for the use of petroleum products, lawn care products, lab chemicals, pesticides and household hazardous waste.
- Replace the split cap on the well with a pitless adaptor and sanitary cap.

Training and Facilities Management:

- Incorporate groundwater education into school curriculum (7-12 curricula available; contact DEP for copies).
- Staff should be instructed on the proper disposal of spent household chemicals and or lab chemicals. Include custodial staff, groundskeepers, and the certified operator.
- Manage hazardous materials and waste in accordance with regulation and in a manner protective of the water supplies and public health and safety.

Planning:

- Work with local officials to develop an Aquifer Protection District and Bylaw that includes the school well's IWPA and to assist you in continued protection of the water supply.
- 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 "Wellhead Protection Grant Program". If funds area available, the Department posts a new Request for Response (RFR), grant application form. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" on the MA DEP website 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 encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet