



Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Plymouth South High School

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, 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

PWS NAME	Plymouth South High School
PWS Address	409 Long Pond Road
City/Town	Plymouth, Massachusetts 02360
PWS ID Number	4239046
Local Contact	Steven Nelson
Phone Number	(508) 224-4416

Well Name	Source ID#	Zone I (in feet)	IWPA (in feet)	Source Susceptibility
Well #1	01G	312	978	Moderate
Well #2	02G	312	978	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, 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 sources of contamination 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

Plymouth South High School receives its drinking water from two groundwater wells. The wells have Zone I radii of 312 feet and an Interim Wellhead Protection Area (IWPA) radii of 978 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the well locations, and the Zone I/ IWPA boundaries.

The water is treated for corrosion control through sodium hydroxide addition to raise the pH. The DEP requires public water suppliers to monitor the quality of the water. For

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).

current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Zone I issues;**
2. **Golf course;**
3. **School, and;**
4. **Parking and access roads .**

The overall ranking of susceptibility to contamination for the wells is moderate, based on the presence of moderate ranked land uses within the Zone I and IWPA.

1. **Zone Is** – Currently, the well does meet DEP's Zone I regulations, which allow only water supply related activities in the Zone I and require that the land within the Zone I be owned or controlled by the public water system. The School's Zone I is owned by the water supply (town) and is mostly wooded. The north eastern edge of the Zone I abuts an athletic field, pesticides and fertilizers should never be used in a Zone I area. 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 modifying systems.

Recommendations:

- ✓ Ensure that pesticides and fertilizers are never applied within the Zone I.
 - ✓ Never store pesticides, fertilizers or road salt within the Zone I.
2. **Golf Course** – There is a portion of a neighboring golf course within the IWPA. Golf courses can be a threat to water supplies because of the pesticides, fertilizers and fuels that are used and stored as part of their operations. Note that the golf course is also a public water supply and shares your same concerns for source water protection.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Potential Concern
golf course	No	Yes	Moderate	fertilizer and pesticide use, fuel storage
school	No	Yes	Moderate	Hazardous materials used in classrooms, and building operation and maintenance
parking lot and access roads	No	Yes	Moderate	stormwater runoff, spills
athletic fields	No	Yes	Moderate	fertilizer and pesticide use

* 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 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.

Recommendations:

- ✓ Encourage the golf course to minimize its use of fertilizers and pesticides with an active Integrated Pest Management (IPM) Plan. For more information on IPM visit <http://www.state.ma.us/dfa/pesticides/ipm/>
- ✓ Coordinate Source Protection efforts with the golf course owners.

3. **School** – Activities associated with schools commonly involve hazardous materials such as fuel oil, laboratory, art, photographic, machine shop, and other chemicals. These hazardous materials have the potential to impact drinking water supplies if they are improperly handled, stored, or materials are improperly disposed of.

Recommendation:

- ✓ Develop an Integrated Pest Management (IPM) Plan, for more information visit <http://www.state.ma.us/dfa/pesticides/ipm/>
- ✓ Ensure that hazardous material storage, use and disposal are all performed in accordance with state and local regulations and in a manner that prevents groundwater contamination.

4. **Vehicle parking and access roads** – Parking for the school and access roads are within the IWPA for the wells. Runoff and spills from parking lots and roads can contaminate public wells.

Recommendations:

- ✓ Direct stormwater drainage away from the wellhead.
- ✓ Ensure emergency response plan includes contact with the Fire Department about spills.

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 Plymouth South High School is commended for meeting DEP's Zone I requirements and using BMPs to reduce the fertilizer and pesticide use on its athletic fields. School officials should review and adopt the key recommendations above and the following:

Priority Recommendations:

Zone I:

- ✓ Keep additional non-water supply activities out of the Zone I.
- ✓ Prohibit public access to the well and pumphouse by locking facilities.
- ✓ Continue regular inspections of the Zone I. Look for illegal dumping or evidence of vandalism.
- ✓ Keep road and parking lot drainage away from the well.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- ✓ Train staff on proper hazardous material use, storage, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.

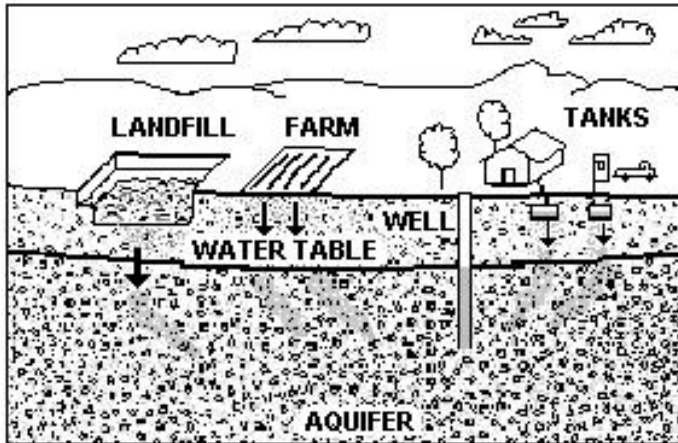


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Isabel Collins in DEP's Lakeville Office at (508) 946-2726 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 made available to the public water supplier and town boards.

- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Incorporate groundwater education into school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).

Facilities Management:

- ✓ Develop an Integrated Pest Management (IPM) Plan, for more information visit <http://www.state.ma.us/dfa/pesticides/ipm/>

Planning:

- ✓ Work with local officials in town to include the facility's IWPA in the Aquifer Protection District Bylaw and to assist you in improving protection.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant 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 that program. For additional information, please refer to DEP's web site. 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>.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

5. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Healthy Schools Fact Sheet
- Source Protection Sign Order Form