



**Massachusetts Department of Environmental Protection  
Source Water Assessment and Protection (SWAP) Report  
For  
The Meeting House @ Stow Condominiums**

**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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March 26, 2003

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

<i>PWS NAME</i>	The Meeting House @ Stow Condominiums
<i>PWS Address</i>	C/O SWSS P.O. Box 2014
<i>City/Town</i>	Stow, Massachusetts
<i>PWS ID Number</i>	2286012
<i>Local Contact</i>	Ms. Deborah Bray
<i>Phone Number</i>	9978) 486-1008

<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	2286012-01G	274	720	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**

The well for The Meeting House @ Stow is located approximately 1400 –feet north of Great Road, approximately 1760 feet west of Red Acre Road. The well is a 6inch diameter bedrock well installed to a depth of 380 feet below grade. The well has a Zone I of 274 feet and an Interim Wellhead Protection Area (IWPA) of 720 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. The surficial deposits in the vicinity of the site has been mapped as kame terraces formed by melt-water streams that deposited these materials between wasting ice

### 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).

masses and adjacent ice-free uplands and valley walls. Kame terraces are composed mainly of gravels that are stratified, fairly well sorted, and fairly well rounded. Bedrock at the site is mapped as Nashoba Formation, which is middle Carboniferous in age and consists of biotite, gneiss and schist with interbedded layers of amphibolite schist, hornblende gneiss, and quartzite beds. Please refer to the attached map of the Zone I and IWPA.

The well serving the facility has chlorine added as a disinfectant. The water is also treated for iron, manganese, taste and odor. The DEP requires public water suppliers to monitor the quality of the water. For current information on monitoring results and treatment and a copy of the most recent Consumer Confidence Report, 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](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. **Inappropriate Activities in Zone I;**
2. **Septic Systems;**
3. **Landscaping and lawncare; and**
4. **Wastewater treatment facility.**

The overall ranking of susceptibility to contamination for the well is Moderate, based on the presence of only moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone I** – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone I. The facility's Zone I contains several units of the condominium. The public water supplier owns and controls all land encompassed by the Zone I. 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:

- ✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Septic System	No	Yes	Moderate	See septic systems brochure in the appendix
Wastewater treatment plant	No	Yes	Moderate	Treatment Chemical or equipment maintenance materials
Landscaping, Lawncare & gardening	No	Yes	Moderate	Fertilizer and pesticide use
Structures	Yes	Yes	-	Non-water supply structures in Zone I

\* -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.

I requirements.

- ✓ Do not use pesticide within the Zone I.

2. **Wastewater treatment Plant** - A wastewater treatment plant belonging to the condominium complex lies within the IWPA of the water supply. Although there are no records of problems with the wastewater plant, wastewater overflows are a potential source of microbial and non-microbial contamination if improperly managed.

**Recommendations:**

- ✓ Ensure that any overflows discharge outside of the protection area.
- ✓ Make sure that the wastewater treatment plant is operated and maintained according to DEP requirements.

3. **Septic system** – The septic system belonging to a neighbor is located within the IWPA. If improperly used or maintained, septic systems are a potential of source contamination in groundwater and the water supply.

**Recommendations:**

- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ Residents and maintenance staff should be trained on proper disposal of spent household chemicals and encouraged to participate in local Household Hazardous waste collections.

4. **Landscaping and lawn care/gardening** - Fertilizer is applied to the lawn that is located within the IWPA. Fertilizer and pesticides may also be used by the residence who lie within the IWPA of the water supply. Fertilizers and pesticides, if improperly applied or stored, can be potential sources of contamination to the water supply.

**Recommendations:**

- ✓ Do not use fertilizers or pesticides in the Zone I.
- ✓ Use best management practices when applying fertilizer in the IWPA.

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

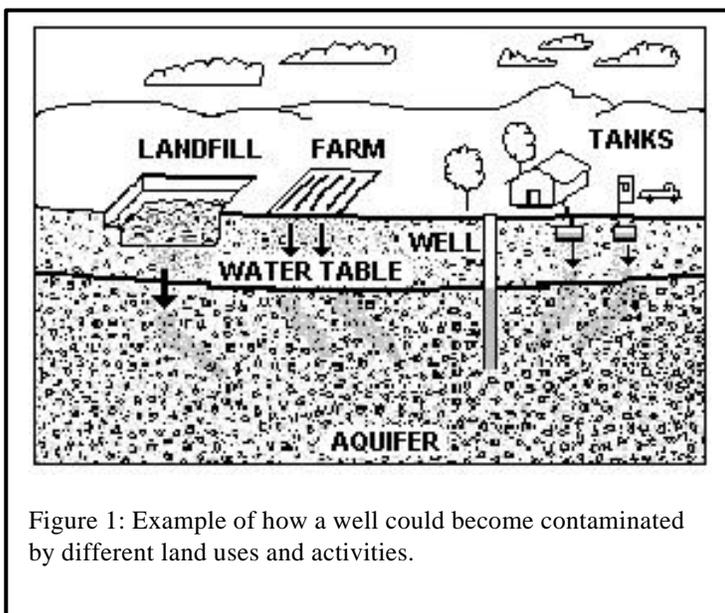


Figure 1: Example of how a well could become contaminated by different land uses and activities.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Meeting House @ Stow Condominiums should review and adopt the key recommendations above and the following:

**Zone I:**

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Since the Condominium complex intends to continue utilizing the condominium units in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.
- ✓ If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction

### For More Information:

Contact **Josephine Yemoh-Ndi** in DEP's **Worcester Office** at (508) 792-7650 x 4030 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 made available to the public water supplier and town boards.

that would prohibit potentially threatening activities or a right of first refusal to purchase the property.

### Training and Education:

- ✓ Train staff on proper hazardous material use (household cleaning chemicals), disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and residents. Post labels as appropriate on raw materials and hazardous waste.
- ✓ Post drinking water protection area signs at key visibility locations.

### Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to <http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf> for the Requirements for Small Quantity Generators.
- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.

### Planning:

- ✓ Work with local officials in Stow to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving 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 land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

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 Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet
- Source Protection Sign Order Form