Massachusetts Department *of* Environmental Protection
Source Water Assessment Program (SWAP) Report
for
Ashland Water Department

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.

Table 1: Public Water System Information

PWS Name	Ashland Water and Sewer Department
PWS Address	Town Hall/P.O. Box 9
City/Town	Ashland, Massachusetts
PWS ID Number	3014000
Local Contact	Joseph Celano - Superintendent
Phone Number	508-881-0112

Well Name	***Source ID#***	***Zone I (in feet)***	***Source Susceptibility***
Howe Street G.P. Well #4	3014000-04G	150-200	moderate
Howe Street G.P. Well #5	3014000-05G	150-200	moderate
Howe Street G.P. Well #6	3014000-07G	150-200	moderate

Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

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

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

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 storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

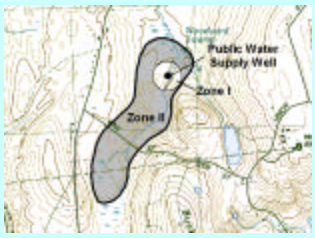
Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Refer to Table 3 for Recommendations to address potential sources of contamination. 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 the following sections:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Source Water Protection
4. Taking the Next Steps to Protection
5. Appendices

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 a Zone II protection area.



Glossary

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 (i.e. clay) that resists penetration by water.

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

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. This area should be owned or controlled by the water supplier and limited to water supply activities.

Zone II: The primary recharge area for the aquifer. This area is defined by hydrogeologic studies that must be approved by DEP. Refer to the attached map to determine the land within your Zone II.

Zone III: The land area beyond the area of Zone II from which surface water and groundwater drain into Zone II.

Section 1: Description of the Water System

The wells for Ashland Water Department are on the north side of Howe Street (to the south of the reservoir). The land on which the wells are situated is a small peninsula that is located in the Hopkinton Reservoir. Each well has a Zone I radius of 150-200 feet.

The wells are 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 Zone II. Water from each well has potassium hydroxide, and zinc orthophosphate added for corrosion control; phosphates are added for iron and manganese removal; and chlorine and ammonium sulfate to make chloramine which is added as a disinfectant.

The Town of Ashland is presently constructing two additional wells in the same Zone II as the existing wells. A filtration plant is also being constructed at this location.

For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web at http://www.epa.gov/safewater/ccr1.html

Section 2: Discussion of Land Uses in the Protection Areas

The Zone II for Ashland is primarily forest and is surrounded on three sides by water (refer to attached map for details). Land uses and activities that are potential sources of contamination are listed in Table 2.

Key issues include:
1. Local Transportation Corridor
2. Landscape Nursery
3. Protection Planning

The overall ranking of susceptibility to contamination for Ashland is moderate, based on the presence of at least one moderate threat land use within the Zone II, as seen in Table 2.

1. Local Transportation Corridor – Howe Street runs southwest of Zone II, and through the Zone III of Ashland's Howe Street Wells. Roadway construction, maintenance, and typical use can all be potential sources of contamination. Accidents can lead to spills of gasoline and other potentially dangerous transported chemicals. De-icing salt washes off into storm drains or onto adjacent ground. In addition, roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes.

Transportation Corridor - Recommendations:

- **Low Salt Areas** - If sodium concentrations in the wells reach levels consistently above the secondary standard, submit a formal request to the towns of Ashland and Hopkinton's Department of Public Works to establish a Low Salt Area along the section of Howe Street adjacent to the wells.
- **Design and Best Management Practices** – Work with the Towns of Ashland and Hopkinton's Department of Public Works in designing proper storm water catch basins that discharge down gradient of the wells, and develop best management practices (BMPs) to prevent runoff from becoming polluted, and where it is polluted, to reduce the amount that reaches surface waters.
- **Planning and Developing** - Notify town officials of EPA's Intermodal Surface Transportation Efficiency Act. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 contains provision for the planning and developing of highway systems and a host of transportation enhancement activities including the mitigation of water

pollution due to highway runoff. Through ISTEA, states are able to use a portion of their federal funding allotment for runoff pollution control devices and other BMPs to prevent polluted runoff from reaching lakes, rivers, and bays.

- **Emergency Response Plan** - Work with the Ashland and Hopkinton fire department's to review emergency response plans. Updates to this plan should include transportation corridors. Request emergency response teams to coordinate Emergency Response Drills and practice containment of potential contaminants from accidents.

2. Landscape Nursery – There is a commercial nursery located in the Zone III of the Howe Street Wells. Potential sources of contamination associated with this land use is from nonpoint source pollution. Nonpoint source pollution (NPS) occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into rivers, lakes, or introduces them into ground water. The most common NPS pollutants associated with nurseries are nutrients (fertilizers, grease, organic matter) and **t**oxic chemicals (pesticides, organic, inorganic compounds)

The best means of dealing with nonpoint source water problems involves the analysis, design, evaluation and implementation of measures, structural or non-structural, to address or correct a water quality problem or concern, or reduce the impact of the problem on the environment.

Landscape Nursery – Recommendations:

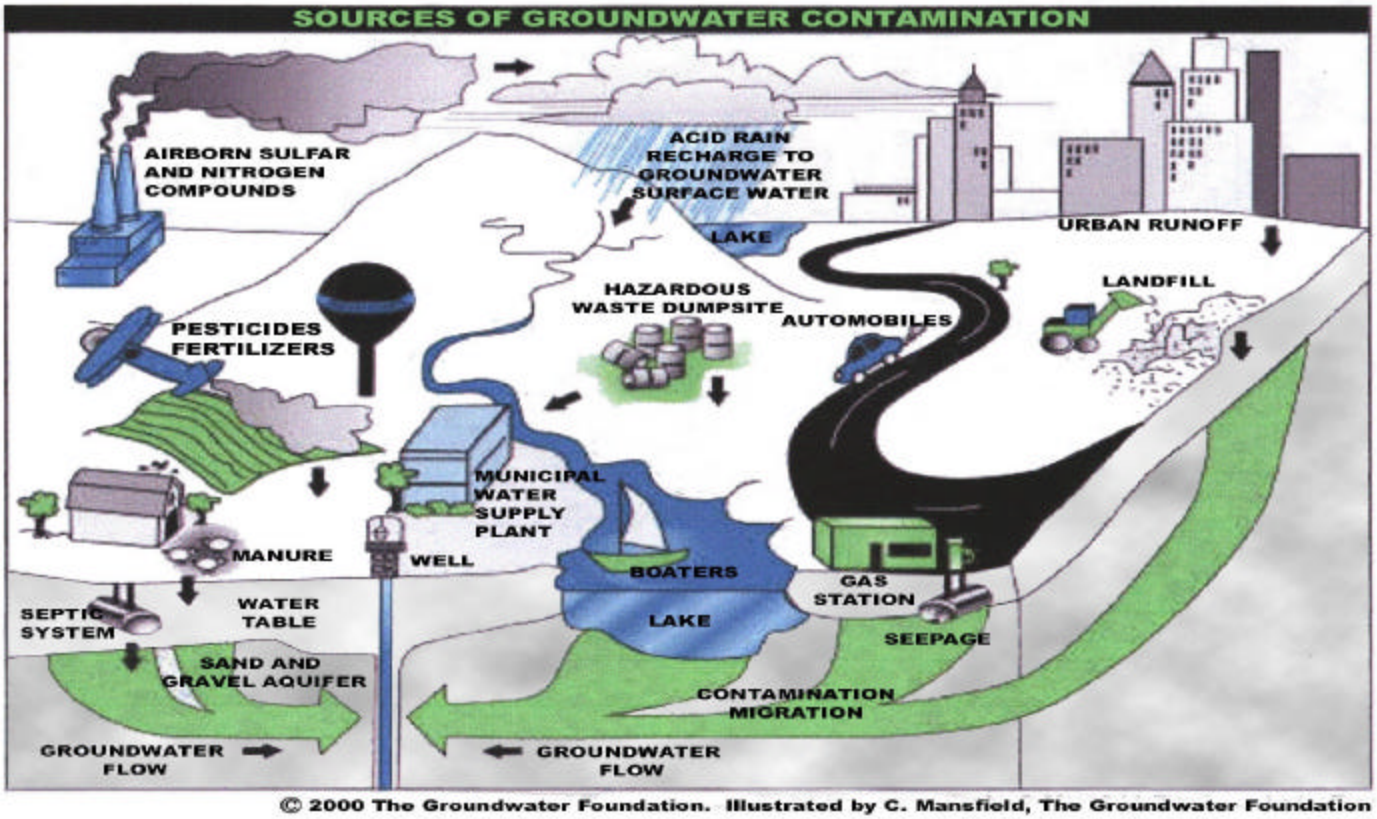
- **Best Management Practices: Structural or Non-structural** - Work with the nursery owner to develop the most effective Best Management Practices (BMPs). Examples of structural or non-structural BMPs include: installing vegetative or forested filter strips between an agricultural land use and groundwater and a surface-water body to reduce runoff and sedimentation; implementing a conservation tillage practice; locating an on-site wastewater treatment system a proper distance from a well or other water supply; and conducting a soil test and basing decisions about crop nutrient applications upon test results.

Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.



- **Best Management Practices: Integrated Pest Management Program** - Encourage the nursery to develop and implement an integrated pest management program and pest scouting practice. For more information on integrated pest management refer to http://www.massdfa.org/pesticides/ipm/.
- **Best Management Practices: Fertilizers and Pesticides** - Encourage commercial nurseries and landscapers to use Best Management Practices (BMP) when storing, handling and applying pesticides and fertilizers. For more information on pesticide and fertilizer storage and handling refer to the Massachusetts Department of Food and Agriculture - Pesticide Bureau website at http://www.massdfa.org.

3. Protection Planning - Protection planning prevents drinking water contamination by managing the land area that supplies water to a well. A Wellhead Protection Plan coordinates community efforts, identifies protection strategies, establishes a timeframe for implementation, and provides a forum for public participation. There are numerous resources available to help communities in developing a plan for protecting drinking water supply wells.

Table 2: Land Use in the Protection Areas (Zones I and II)

Note: For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area

Activities	Quantity	Threat*	Potential Source of Contamination*
Miscellaneous			
Nurseries	1	M	Fertilizers, pesticides, and other chemicals: leaks, spills, improper handling, or over-application
Transportation Corridors	1	M	Fuels and other hazardous materials: accidental leaks or spills, over-application or improper handling of pesticides
Water Treatment	1	M	Treatment plant chemicals: spills, leaks, or improper handling or storage of chemicals and equipment maintenance materials

Water Supply Protection Area % that is Sewered = 0%

Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix 3: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix B: Tier Classified Oil and/or Hazardous Material Sites.

* **THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.

Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

What are "BMPs?"

Best Management Practices are **structural (i.e. oil & grease trap catch basins), nonstructural (i.e. hazardous waste collection days) or managerial** measures that are used to protect and improve surface water and groundwater quality.

Protection Planning - Recommendation:

- **Local Controls** - Coordinate efforts with local officials in to compare existing controls with current MA Wellhead Protection Regulations 310 CMR 22.21(2). For more information on DEP land use controls refer to http://www.state.ma.us/dep/brp/dws/.
- **Develop a Wellhead Protection Plan** – Establish a local team, and refer them to http://www.state.ma.us/dep/brp/dws/ for a copy of DEP's guidance, "Developing a Local Wellhead Protection Plan".

Other land uses and activities that may be potential contaminant sources include agriculture, forestry operations, and residential. Refer to Table 2 and Appendix 2 for more information about these land uses.

Identifying potential contaminant sources is an important initial step in protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination. Once potential contaminant sources are identified, specific recommendations like those below should be used to better protect the Ashland's wellfield.

Section 3: Source Water Protection

Implementing source protection measures and Best Management Practices (BMPs) will reduce the Ashland Water Supply System's susceptibility to contamination. Additional source protection recommendations are listed in Table 3 and the Key Issues above.

Ashland is commended for taking an active role in promoting source protection measures in the Ashland Water Department's supply area through:

- Working with the Town to adopt a Groundwater Protection District bylaw.

Appendix 1 includes specific recommendations for each of the following:

➢ **Partner with Local Businesses:**

Since many small businesses and industries use hazardous materials and produce hazardous waste products, it is essential to educate the business community about drinking water protection. Encouraging partnerships between businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

➢ **Provide Outreach to the Community:**

Public education and community outreach ensure the long-term protection of drinking water supplies. Awareness often generates community cooperation and support. Residents and business owners are more likely to change their behavior if they know where the wellhead protection recharge area is located; what types of land uses and activities pose threats; and how their efforts can enhance protection.

➢ **Plan for the Future:**

One of the most effective means of protecting water supplies is planning, such as the adoption of local controls to protect watersheds and ground water. These controls may include health regulations, general ordinances, and zoning bylaws that prohibit potential sources of contamination from wellhead protection areas.

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

Top 5 Reasons to Develop a Local Wellhead Protection Plan

❶ Reduces Risk to Human Health

❷ Cost Effective! Reduces or Eliminates Costs Associated With:

- Increased groundwater monitoring and treatment
- Water supply clean up and remediation
- Replacing a water supply
- Purchasing water

❸ Supports municipal bylaws, making them less likely to be challenged

❹ Ensures clean drinking water supplies for future generations

❺ Enhances real estate values – clean drinking water is a local amenity. A community known for its great drinking water is a place people want to live and businesses want to locate 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

Table 3: Current Protection and Recommendations for Ashland

Protection Measures	Status	Recommendations
Zone I		
Does the Public Water Supplier (PWS) own or control the entire Zone I?	**NO**	The Department of Environmental Management owns a small section of the Zone I along the waterline of the reservoir. The Town of Ashland is currently negotiating acceptable controls as part of the new source approval for 2 proposed new wells. Follow Best Management Practices (BMP's) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials.
Is the Zone I posted with "Public Drinking Water Supply" Signs?	**YES**	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is Zone I regularly inspected?	**YES**	Continue daily inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone I?	**YES**	Continue monitoring non-water supply activities in Zone Is.
Municipal Controls (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Wellhead Protection Controls that meet 310 CMR 22.21(2)?	**NO**	The Town of Ashland's "Groundwater Protection District" bylaw does not meet the floor drain requirements. Refer to www.state.ma.us/dep/brp/dws/ for model bylaws and health regulations, and current regulations.
Do neighboring communities protect the Zone II areas extending into their communities?	**N/A**	
Planning		
Does the PWS have a Wellhead Protection Plan?	**NO**	Develop a wellhead protection plan. Follow "Developing a Local Wellhead Protection Plan" available at: www.state.ma.us/dep/brp/dws/.
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	**YES**	Augment plan by developing a joint emergency response plan with fire department, Board of Health, DPW, and local and state emergency officials. Coordinate emergency response drills with local teams.
Does the municipality have a wellhead protection committee?	**NO**	Establish committee; include representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	**NO**	The town is encouraged to implement a program, and to include municipal facilities. For more guidance see "Hazardous Materials Management: A Community's Guide" at www.state.ma.us/dep/brp/dws/files/hazmat.doc
Does the PWS provide wellhead protection education?	**YES**	Aim additional efforts at agricultural, commercial, industrial and municipal uses.

Section 4: Additional Resources Available for Source Protection

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to improve drinking water protection in your community.

The assessment and protection recommendations in this SWAP report are provided as a tool to spur community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities.

The Ashland Water Department should supplement this SWAP report with local information on potential sources of contamination and land uses. To aid in the protection of the wells, local information should be maintained and updated periodically to reflect land use changes in the Zone II. Use this information to set priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

For More Information

Contact Anita Wolovick in DEP's Wilmington Office at (978) 661-7768 for more information and assistance on improving current protection measures.

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

Funding Resources:
The Department's Wellhead Grant Protection Program and Source Protection Grant Program provide funds to assist public water suppliers in addressing Water Supply Source Protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the Grant Program. For additional information, please refer to the program fact sheet from this year. Please note: each spring DEP posts a new Request for Response for the Grant program (RFR).

Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State R. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: http://www.state.ma.us/dep/brp/mf/mfpubs.htm and, "An Internet Guide to Financing Stormwater Management" at http://stormwaterfinance.urbancenter.iupui.edu

Section 5: Appendices

1. Protection Recommendations
2. Additional Documents on Source Protection