

Source Water Assessment Program (SWAP) Report For Ashfield Water District

Table 1: Public Water System (PWS) Information

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 Protecti on, Bureau of Resource Protection, Drinking Water Program

> Date Prepared: April 14, 2003

PWS Name	Ashfield Water District					
PWS Address	412 Main Street					
City/Town	Ashfield, Massachusetts					
PWS ID Number	1013000					
Local Contact	Mr. Peter Johnson					
Phone Number	413-628-3297					
Well Name	Source ID#	Zone I (in feet)	IWPA (in feet)	Source Susceptibility		
	1012000 01C	332	1.187	High		
Well #1	1013000-01G	332	,	0		

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

Ashfield is a small, rural, agricultural/residential community located in southwestern Franklin County in the foothills of the Berkshire Hills. Ashfield Water District maintains water supply Wells #1 and #2 that provide water to the center of town and the Ashfield Lake area. The District also maintains a surface water reservoir as an emergency source that will not be addressed in this assessment. Some water from the reservoir is directed to an area near the old storage tank, discharging to a channel maintaining a minimum flow in a brook adjacent to Well #1. The wells are both bedrock wells drilled to depths of 400 and 440 feet, respectively, and have approved

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 (I WPA).

- 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 I WPA 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 I WPA 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 (I WPA). withdrawal rates of 24.6 and 23.7 gallons per minute based on continuous rate pumping tests. The Zone I and Interim Wellhead Protection Area (IWPA) radii are 332 feet and 1,187, respectively for Well #1 and 330 feet and 1,158, respectively for Well #2. The Zone I is the protected area immediately surrounding the wellhead while 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 wells are located within a bedrock aquifer with relatively thin till covering. The predominant bedrock is mapped as highly contorted schist with granofels, marble or quartz of the Waits Formation. There is no record indicating a confining, protective clay layer or artesian conditions in the vicinity of the wells. Wells located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

Water from the Ashfield wells does not require and does not have treatment at this time. However, the District does have the capability to chlorinate water from the wells if it is necessary. For current information on water quality monitoring results, please refer to the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Please refer to the attached map of the Zone I and IWPA and Table 2 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

There are few activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

- 1. Zone I ownership
- 2. Transportation corridors
- 3. Residential uses
- 4. Hazardous materials

The overall ranking of susceptibility to contamination for the system is high based on the presence of at least one land use or activity ranked as high in the Zone I and IWPA of the wells, as seen in Table 2.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Transportation corridors	Well # 1	Both	Moderate	Limit road salt usage and provide drainage away from wells
Residential use	Well #1	Both	Moderate	Septic and household hazardous materials
Hazardous materials	Well #1	Both	High	Chemicals, lawn equipment and Small Quantity Generator
Livestock operations (noncommercial)	Well #1	Well #1	High	Manure and household hazardous materials

* -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/den/hrn/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 I WPA 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.

1. Non-conforming Zone I – Currently, the water supplier does not own or control the entire Zone I area for Well #1. There is a residence and the associated farm within the Zone I of Well #1. Please note that systems not meeting DEP Zone I requirements for ownership or control, must get DEP approval and address Zone I ownership prior to increasing water use or modifying systems. The water supplier owns or controls through a Conservation Restriction the entire Zone I for Well #2.

Recommendations:

- ▼ Control access to the wellhead area and make every effort to acquire Zone I control or ownership.
- ▼ Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store petroleum products, pesticides, fertilizers or road salt within the Zone I.
- ▼ The Water District should continue to monitor activities at the residence to assure that BMPs are used at the facility. If the facility becomes commercial in nature, consult with the NRCS to determine if assistance is available to mitigate problems if they ever arise. Review potential USDA funding for mitigation and prevention of runoff pollution through the Environmental Quality Incentives Program (EQIP).

2. Residential Land Uses – The protection areas have a few residences within them. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Household Hazardous Materials** Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- Stormwater Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents. Visit the Nonpoint Source pollution web site for additional information and assistance at http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

Residential Land Use Recommendations:



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

▼ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and at www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

3. Transportation Corridors and Utility Right-of-Ways There are roads located within the Zone I of Well #1 and within the IWPA of both wells. De-icing materials, petroleum chemicals and other debris on roads are picked up by stormwater. Roadways can often be sites for illegal dumping of hazardous or other potentially harmful wastes.

Catch basins and drainage swales transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include

For More Information:

Contact Catherine Skiba in DEP's Western Region 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 <u>www.state.ma.us/dep/brp/dws</u>, including:

- 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. contaminants from automotive leaks, maintenance, washing, pesticides and fertilizers or accidental spills.

There is one utility Right-of-Way within the IWPA for Well #1 and within close proximity to the IWPA for Well #2. Continue your current practice of reviewing the Yearly Operational Plan (YOP) of the utility and meet with them to review the locations and maps of their easements for accuracy. Be sure that they contact you regarding changes in maintenance of the right-of-way.

Transportation Corridor Recommendations:

- **V** Regularly inspect Zone Is and IWPAs for illegal dumping and spills.
- ▼ Work with local emergency response teams to ensure that any spills within the protection areas can be effectively contained and be sure that team is aware of the protection areas.
- ♥ Where catch basins are installed, work with the municipality or State to have catch basins inspected, maintained, and cleaned on a regular schedule. Regular street sweeping reduces the amount of potential contaminants in runoff. For information on DEP's S. 319 Nonpoint Source Competitive Grants Program and upcoming funding opportunity refer to: http://www.state.ma.us/dep/brp/mf/mfpubs.htm#wpa.
- ▼ Storm Drain Stenciling Program Work with local watershed groups to institute a Storm Drain Stenciling Program. For more information on how to develop a storm drain stenciling program go to http://www.earthwater-stencils.com.
- ▼ If storm drainage maps are available, review the maps with emergency response teams. Smaller communities may not have maps available. Work with town officials to investigate mapping options. The NPDES Phase II Stormwater Rule requires some communities to complete stormwater mapping. For additional information, refer to the Stormwater Management Information at http://www.state.ma.us/dep/brp/ww/wwpubs.htm#storm.
- **v** Promote BMPs for stormwater management and pollution controls.
- ♥ Work with local officials during their review of the utility right of way Yearly Operating Plans (YOPs) to ensure that water supplies are protected during vegetation control or maintenance of the utility.
- ▼ Review potential USDA funding for mitigation and prevention of runoff pollution through the Environmental Quality Incentives Program (EQIP). The USDA web site is www.ruraldev.usda.gov or call Rita Thibodeau, at the local office (Greenfield at 413-772-0384 e-mail address is <u>rita.thibodeau@magreenfie.fsc.usda.gov</u>). Review the fact sheet available on line and call the local office of the NRCS for assistance http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf.
- ▼ Visit DEP's Nonpoint Source Pollution web site for additional information and assistance at <u>http://www.state.ma.us/dep/brp/wm/nonpoint.htm</u>.

4. Hazardous Materials Storage and Use – The storage tank and motor control building for the District is located immediately adjacent to Well #1. The building is utilized to store equipment for the District including lawn mowers and associated petroleum products. The company, Harris & Gray Contractors a Small Quantity Generator of hazardous materials is located within the IWPA of Well #2. If hazardous materials are improperly stored, used, or disposed, they become potential sources of

contamination. Hazardous materials should <u>never</u> be disposed of to a septic system or floor drain leading directly to the ground. All petroleum products should be stored away from the well. Any products utilized by the water supplier should be kept in secondary containment to avoid accidental release.

Hazardous Materials Storage and Use Recommendations:

- **v** Remove equipment and petroleum products not directly related to supplying water.
- **v** Provide secondary containment for all products that are required and minimize the amount of product stored on site.
- **v** Request that the Board of Health adopt a hazardous materials handling regulation.
- **v** Closely monitor deliveries of chemicals.

Other activities that have been identified in the protection areas were a beaver swamp located topographically downgradient of Well #2 but within the IWPA and farming. Beaver swamps may flood wellhead areas causing a poetential threat from bacteria and viruses. Monitor the beaver activity to be sure that the ponding does not encroach on the wellhead. The residential home with a small livestock operation is within the Zone I and IWPA of Well #1. The residence appears to be located topographically downgradient from the wellhead so that runoff is directed away from Well #1. The Water District should monitor activities at the residence to assure that BMPs are used at the facility. If the facility is commercial in nature, consult with the NRCS to determine if assistance is available to mitigate problems if they arise. Review potential USDA funding for mitigation and prevention of runoff pollution through the Environmental Quality Incentives Program (EQIP). The USDA web site is www.ruraldev.usda.gov or call Rita Thibodeau, at the local office (Greenfield at 413-772-0384 - e-mail address is <u>rita.thibodeau@magreenfie.fsc.usda.gov</u>). Review the fact sheet available online at the website http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local office of the NRCS for assistance.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. Ashfield is commended for its current high level of awareness of activities in the protection area and efforts to secure a conservation restriction for the Zone I of Well #2. Ashfield should continue efforts to protect water supplies by reviewing and adopting the key recommendations above and the following:

Priority Recommendations:

- **v** Review use and storage of hazardous materials stored in the Zone I of Well #1.
- ♥ Work with Ashfield to adopt bylaws/regulations to protect water supplies such as hazardous materials handling regulations, floor drain regulations and water supply protection area Zoning Bylaws.
- ▼ Review the Wellhead Protection Plan prepared in the early 1990s and update the plan as appropriate. Inclued Town Boards, other water suppliers in Ashfield and local citizens in the protection planning process. Review the attached guidance for wellheda protection planning.

Zone I:

- **v** Prohibit any new non-water supply activities from Zone I.
- **v** When feasible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- **v** Continue to prohibit public access to the well and control building by locking facilities and posting signs.
- ▼ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- ▼ If the District intends to continue utilizing the structures in the Zone I for storage of equipment, 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 or Memorandum of Understanding (MOU) that would prohibit potentially threatening activities or a Right of First Refusal agreement to purchase the property.
- **v** Redirect road drainage in the Zone I away from the well.
- **V** Do not use or store pesticides, fertilizers, petroleum products or road salt within the Zone I.

Training and Education:

- ▼ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers and certified operator. Post labels as appropriate on raw materials and hazardous waste.
- **v** Post drinking water protection area signs at key visibility locations as appropriate.
- ▼ Incorporate groundwater education into the local school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).
- Work with your community to ensure that stormwater runoff near Well #1 is directed away from the well and is treated according to DEP guidance.

Facilities Management:

- ▼ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to <u>http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf</u> for the Requirements for Small Quantity Generators.
- **v** Upgrade any oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- **v** Concrete pads around wellheads should slope away from the wells and well casings should extend above ground.

▼ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ♥ Work with local officials in Ashfield to develop Aquifer Protection District Bylaws and include the IWPA areas for the District wells and other public water supplies wells in Ashfield to assist in improving protection for all PWSs.
- ▼ 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.

Funding:

The Department's Wellhead and Source Water Protection Grant Programs provide funds to assist public water suppliers in addressing protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the grant programs. Please note: each program year, if funds are available, the Department posts a new Request for Response for the grant program (RFR) at http://www.mass.gov/portal/index.jsp?pageID=aghome&agid=osd. 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.

The Massachusetts Department of Food and Agriculture's Agricultural Environmental Enhancement Program (AEEP) provides funding to farmers to install a variety of water quality protection practices. For more information on the program contact the coordinator, Susan Phinney, at (617) 626-1772, <u>Susan Phinney@state.ma.us</u>.

Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State Revolving Fund, and other sources. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: http://mass.gov/dep/brp/mf/mfpubs.htm. The USDA also has various funding sources for government, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site http://search.sc.egov.usda.gov/nrcs.asp?qu=eqip&ct=NRCS. One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Consider reviewing the fact sheet available online and call the local office Amherst 413-253-4350 of the NRCS for assistance at the following website http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.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 Sheets
- Other Source Protection information