Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Meadowbrook Acres Mobile Home Park

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

Date Prepared:
October 22, 2003

Table 1: Public Water System (PWS) Information

PWS Name	Meadowbrook Acres Mobile Home Park
PWS Address	State Route 20
City/Town	Brimfield, Massachusetts
PWS ID Number	1043001
Local Contact	Mr. William Enser
Phone Number	(413) 243-1416

Well Name	***Source ID#***	***Zone I (in feet)***	***IWPA (in feet)***	***Source Susceptibility***
Upper Well	1043001-01G	248	616	High
Lower Well	1043001-02G	248	616	High

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

Meadowbrook Acres Mobile Home Park (the Park) is located on Route 20 in Brimfield near the western border with Monson. The Park is comprised of approximately 95 trailers, an administration building, a clubhouse, and other associated facilities. The total population ranges from approximately 130 people year-round to 150 people seasonally. The facility is served by two potable supply wells, the Upper well (01G) and the Lower well (02G). There is no municipal wastewater disposal facility in

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).

Brimfield; therefore, wastewater from the facility is disposed of through on-site, individual septic systems. The facility is in the process of changing the wastewater disposal from individual septic systems throughout the park to a combined system away from the wells. The facility has received a groundwater discharge permit and has a system design but presently does not have available funds to complete the construction.

The Upper well is a 280-foot deep, 6-inch diameter, bedrock well located below grade in a vault. The Lower well is a 260-foot deep, 6-inch diameter bedrock well also locate in a vault below grade. Geologic mapping in the area indicates thin overburden deposits of sand and gravel less than 50 feet deep. The Lower well is likely in relatively thin stratified drift, deposited by receding glaciers some 14,000 to 18,000 years before present. Recent streams and rivers may have reworked the sand and gravel and deposited recent alluvium. The Upper well is likely on the edge of the valley with only thin till layer over bedrock. The bedrock in the area is mapped as intrusive rocks and their metamorphic equivalents of the Bronson Hill Formation, predominantly schist.

The Zone I is the area immediately around the wellhead where only activities associated with supplying water are allowed to occur or other non-threatening activities. 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. The Zone I and IWPA protective radii for both wells 248 feet and 616 feet, respectively. These protective radii were calculated based on the metered water use from the two highest months of use from the Upper well. Please refer to the attached map that shows the Zone Is and IWPAs. The Zone I areas are not conforming to current DEP requirements. The Zone I areas include residences, parking areas, roadways, fuel oil/kerosene storage, and septic tanks. The IWPAs include the remainder of the facility, Route 20 and a utility right-of-way.

There is no evidence of a continuous, protective confining clay layer 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 well serving the facility has no treatment at this time. The DEP requires public water suppliers to regularly monitor the quality of the water. For current information on

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
High density residential land use	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells. Provide information about BMPs
Fuel Storage Above Ground	Yes	Yes	Moderate /High	Require proper maintenance and upgrades to fuel oil/kerosene tanks to prevent releases from occurring. Encourage propane use.
Septic System	Yes	Yes	Moderate	See septic systems brochure in the appendix, relocate septic systems outside of Zone I
Lawn care/gardening	Yes	Yes	Moderate	Encourage residents in proper storage, disposal, and application of pesticides.
Transportation corridors/right-of-way	Yes	Yes	Moderate	Herbicides: over-application or improper handling; fuel storage, transported chemicals, and maintenance chemicals: leaks or spills

*** -For more informati on 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.

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 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. **Non-conforming Zone I;**
2. **Residential Land Uses; and,**
3. **Transportation corridors including railroad.**

The overall ranking of susceptibility to contamination for the well is high, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

1. Non-conforming Zone I – Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone I or other non-threatening activities. The facility's Zone Is contain septic systems, driveways, roads, and residences. Systems not meeting DEP Zone I requirements must receive DEP approval prior to any activity and address Zone I issues prior to increasing water use or modifying systems.

Recommendations:

- ✓ Work with residents within Zone I to encourage the replacement of fuel oil or kerosene heat with propane heat and to properly remove the fuel oil/kerosene tanks from the residence if they do convert to an alternative heating source.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Direct driveway drainage in the Zone I away from the well.
- ✓ Relocate septic systems outside of the Zone I.
- ✓ Consider establishing age and condition standards for fuel tanks and incentives for converting to propane.

2. Residential Land Uses - The residences have on-site septic systems. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** - Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained, they can be a potential source of microbial contamination.
- **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** – Catchbasins 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

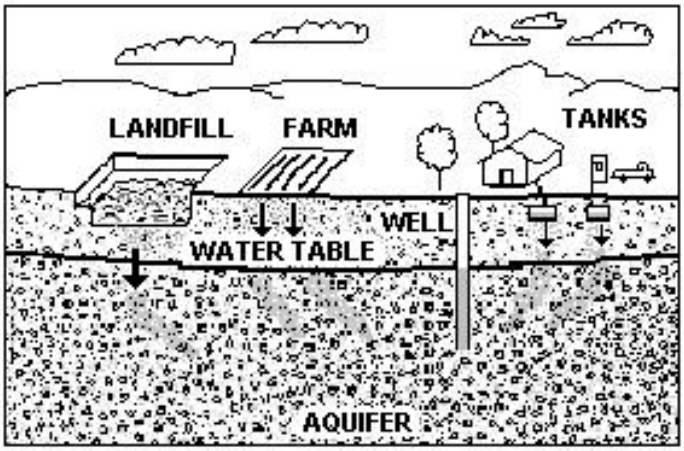

Figure 1: Example of how a well could become contaminated by different land uses and activities.

contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

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

3. Transportation corridor including railroad – The well is located less than 25 feet from the road and the railroad track is within the IWPA. Accidents and normal use and maintenance of roads and railroads pose a potential threat to water quality. 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, car washing, and accidental spills as well as waste from wildlife and pets. Railroad right-of-ways may pose a potential threat from accidents and maintenance practices.

Recommendations:

- Monitor the area to ensure that runoff during heavy storms does not threaten the well. If it is determined that runoff backs-up toward the well, consider modifying the ground surface around the well casing to ensure that stormwater does not discharge near the well.
- Prepare an Emergency Response Plan that includes coordination between the DEP, the Town emergency response (ER) team in the event of an accident near the wellhead. The Town ER team should be made aware of the location of your water system so that they can notify you in the event of an accident near your system.
- Request that the Selectmen or Conservation Commission, review the Yearly Operating Plan for the railroad to ensure that the railroad is aware of location of your systems' IWPA.

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 Park is commended for having securely locked covers over the wellheads and monitoring activities near the wells. Continue to move toward funding the upgrade of the septic systems. The Park should review and adopt the key recommendations above and the following:

Priority Recommendations:

- ✓ Encourage the replacement of fuel oil or kerosene heat with propane heat so that oil/kerosene tanks can be removed from the Zone Is.
- ✓ Relocate septic systems outside of the Zone Is.

Zone I:

- ✓ Aboveground storage tanks that cannot be removed from your Zone Is should be located on an impermeable surface, and should a spill occur, containment should be large enough to hold the complete liquid volume of the tank.
- ✓ Prohibit new, non-water supply activities from the Zone Is.
- ✓ Restrict use of salt within Zone Is and drain stormwater away from well.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Conduct regular inspections of Zone Is, check any aboveground tanks for leaks.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone Is.

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

For More Information:

Contact Catherine Skiba in DEP's Springfield 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/

Copies of this assessment have been made available to the public water supplier and town boards.

- ✓ Septic system components should be located, inspected, and maintained on a regular basis.
- ✓ 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 town to develop and include the 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.

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 the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. If funds are available, each program year the Department posts a new Request for Response for the Grant program (RFR). 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.

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