Source Water Assessment Program (SWAP) Report For Conway Grammar School

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: January 11, 2000

Table 1: Public Water System (PWS) Information

PWS Name	**Conway Grammar School**
PWS Address	**24 Fournier Road**
City/Town	**Conway, Massachusetts**
PWS ID Number	**1068006**
Local Contact	**Principal, Ms. Judith Siciliano**
Phone Number	**413-369-4239**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1068006-01G	195	496	Moderate

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.

Maintaining Your Good 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.

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 septic systems, road salting or storage, 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 contaminant sources, 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 you or your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attached Map of the Protection Areas
5. Appendices

1. DESCRIPTION OF THE WATER SYSTEM

Well #1
The Conway Grammar School has a total staff and student population of approximately 240 people and is located in a rural setting surrounded primarily by woodland, rural and agricultural land uses. The well for the Conway Grammar School is located on a wooded parcel of land, approximately 150 feet south of a former ice pond, 300 feet north of a farmhouse and approximately 800 feet north of South Deerfield Road (State Route 116). The Zone I radius for Well #1 is 194 feet and the Interim Wellhead Protection Area (IWPA) radius is 496 feet. The well was developed and tested under the DEP's New Source Approval Process in 1990 at a pumping rate of 4 gallons per minute (gpm). The Zone I and IWPA protective radii are based on the well's approved safe yield of 3 gpm (4,320 gallons per day). Please refer to the attached map that shows the Zone I and IWPA.

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).

Well #1 is a 6-inch diameter drilled well with steel casing grouted to 33 feet below ground. Geologic mapping of the area indicates the bedrock is garnetiferous, quartz-mica schist of the Conway Formation. Bedrock was encountered 9 feet below grade and the boring was advanced to 545 feet below ground with the pump set at approximately 500 feet. The driller recorded water-bearing fractures from 380 to 440 feet below grade and under static (non-pumping condition) water freely flowed out of the top of the casing. Therefore, during well completion, the ground level around the well was raised with fill and the casing was extended approximately 3 feet above the ground. A casing drain was installed approximately 4 feet below ground to keep water in the well from freezing during the winter. When the well pump is off, water flows freely to a nearby brook.

During the site visit, bedrock outcrops were observed immediately adjacent to the well and throughout the parcel. This confirms that the bedrock is shallow, with little or no hydrogeologic barrier between the ground surface and the bedrock aquifer. Bedrock wells drilled in these conditions are considered to be highly vulnerable to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the ground surface.

Water Quality

The water quality from well #1 currently meets all US Environmental Protection Agency and Massachusetts Department of Environmental Protection drinking water standards. The Conway School well water does not require and does not have treatment at this time. For current information on monitoring results, please contact the Principal, Ms. Judith Siciliano listed above.

2. DISCUSSION OF LAND USES IN THE PROTECTION AREAS

There are a few land uses and activities within the drinking water supply protection areas that are potential sources of contamination. Please refer to Table 2.

Key issues include:

1. The Town's Salt Shed and dirt-floored barn used for storage,
2. Stockpiled clean soil and crushed asphalt within the IWPA,
3. Residential and recreational uses within IWPA.

Although there are no activities within the Zone I, the overall susceptibility ranking of the well to contamination is moderate, based on the presence of at least one moderate threat land use or activity in the IWPA.

Table 2: Activities within the Water Supply Protection Areas

Facility Type	Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Highway Department	Salt Shed and former cow barn	No	Yes	Moderate	Dirt-floored former cow barn is being used for equipment storage. Potential threat from hydraulic/petroleum fluids and other materials that may be stored there.
	Stockpiled cut asphalt/soil	No	Yes	Moderate	Approximately 200 – 300 c.y. of crushed asphalt and dirt were stockpiled.
Residential	Two Residences with barn and non-commercial farm animals	No	Yes	Moderate	See septic system, pesticide and manure brochures in the appendix.
School	Athletic Field	No	Yes	Moderate	Continue policy of no fertilizer or pesticide usage. Include in landscaper's contract.
	Transformer	No	Yes	Low	Due to the age of the transformer, it likely does not contain PCBs. However, contact your utility company to confirm.

*** -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 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.

1. Town's Salt Shed – The aerial photograph (map) attached to this report was taken in 1997. It is our understanding that the shed was constructed in 1999 and therefore does not appear on the photograph. However the former cow barn and farmhouse do appear on the photo. The cow barn is shown on the map under the 3 of the number "13" shown within the blue circle outlining the IWPA. The new salt shed is located immediately north of the former cow barn.

Please note that the 1998 Sanitary Survey states explicitly that the Department must be informed prior to conducting activities within the Zone I or IWPA. The Town did receive verbal approval from the Department to construct the salt shed. Although the salt shed is covered and the tarmac is paved, there is no drainage control from the facility, which could result in ponding of water at the site. In addition, the Town is utilizing the former cow barn for storage. The floor of the old barn is dirt and currently the Town is storing the truck sander bodies and tires in the barn along with miscellaneous items. The potential threats from these items are release of hydraulic fluid from the sanders, the potential release of petroleum products from motor vehicles utilizing the facility, as well as motor oils stored there and used to maintain those vehicles. The relatively thin soil does not provide a significant barrier to prevent potential contaminants from entering the bedrock aquifer utilized by the school's well, therefore, careful consideration must be made of the activities conducted within the IWPA. The Town must prohibit activities within the IWPA that pose a significant threat to the public water supply and use Best Management Practices and controls for those activities that will be allowed in this area. No activities may take place in the Zone I that are not directly related to the Public Water Supply.

2. Stockpiled soil and crushed asphalt – Approximately 200 to 300 cubic yards of clean fill, top soil, and crushed asphalt were stockpiled within the IWPA of the school well. The material is located just outside of the Zone I beginning approximately 248 feet from the well. Asphalt and other recyclable materials are considered to pose a moderate threat. The piles of dirt and asphalt also do not appear on the map but were observed immediately north and slightly east of the new salt shed.

The Department can offer technical assistance to the Town to determine what types of activities should be prohibited within the IWPA and the Best Management Practices that should be employed for those activities that will be conducted on Town property within the IWPA.

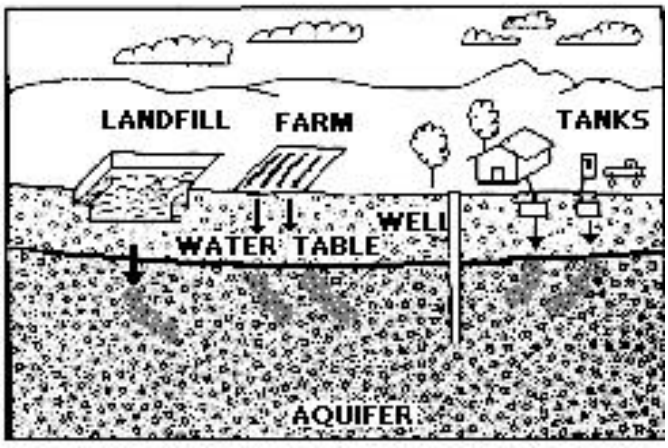

Figure 1: Example of how a well could become contaminated by different land uses and activities.

3. Residential and recreational land uses within the IWPA include recreation horses, normal household activities and a snow mobile trail. In general, normal residential activities pose some threat to public and private water supplies. Use of best management practices minimizes the threat to both private and public wells. Judicious use of pesticides, petroleum products, maintenance of septic systems and animal manure management will protect both the public and private residential; water supplies.

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

3. PROTECTION RECOMMENDATIONS

The Conway Grammar School and Town of Conway should review and adopt the following recommendations at the school:

Zone I and IWPA:

- ✓ Remove or manage all potentially hazardous materials within the IWPA including the asphalt, petroleum products or

For More Information:

Contact Catherine V. Skiba at 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 DEP's web site at: www.state.ma.us/dep/brp/dws.

Copies of this assessment have been provided to the water department, town boards, the town library and the local media.

equipment containing petroleum products.

- ✓ Contain or control all materials that could pose a potential hazard to public water supplies.
- ✓ If the Town intends to continue utilizing the cow barn, seal the floor and restrict (control) activities that could pose a threat to the water supply.
- ✓ Control the runoff from the salt shed road and parking lot to prevent ponding.
- ✓ Work with the Selectmen, Board of Health and Planning Board to manage activities within the IWPA. Due to the vulnerability of the bedrock aquifer, it is imperative that the Town and school carefully consider activities proposed for the IWPA. Refer to the Wellhead Protection Plan guidance and the model bylaws for types of activities that should be prohibited and controlled in the vicinity of a public or private water supplies.
- ✓ Post drinking water protection area signs at key visibility locations of the Zone I.
- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I and IWPA. Look for illegal dumping and evidence of vandalism.
- ✓ Do not use or store hazardous materials within Zone I.

Training and Education:

- ✓ Train staff on proper hazardous material use, storage, use, disposal, emergency response, and best management practices. Include custodial staff, groundskeepers, certified operator, and food preparation staff in the training.
- ✓ Arrange to have hazardous materials disposal available for the school staff, primarily the custodial staff, either through the Town's hazardous waste collection days or through other means. The school may have to register as a Very Small Generator of Hazardous Waste to dispose of small quantities of hazardous materials.
- ✓ Incorporate groundwater education into the school's curriculum (K- Grade 6 curricula available from DEP; DEP can suggest other agencies' curricula as well).

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, handling, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/brp/dws/dwspubs.html and www.dep.state.ma.us/dep/bwp/dhm/dhmpubs.htm. Also contact Hillary Eustace of the Massachusetts Office of Technical Assistance at 617-626-1061 or Hilary.Eustace@state.ma.us.
- ✓ Septic system components should be inspected and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ 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 Conway to inform them of the significance of the school's IWPA so they may assist you in improving and maintaining protection of the school's water supply.
- ✓ Contact the Department for guidance regarding any further development of activities within the IWPA.
- ✓ It is recommended that the Town consider zoning bylaws to protect the public water supply areas within the community. Refer to the Department's model bylaws for examples of activities that should be prohibited within the Wellhead Protection Areas and those that should be restricted or controlled. Utilize BMPs where appropriate.
- ✓ Prepare a Wellhead Protection Plan and Emergency Response Plan to address short-term water shortages, long-term water demands and management. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional, new information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Financial:

- ✓ The Conway Grammar School is eligible to apply for Wellhead Protection and Source Water Protection Technical Assistance Grants under the State Revolving Funds (SRF) program. An announcement for the Grant programs is attached to this report

and Department personnel are available to assist you through the grant application process. Preparation of a wellhead protection plan and preparation of Town protective bylaws are types of eligible projects

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.

Attachment:

- Map of the Public Water Supply (PWS) Protection Area.
- Septic System Brochure
- Making Wellhead Protection Work in Massachusetts
- Developing a Local Wellhead Protection Plan
- Bureau of Waste Prevention, Division of Solid Waste policies
  Guide to Regulations for Using or Processing Asphalt, Brick and Concrete Rubble

Additional Reference Documents:

To help with source protection efforts, more information is available from the Regional Office by contacting Catherine V. Skiba (413) 755-2119 or online at www.state.ma.us/dep/brp/dws, including:

- Water Supply Protection Guidance Materials such as model regulations,
- Best Management Practice information, and general water supply protection information.
- MA DEP SWAP Strategy
- Land Use Pollution Potential Matrix
- Draft Land/Associated Contaminants Matrix