Source Water Assessment Program (SWAP) Report for Richmond Consolidated School

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 Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
June 15, 2001

Table 1: Public Water System (PWS) Information

PWS Name	**Richmond Consolidated School**
PWS Address	**State Road**
City/Town	**Richmond, Massachusetts**
PWS ID Number	**1249004**
Local Contact	**Mr. Bruce Garlow**
Phone Number	**413-698-3882**

Well Name	***Source ID#***	***Zone I (in feet)***	***IWPA (in feet)***	***Source Susceptibility***
Well #1	1249004-02G	250	622	Moderate

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, 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 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
Richmond Consolidated School is a rural, kindergarten through eighth grade school located on the east side of State Road, Route 41 in Richmond. The total school student and staff population is approximately 250 people per day and is served by a single potable supply well (Well #1 –02G) located northeast of the school. The school was expanded and renovated in 1999 and the school's old (01G) was abandoned as a water supply and decommissioned, by filling in and sealing the well in accordance with the DEP's requirements

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 has a Zone I protective radius of 250 feet and an Interim Wellhead Protection Area (IWPA) radius of 622 feet based on pumping test data and Zone I restrictions. The well was tested at a rate of 18 gallons per minute (gpm) under the New Source Approval Process and was granted an approved withdrawal rate of 10,000 gallons per day (7 gpm) due to a limited Zone I area of a 250-foot radius.

Well #1 is a 6-inch diameter well drilled to a depth of approximately 440 feet below ground. The driller's log states that topsoil was encountered from ground level to 3 feet below ground, where bedrock was encountered. The driller logged the bedrock as limestone from 3 feet to the final well depth; the geologic map of the area states that the bedrock is dolomite and marble of the Stockbridge Formation. Forty feet of casing was grouted into place with approximately 24-inches of casing above ground. At the time this report was prepared, the water does not require and is not treated. You may request additional, current information regarding the quality of the water, from the local contact listed in Table 1.

Please refer to the attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information.

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. **Parking and Stormwater Retention Basin**
2. **Passive Recreation in IWPA**

The well is located in an aquifer with a high vulnerability to contamination due to the absence of a significant hydrogeologic barrier to prevent contaminant migration. The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of at least one moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Parking and Stormwater Retention Basin in the IWPA –** The stormwater from the parking areas is discharged to a retention basin immediately adjacent to the Zone I. The discharge line was mounded, rather than buried, due to shallow bedrock and the retention basin is located on bedrock, with riprap. Storm water from the parking lot is routed through catch basins prior to discharge to the sediment trap/water quality basin. There are eight (8) catch basins and the building footing drain that discharge to the basin. Four (4) of those basins are located in the parking lot.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Parking and Storm water retention	No	Yes	Moderate	Manage, monitor and maintain system.
Passive Recreation	Yes	Yes	Low	Evidence of low frequency passive activity.

- **-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.

As flowing storm water travels, it picks up debris and contaminants from parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, or accidents.

Pollutants are actually not removed from most catch basins until they are cleaned out. Regular maintenance is required to reduce the risk of resuspension of sediments and contaminants during large storm events. Maintenance is essential for the proper operation of catch basins and the sediment/water quality basin. Due to the shallow bedrock contaminant discharged through the basin may impact the bedrock aquifer.

Recommendations:

- ✓ If you do not have a storm water maintenance plan, develop one. Maintenance plans should include an inspection and maintenance schedule. Inlets should be cleaned out a minimum one time per year and inspected quarterly. The outfall should be inspected annually for structural integrity and determine if it needs to be cleaned. Look for color, turbidity, odor, oil sheen etc. All observations should be recorded and action taken if evidence of a release of hazardous materials such as petroleum products has been observed.
- ✓ Inspect parking areas periodically for evidence of leaks or accidental spills.
- ✓ Post Drinking Water supply signs in the parking areas.
- ✓ Sweeping parking lots reduces the amount of potential contaminants in stormwater runoff.
- ✓ All sediments and hydrocarbons should be properly handled and disposed in accordance with local, state and federal guidelines and regulations. Catch basin cleanings are classified as a solid waste and must be handled and disposed of in accordance with all DEP regulations, policies and guidance.

2. **Passive Recreation in IWPA** – Passive recreation occurs in the IWPA at a tennis court. Passive recreation poses minimal threat provided access to the wellhead is prevented.

Recommendations:

- ✓ Conduct routine inspections of the wellhead and monitor for activities near the wellhead.
- ✓ If there is evidence of unauthorized access to the wellhead, consider fencing off the wellhead area. Fencing for the wellhead is an eligible project under the Wellhead Protection grant program. (See Funding below).

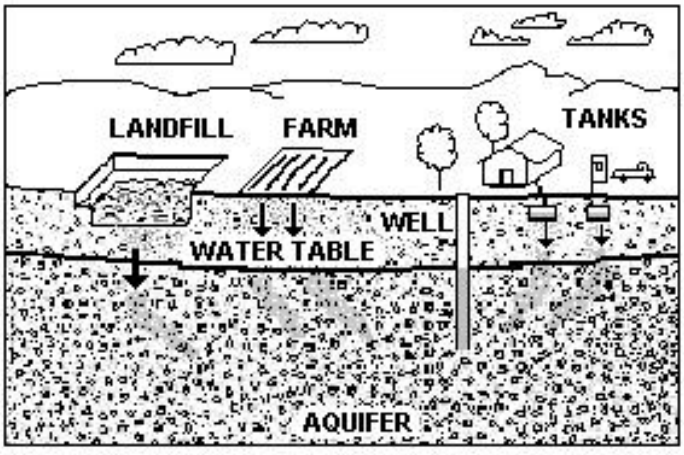

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Other activities that were noted during the assessment were the open fields adjacent to the school. It is our understanding that these fields are hayed. Provided that no soil enhancements, manure or pesticides are applied, haying poses minimal threat to the aquifer. Any soil enhancements should be applied following a nutrient managment plan prepared with assistance from the There is one residence in the northern section of the IWPA and low-density residential development west of Route 41. Normal residential activities pose minimal threat to the water quality of the public water supply as well as their own private supply provided homeowners are aware of the potential hazards of household waste, lawn care chemicals, animal waste and septic systems and they utilize best management practices.

Provide information to residents about the potential hazards of household chemicals, lawn care chemicals and fertilizers.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional 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 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 provided to the public water supplier, town boards, the town library and the local media.

Include information on Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides, household hazardous waste and septic system maintenance and disposal practices.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Richmond Consolidated School is commended for current protection measures specifically those designed into the school renovations.

Please review and adopt the key recommendations listed above and as follows:

Priority Recommendation:

- ✓ If you do not have a storm water maintenance plan, work with the Town to develop one. Maintenance plans should include an inspection and maintenance schedule. Inlets should be cleaned out a minimum one time per year and inspected quarterly. The outfall should be inspected annually for structural integrity and determine if it needs to be cleaned. Catch basin cleanings are classified as a solid waste and must be handled and disposed of in accordance with all DEP regulations, policies and guidance. Look for color, turbidity, odor, oil sheen etc. All observations should be recorded and action taken if evidence of a release of hazardous materials such as petroleum products has been observed.

Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I. Look for evidence of unauthorized access.
- ✓ Monitor activities and if there is evidence of increased activity or access, consider fencing an gating the wellhead area. This is an eligible project for a Wellhead Protection grant.
- ✓ Post drinking water supply sign in the parking lots at the front and rear of the building.
- ✓ Provide information to residents about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Provide information on Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides and household hazardous waste.
- ✓ Provide educational outreach to residents regarding septic system maintenance and disposal practices.

Training and Education:

- ✓ Post drinking water protection area signs at key visibility locations such as in the parking areas.
- ✓ Incorporate groundwater education into school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).

Facilities Management:

- ✓ Work with the town or develop a storm water maintenance plan that includes an inspection and maintenance schedule. Inlets should be cleaned out a minimum one time per year and inspected quarterly. The outfall should be inspected annually for structural integrity and determine if it needs to be cleaned. Look for color, turbidity, odor, oil sheen etc. All observations should be recorded.
- ✓ Inspect parking areas periodically for evidence of leaks or accidental spills.
- ✓ Sweeping parking lots reduces the amount of potential contaminants in stormwater runoff.
- ✓ All sediments and hydrocarbons should be properly handled and disposed in accordance with local, state and federal guidelines and regulations. Catch basin cleanings are classified as a solid waste and must be handled and disposed of in

accordance with all DEP regulations, policies and guidance.

- ✓ Septic system components should be inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ Concrete protective collars on the wellhead (earthen or concrete) should slope away from well and the well casing should extend above ground.

Planning:

- ✓ Encourage local officials in Richmond to develop protective bylaws and include the school well's IWPA in an Aquifer Protection District Bylaws and to assist you in securing 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 potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection 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 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. 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 spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area
- Developing a Local Wellhead Protection Plan
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Healthy Schools Fact Sheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form