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

# Acton Water Supply District

### 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.

### 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.

### Table 1: Public Water System Information

| | |
|---|---|
| ***PWS Name*** | Acton Water Supply District |
| ***PWS Address*** | 693 Massachusetts Avenue, Rt. 111 |
| ***City/Town*** | Acton |
| ***PWS ID Number*** | 2002000 |
| ***Local Contact*** | James Deming |
| ***Phone Number*** | (978) 263-9107 |

## 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.

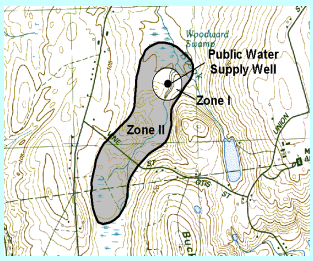
Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

**This report includes the following sections:**

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection Conclusions and Recommendations
4. 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.

## Section 1: Description of the Water System

***Zone II #:*** 176 (Conant) ***Susceptibility:*** High

| ***Well Names*** | ***Source IDs*** |
|---|---|
| Conant Well #1 | 2002000-02G |
| Conant II GP Well #1 | 2002000-14G |
| Conant II GP Well #2 | 2002000-15G |
| Conant II GP Well #3 | 2002000-16G |
| Conant II GP Well #4 | 2002000-17G |
| Conant II GP Well #5 | 2002000-18G |

***Zone II #:*** 337 (Whitcomb/Clapp) ***Susceptibility:*** High

| ***Well Names*** | ***Source IDs*** |
|---|---|
| Whitcomb Well | 2002000-01G |
| Clapp Well | 2002000-07G |

***Zone II #:*** 338 (School Street) ***Susceptibility:*** High

| ***Well Names*** | ***Source IDs*** |
|---|---|
| Lawsbrook Well | 2002000-03G |
| Christofferson Well | 2002000-04G |
| Scribner Well | 2002000-08G |

***Zone II #:*** 339 (Assabet) ***Susceptibility:*** High

| ***Well Names*** | ***Source IDs*** |
|---|---|
| Assabet #1 | 2002000-05G |
| Assabet #2 | 2002000-06G |
| Assabet #2a | 2002000-19G |

***Zone II #:*** 419 (Kennedy) ***Susceptibility:*** High

| ***Well Names*** | ***Source IDs*** |
|---|---|
| Marshall Well | 2002000-09G |
| Kennedy GP Well #1 | 2002000-10G |
| Kennedy GP Well #2 | 2002000-11G |
| Kennedy GP Well #3 | 2002000-12G |
| Kennedy GP Well #4 | 2002000-13G |

There are nineteen wells supplying water to the Acton Water Supply District (AWSD). The wells are located in five Zone II protection areas that are located throughout Acton and portions of Concord, Boxborough, Westford, and Carlisle. Each well has a Zone I of 400 feet. The wells are located in aquifers with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. clay) that can prevent contaminant migration. Please refer to the attached map to view the boundaries of the Zone II.

All wells are treated for corrosion control, organics removal, fluoridation and disinfection. For a more detailed description of the Acton Water Supply District's system, current information on monitoring results and treatment and a copy of the most recent Consumer Confidence Report, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data are also available on the web at http://www.epa.gov/safewater/ccr1.html.

## Section 2: Land Uses in the Protection Areas

The Zone IIs for AWSD are a mixture of forest, residential, mining, commercial, and light industrial land uses (refer to attached map for details). Land uses and activities that are potential sources of contamination are listed in Table 2, with further detail provided in the Table of Regulated Facilities and Table of Underground Storage Tanks in Appendix B.

**Key Land Uses and Protection Issues include:**

1. Inappropriate activities in Zone I
2. Residential land uses
3. Transportation corridors
4. Hazardous materials storage and use
5. Oil or hazardous material contamination sites
6. Agricultural activities

The overall ranking of susceptibility to contamination for the system is high, based on the presence of at least one high threat land use within the water supply protection areas, as seen in Table 2.

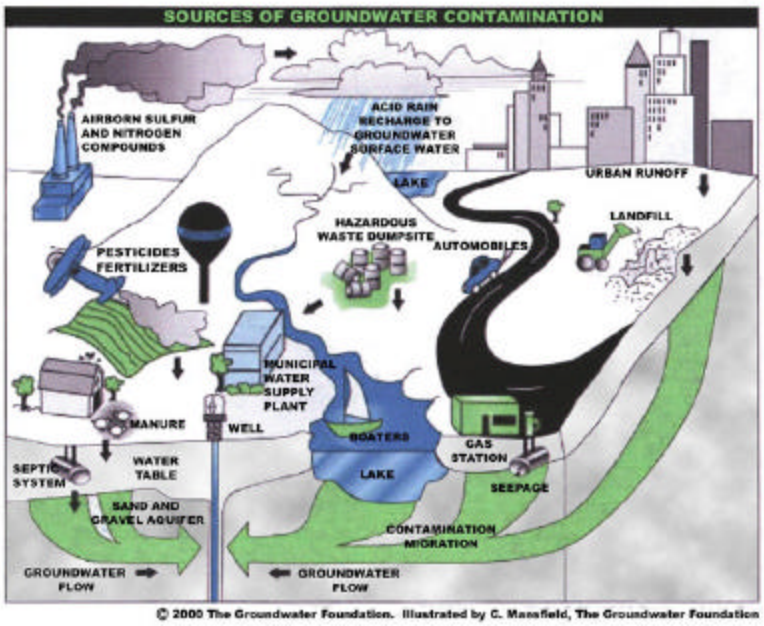
### Benefits of Source Protection

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.

**1. Inappropriate Activities in Zone Is –** The Zone I for each of the wells is a 400 foot radius around the wellhead. Massachusetts drinking water regulations (310 CMR 22.00 Drinking Water) requires public water suppliers to own the Zone I, or control the Zone I through a conservation restriction. The eighteen Zone Is for the wells are owned or controlled by the public water system and protected by Acton's hazardous materials bylaw and inspection program. Only water supply activities are allowed in the Zone I. However, many public water supplies were developed prior to the Department's regulations and contain non water supply activities such as homes and public roads. The following non water supply activities occur in the Zone Is of the system wells:



**Zone I: Whitcomb Well 2002000-01G and Clapp Well 2002000-07G** - The Whitcomb/Clapp wells' Zone I contains the AWSD headquarters which includes district office activities associated with water supply operations (e.g. maintenance of equipment) and a short piece of Route 111 (Massachusetts Avenue).

**ZoneI: Marshall Well 2002000-09G** - Route 27 runs through the western edge of the Zone I for the Marshall Well.

**Zone I Recommendations:**

- ✓ To the extent possible, restrict Zone I activities to only those directly related to providing drinking water, such as wells, pumphouses, treatment, and water storage. When feasible, all other activities should be removed during future upgrades.
- ✓ Use BMPs for the storage, use, and disposal of hazardous materials such as water supply chemicals and maintenance chemicals.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Keep any new non water supply activities out of the Zone I.

**2. Residential Land Uses –** Approximately 20% of the Zone IIs consist of residential areas, including multi-family residential. None of the areas have public sewers, and so all use 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 (UST and AST) 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.

**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.

*(Continued on page 7)*

### What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

### For More Information

Contact Josephine Yemoh-Ndi in DEP's Worcester Office at (508) 792-7650 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, board of health, and the town.

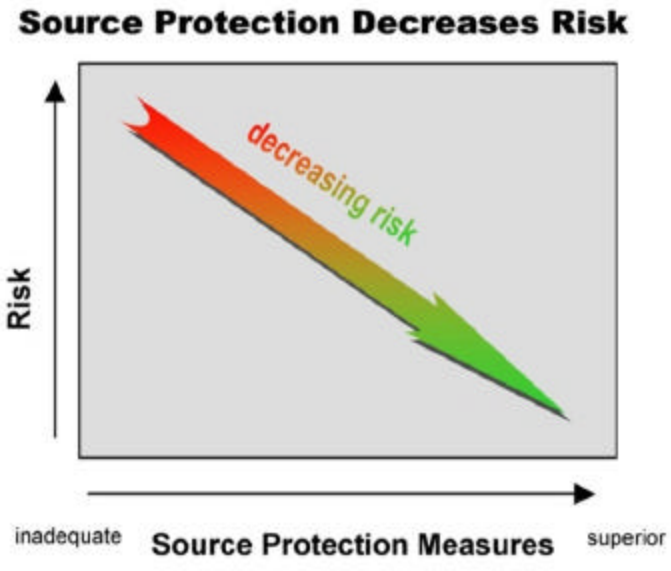



Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

**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 that a facility uses best management practices (BMPs), especially if those BMPs include reducing or eliminating the use of hazardous chemicals. 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.

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

For more detailed information refer to Acton Water Supply District's "Wellhead Protection Project"

| Activities | Threat* | Quantity (Zone II # ) | Potential Source of Contamination |
|---|---|---|---|
| **Agricultural** | | | |
| Fertilizer Storage or Use | M | 1 (#339), 3 (#419), 1 (#338), 5 (#337) | Fertilizers: leaks, spills, improper handling, or over-application |
| Landscaping | M | 1 (#339) | Fertilizers and pesticides: leaks, spills, improper handling, or over-application |
| Livestock Operations | M | 2 (#419) | Manure (microbial contaminants): improper handling |
| Manure Storage or Spreading | H | 1 (#419) | Manure (microbial contaminants): improper handling |
| Pesticide Storage or Use | H | 1 (#339), 5 (#338) | Pesticides: leaks, spills, improper handling, or over-application |
| **Commercial** | | | |
| Repair Shops (Engine, Appliances, Etc.) | H | 10 (#339), 2 (#419), 1 (#338), 2 (#337) | Engine fluids, lubricants, and solvents: spills, leaks, or improper handling or storage |
| Sand And Gravel Mining/Washing | M | 1 (#339) | Heavy equipment, fuel storage, clandestine dumping: spills or leaks |
| Gas Stations | H | 2 (#339), 1 (#176) | Automotive fluids and fuels: spills, leaks, or improper handling or storage |
| Body Shops | H | 3 ( #339), (#337) | Vehicle paints, solvents, and primer products: improper management |
| Paint Shops | H | 1 (#339) | Paints, solvents, other chemicals: spills, leaks, or improper handling or storage |
| Car/Truck/Bus Washes | L | 2 (#339) | Vehicle wash water, soaps, oils, greases, metals, and salts: improper management |
| Service Stations/ Auto Repair Shops | H | 1 (#339), 2 (#176), 1 (#337) | Automotive fluids and solvents: spills, leaks, or improper handling |
| Dry Cleaners | H | 1 (#339), 2 (#176) | Solvents and wastes: spills, leaks, or improper handling |
| Bus and Truck Terminals | H | 1 (#339) | Fuels and maintenance chemicals: spills, leaks, or improper handling |

| Activities | Threat* | Quantity & Zone II # | Potential Source of Contamination |
|---|---|---|---|
| **Commercial (Cont)** | | | |
| Furniture Stripping and Refinishing | H | 1 (#339) | Hazardous chemicals: spills, leaks, or improper handling |
| Junk Yards and Salvage Yards | H | 1 (#339) | Automotive chemicals, wastes, and batteries: spills, leaks, or improper handling |
| Photo Processors | H | 1 (#176) | Photographic chemicals: spills, leaks, or improper handling or storage |
| Railroad Tracks And Yards | H | 1 (#176), 1 (#419), 1 (#338) | Herbicides: over-application or improper handling; fuel storage, transported chemicals, and maintenance chemicals: leaks or spills |
| **Industrial** | | | |
| Wood Preserving Facilities | M | 1 (#339) | Wood preservatives: spills, leaks, or improper handling or storage |
| Machine/ Metalworking Shops | H | 1 (#339), 2 (#419), 1 (#338) | Solvents and metal tailings: spills, leaks, or improper handling |
| Industry/Industrial Parks | H | 1 (#337) | Industrial chemicals and metals: spills, leaks, or improper handling or storage |
| **Residential** | | | |
| Fuel Oil Storage (at residences) | M | Numerous-All Zone IIs | Fuel oil: spills, leaks, or improper handling |
| Lawn Care / Gardening | M | Numerous-All Zone IIs | Pesticides: over-application or improper storage and disposal |
| Septic Systems / Cesspools | M | Numerous-All Zone IIs | Hazardous chemicals: microbial contaminants, and improper disposal |
| **Miscellaneous** | | | |
| Aboveground Storage Tanks | M | 2 (#339) | Materials stored in tanks: spills, leaks, or improper handling |
| Oil or Hazardous Material Sites | - | 2 (#176), 1 (#419), 1 (#337) | Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified in Appendix B. |
| Superfund Sites | - | 2 (#339) | Oil or hazardous materials and waste: spills, leaks, or improper handling or storage |
| Small quantity hazardous waste generators | M | 1 (#339), 4 (#176), 1 (#338), 1 (#337) | Hazardous materials and waste: spills, leaks, or improper handling or storage |
| Wastewater Treatment Plant/ Collection Facility/ Lagoon | M | 2 (#339), 1 (#176), 1 (#419) | Treatment chemicals or equipment maintenance materials: improper handling or storage; wastewater: improper management |
| Water Treatment Sludge Lagoon | M | 1 (#339) | Sludge and wastewater: improper management |

| Activities | Threat* | Quantity & Zone II # | Potential Source of Contamination |
|---|---|---|---|
| **Miscellaneous (Cont)** | | | |
| Transportation Corridors | M | 1 (#339), 1(#176), 1(#419), 1 (#338) 1(#337) | Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling |
| Utility Substation Transformers | L | 3 (#176), 1 (#419) | Chemicals and other materials including PCBs: spills, leaks, or improper handling |

**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 detailed information on potential sources of contamination contact Acton Water Supply District and request to review their "Wellhead Protection Project" report.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: 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.

*(Continued from page 4)*
- ✓ Work with planners to control new residential developments in the water supply protection areas.
- ✓ Promote BMPs for stormwater management and pollution controls.

**3. Transportation Corridors –** Routes 2, 2A, 225, 27 and 111 all intersect portions of the five Zone IIs for AWSD's wells. Local roads are also common throughout the Zone IIs. Roadway construction, maintenance, and typical highway use can all be potential sources of contamination. Accidents can lead to spills of gasoline and other potentially dangerous transported chemicals. Roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes. De-icing salt, automotive chemicals and other debris on roads are picked up by stormwater and wash in to catchbasins.

Railroad tracks run through the southern portion of the School Street Zone II and define the northeastern boundary of the Whitcomb/Clapp Zone II. An abandoned rail line intersects the Kennedy Zone II and the Conant Zone II. Rail corridors serving passenger or freight trains are potential sources of contamination due to chemicals released during normal use, track maintenance, and accidents. Accidents can release spills of train engine fluids and commercially transported chemicals.

**Transportation Corridor Recommendations:**
- ✓ Identify stormwater drains and the drainage system along transportation corridors. Wherever possible, ensure that drains discharge stormwater outside of the Zone II.
- ✓ Work with the Town and State to have catch basins inspected, maintained, and cleaned on a regular schedule. Street sweeping reduces the amount of potential contaminants in runoff.
- ✓ Work with local emergency response teams to ensure that any spills within the Zone II can be effectively contained.
- ✓ If storm drainage maps are available, review the maps with emergency response teams. If maps aren't yet available, work with town officials to investigate mapping options such as the upcoming Phase II Stormwater Rule requiring some communities to complete stormwater mapping.
- ✓ Work with local officials during their review of the railroad right of way Yearly Operating Plans to ensure that water supplies are protected during vegetation control.

**4. Hazardous Materials Storage and Use** – Eight percent of the land area within the Zone IIs is commercial or industrial land uses. Many small businesses and industries use hazardous materials, produce hazardous waste products,

and/or store large quantities of hazardous materials in UST/AST. If hazardous materials are improperly stored, used, or disposed, they become potential sources of contamination. Hazardous materials should never be disposed of to a septic system or floor drain leading directly to the ground.

**Hazardous Materials Storage and Use Recommendations:**

- ✓ Educate local businesses on best management practices for protecting water supplies. Distribute the fact sheet "Businesses Protect Drinking Water" available in Appendix D and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMP's for common business issues.
- ✓ Work with local businesses to register those facilities that are unregistered generators of hazardous waste or waste oil. Partnerships between businesses, water suppliers, and communities enhance successful public drinking water protection practices.
- ✓ Educate local businesses on Massachusetts floordrain requirements. See brochure "Industrial Floor Drains" for more information.

**5. Presence of Oil or Hazardous Material Contamination Sites –** The Zone IIs contain DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Numbers 2-0010612, 2-0000848, 2-0010259, 2-0010766. Refer to the attached map and Appendix B for more information. The AWSD should monitor activities at two federally classified superfund sites in close proximity to two of their Zone IIs: the W.R. Grace & Co. superfund site located between the Assabet and School Street Zone IIs and the newly classified superfund site at Nuclear Metals, Inc. located south of the Assabet Zone II. More information can be viewed at http://www.epa.gov/superfund/index.htm.

**Oil or Hazardous Material Contamination Sites Recommendation:**

- ✓ Monitor progress on any ongoing remedial action conducted for the known oil or contamination sites.

**6. Agricultural Activites –** There are several areas of agricultural activity within the Zone IIs. Pesticides and fertilizers have the potential to contaminate a drinking water source if improperly stored, applied, or disposed. If not contained or applied properly, animal waste from barnyards, manure pits and field application are potential sources of contamination to ground and surface water.

**Top 5 Reasons to Develop a Local Wellhead Protection Plan**

❶ Reduces Risk to Human Health and the Environment

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 in a place people want to live and businesses want to locate.


**Agricultural Activities Recommendation:**

- ✓ Work with farmers in your protection areas to make them aware of your water supply and to encourage the use of a US Natural Resources Conservation Service farm plan to protect water supplies.

**7. Protection Planning –** Currently, the Town does have water supply protection controls that meet DEP's Wellhead Protection regulations 310 CMR 22.21(2). Protection planning protects drinking water 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 resources available to help communities develop a plan for protecting drinking water supply wells.

**Protection Planning Recommendations:**

- ✓ Establish a protection team, and refer them to http://mass.gov/dep/brp/dws/protect.htm for a copy of DEP's guidance, "Developing a Local Wellhead Protection Plan".
- ✓ Coordinate efforts with local officials to compare local wellhead protection controls with current MA Wellhead Protection Regulations 310 CMR 22.21 (2). For more information on DEP land use controls see http://mass.gov /

*(Continued on page 10)*

## Table 3: Current Protection and Recommendations

| Protection Measures | Status | Recommendations |
|---|---|---|
| **Zone I** | | |
| Does the Public Water Supplier (PWS) own or control the entire Zone Is? | **YES** | 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)? | **YES** | The Town "Aquifer Protection District" bylaw meets DEP's requirements for wellhead protection. 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? | **NO** | Work with neighboring municipalities to include Zone IIs in their wellhead protection controls. |
| **Planning** | | |
| Does the PWS have a Wellhead Protection Plan? | **YES** | 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? | **YES** | 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 commercial, industrial and municipal uses within the Zone II. |

dep/brp/dws/protect.htm.

Other land uses and activities within the Zone II are listed in Table 2. Refer to Table 2 and AWSD's "Wellhead Protection Project" for more information about these land uses.

Identifying potential sources of contamination 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 sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

## Section 3: Source Water Protection Conclusions and Recommendations

**Current Land Uses and Source Protection:**
As with many water supply protection areas, the system Zone IIs contain potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2.

AWSD is commended for taking an active role in promoting source protection measures by initiating the "Wellhead Protection Project, July 2002" which was funded through a grant provided by Massachusetts DEP's Wellhead Protection Grant Program. Assisted by Woodard and Curran, Inc., AWSD developed a thorough assessment of the potential threats located within their Zone IIs. Information for the report was gathered using a variety of sources including surveys of local agencies in Acton and surrounding towns, local, state and federal databases, GIS data from the local, state and federal levels and a windshield survey of all five Zone IIs. The report supplies AWSD with valuable tools for wellhead protection, including a comprehensive database of the potential sources of contamination located within their Zone IIs and the necessary GIS data layers to produce maps useful in future decision making.

**Source Protection Recommendations:**
To better protect the sources for the future:

- ✓ Inspect the Zone Is regularly, and when feasible, remove any non-water supply activities.
- ✓ Add Zone I data layer to AWSD GIS maps to aid protection planning and inspections.
- ✓ Organize a wellhead protection committee comprised of stakeholders from both the public and private sectors to implement the Wellhead Protection Plan. and recommendations from the Wellhead Protection Project.
- ✓ Educate residents on ways they can help you to protect drinking water sources.
- ✓ Locate stormwater drainage in your Zone Is and Zone IIs and cooperate on responding to spills or accidents.
- ✓ Partner with local businesses to ensure the proper storage, handling, and disposal of hazardous materials.
- ✓ Monitor progress on any ongoing remedial action conducted for the known oil or contamination sites.
- ✓ Continue to update and improve the AWSD's wellhead protection database.
- ✓ Work with farmers in your protection areas to make them aware of your water supply and to encourage the use of a NRCS farm plan to protect water supplies.

### What is a Zone III?

A Zone III (the secondary recharge area) is the land beyond the Zone II from which surface and ground water drain to the Zone II and is often coincident with a watershed boundary.

The Zone III is defined as a secondary recharge area for one or both of the following reasons:

1. The low permeability of underground water bearing materials in this area significantly reduces the rate of groundwater and potential contaminant flow into the Zone II.
2. The groundwater in this area discharges to a surface water feature such as a river, rather than discharging directly into the aquifer.

The land uses within the Zone III are assessed only for sources that are shown to be groundwater under the direct influence of surface water.

### Additional Documents:

To help with source protection efforts, more information is available by request or online at mass.gov/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

**Conclusions:**
These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed in Table 3, the Key Issues above and Appendix A.

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 Department's Wellhead Protection Grant 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. 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 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 assessment and protection recommendations in this SWAP report are provided as a tool to encourage community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. The water supplier should supplement this SWAP report with local information on potential sources of contamination and land uses. 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.

## Section 4: Appendices

A. Protection Recommendations
B. Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas
C. Additional Documents on Source Protection

## Appendix A: Protection Recommendations

| Land Use | Potential Contaminant Sources* | Recommendation |
|---|---|---|
| **Agricultural** | | |
| Fertilizer Storage or Use | Fertilizers: leaks, spills, improper handling, or over-application | Facility owners/operators to ensure BMPs are in place for proper storage, and application of fertilizers. |
| Livestock Operations | Manure (microbial contaminants): improper handling | Livestock operations to ensure that BMPs are in place for proper manure storage and management. |
| Landscaping | Fertilizers and pesticides: leaks, spills, improper handling, or over-application | Landscapers to ensure proper storage, handling, and application of pesticides. |
| Manure Storage or Spreading | Manure (microbial contaminants): improper handling | Farmers to encourage the use of a farm plan that includes BMPs for the management, storage, and application of manure. |
| Pesticide Storage or Use | Pesticides: leaks, spills, improper handling, or over-application | Facility owners/operators to ensure that BMPs are in place for proper storage, handling, and application of pesticides. |
| **Commercial** | | |
| Car/Truck/Bus Washes | Vehicle wash water, soaps, oils, greases, metals, and salts: improper management | Carwashes to ensure that BMPs are in place for the management of washwater. |
| Body Shops | Vehicle paints, solvents, and primer products: improper management | Body shops to ensure BMPs are in place for the proper storage, labeling, management, and disposal of paints, solvents, and other chemicals. |
| Gas Stations | Automotive fluids and fuels: spills, leaks, or improper handling or storage | Gas stations to ensure BMPs are in place for the proper storage and handling of fuel and automotive fluids. |
| Service Stations/ Auto Repair Shops | Automotive fluids and solvents: spills, leaks, or improper handling | Service stations to ensure BMPs are in place for the proper storage, handling, and disposal of solvents and automotive fluids. |
| Bus and Truck Terminals | Fuels and maintenance chemicals: spills, leaks, or improper handling | Bus and truck terminals to ensure that BMPs are in place for storage, handling, and disposal of fuels and maintenance chemicals. |
| Dry Cleaners | Solvents and wastes: spills, leaks, or improper handling | Dry cleaners to ensure that BMPs are in place for the handling, storage, and disposal of solvents and wastes. |
| Furniture Stripping and Refinishing | Hazardous chemicals: spills, leaks, or improper handling | Furniture stripping and refinishing owners/operators to ensure that BMPs are in place for the handling, storage, and disposal of hazardous chemicals. |
| Paint Shops | Paints, solvents, other chemicals: spills, leaks, or improper handling or storage | Paint shops to ensure that BMPs are in place for the handling, storage, and disposal of solvents, paints, and other chemicals. |
| Photo Processors | Photographic chemicals: spills, leaks, or improper handling or storage | Photo processors to ensure that BMPs are in place for the handling, storage, and disposal of photographic chemicals. |
| Printer And Blueprint Shops | Printing inks and chemicals: spills, leaks, or improper handling or storage | Printer and blueprint shops to ensure that BMPs are in place for the handling, storage, and disposal of printing inks and chemicals. |
| Railroad Tracks And Yards | Herbicides: over-application or improper handling; fuel storage, transported chemicals, and maintenance chemicals: leaks or spills | Railroads to review Yearly Operating Plans to ensure that BMPs are in place to manage herbicide application in water supply protection areas. |
| Repair Shops (Engine, Appliances, Etc.) | Engine fluids, lubricants, and solvents: spills, leaks, or improper handling or storage | Repair shops to ensure that BMPs are in place for the handling, storage, and disposal of engine fluids, lubricants, and solvents. |
| Sand And Gravel Mining/Washing | Heavy equipment, fuel storage, clandestine dumping: spills or leaks | Sand and gravel operations to ensure that BMPs are in place for fuel storage and the prevention of clandestine dumping. |

| | | |
|---|---|---|
| **Industrial** | | |
| Industry/Industrial Parks | Industrial chemicals and metals: spills, leaks, or improper handling or storage | Industrial facilities to ensure that BMPs are in place for the handling, storage, and disposal of chemicals and metals. |
| Machine/Metalworking Shops | Solvents and metal tailings: spills, leaks, or improper handling | Machine/metalworking shops to ensure that BMPs are in place for the handling, storage, and disposal of solvents and metal tailings. |
| Wood Preserving Facilities | Wood preservatives: spills, leaks, or improper handling or storage | Wood preservatives to ensure that BMPs are in place for the handling, storage, and disposal of wood preservative chemicals. |
| **Residential** | | |
| Fuel Oil Storage (at residences) | Fuel oil: spills, leaks, or improper handling | Residents to encourage proper maintenance and upgrades to fuel oil tanks. |
| Lawn Care / Gardening | Pesticides: over-application or improper storage and disposal | Residents to encourage proper storage, disposal, and application of pesticides. |
| Septic Systems / Cesspools | Hazardous chemicals: microbial contaminants, and improper disposal | Residents to encourage maintenance and inspection of septic systems and proper disposal of household hazardous waste. |
| **Miscellaneous** | | |
| Aboveground Storage Tanks | Materials stored in tanks: spills, leaks, or improper handling | Aboveground Storage Tank owners to ensure that BMPs are in place for the handling, storage, and containment of materials stored in tanks. |
| Oil or Hazardous Material Sites | Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified in Appendix B. | Licensed Site Professionals for oil or hazardous material sites to monitor progress on clean-up efforts. |
| Small Quantity Hazardous Waste Generators | Hazardous materials and waste: spills, leaks, or improper handling or storage | Small quantity hazardous waste generators to ensure that BMPs are followed for the handling, storage, and disposal of hazardous materials and waste. |
| Stormwater Drains/ Retention Basins | Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns | Department of Public Works to ensure that BMPs are in place for the disposal of sludge and maintenance of storm drains and detention basins. |
| Superfund Sites | Oil or hazardous materials and waste: spills, leaks, or improper handling or storage | Superfund site??? to monitor the progress of clean-up efforts. |
| Transportation Corridors | Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling | Fire department to ensure that emergency response plans consider the water supply protection area. |
| Underground Storage Tanks | Stored materials: spills, leaks, or improper handling | Underground storage tank owners to ensure that BMPs are in place for the handling, storage, and containment of stored materials. |
| Utility Substation Transformers | Chemicals and other materials including PCBs: spills, leaks, or improper handling | Utilities to ensure that transformers containing PCBs are replaced and that BMPs are in place for the handling and disposal of other chemicals. |
| Wastewater Treatment Plant/Collection Facility/ Lagoon | Treatment chemicals or equipment maintenance materials: improper handling or storage; wastewater: improper management | Wastewater treatment plants / collection facilities / lagoons to ensure that BMPs are followed for the handling, storage, and disposal of treatment chemicals. |
| Water Treatment Sludge Lagoon | Sludge and wastewater: improper management | Water treatment operators to ensure that BMPs are followed for the handling, storage, and disposal of sludge and wastewater. |

**APPENDIX B – Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas**

DEP's datalayer depicting oil and/or hazardous material (OHM) sites is a statewide point data set that contains the approximate location of known sources of contamination that have been both reported and classified under Chapter 21E of the Massachusetts General Laws. Location types presented in the layer include the approximate center of the site, the center of the building on the property where the release occurred, the source of contamination, or the location of an on-site monitoring well. Although this assessment identifies OHM sites near the source of your drinking water, the risks to the source posed by each site may be different. The kind of contaminant and the local geology may have an effect on whether the site poses an actual or potential threat to the source.

The DEP's Chapter 21E program relies on licensed site professionals (LSPs) to oversee cleanups at most sites, while the DEP's Bureau of Waste Site Cleanup (BWSC) program retains oversight at the most serious sites. This privatized program obliges potentially responsible parties and LSPs to comply with DEP regulations (the Massachusetts Contingency Plan – MCP), which require that sites within drinking water source protection areas be cleaned up to drinking water standards.

For more information about the state's OHM site cleanup process to which these sites are subject and how this complements the drinking water protection program, please visit the BWSC web page at http://www.state.ma.us/dep/bwsc. You may obtain site -specific information two ways: by using the BWSC Searchable Sites database at http://www.state.ma.us/dep/bwsc/sitelist.htm, or you may visit the DEP regional office and review the site file. These files contain more detailed information, including cleanup status, site history, contamination levels, maps, correspondence and investigation reports, however you must call the regional office in order to schedule an appointment to view the file.

The table below contains the list of Tier Classified oil and/or Hazardous Material Release Sites that are located within your drinking water source protection area.

**Table 1**: Bureau of Waste Site Cleanup Tier Classified Oil and/or Hazardous Material Release Sites (Chapter 21E Sites) - Listed by Release Tracking Number (RTN)

| RTN | Release Site Address | Town | Contaminant Type |
|---|---|---|---|
| 2-0000848 | 341 GREAT RD | ACTON | Oil |
| 2-0010259 | 336 GREAT RD | ACTON | Hazardous Material |
| 2-0010612 | 930 MAIN ST | ACTON | Oil and Hazardous Material |
| 2-0010766 | 196 GREAT RD | ACTON | Oil |

For more location information, please see the attached map. The map lists the release sites by RTN.